Students Teaching Students – How One Suborbital Payload Impacted an Entire School

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Abstract

During the Next-Generation Suborbital Researchers Conference (NSRC) in 2016, Blue Origin and DreamUp announced a partnership to provide access for student payloads on upcoming New Shepard suborbital launches. DCS Montessori (a PK-8 Charter School) leaped at the possibility of developing a student payload and became one of the first teams to benefit from this new partnership. With the support of DCS Montessori School head of school and teachers, Mr. Gulliver volunteered to develop a curriculum and mentor students to develop a payload for an upcoming mission.

Developing a Student Curriculum

Once a contract statement of work was established between DCS Montessori School, DreamUp, NanoRacks, and Blue Origin, the school embarked on developing a custom curriculum to use this opportunity as teaching moment and engage as many students as possible with elements of the payload development. The middle school students took the lead and were split into 4 groups. Group 1 was responsible for designing and building the payload enclosure. Group 2 was responsible for developing and testing an experiment. Group 3 was responsible for generating and organizing a school-wide art project that would enable all students at the school to create something that would be sent into space. Group 4 was responsible for educational outreach and developing an age-appropriate lesson to share with the preschool, lower elementary, and upper elementary students. By engaging the entire school in various aspects of the suborbital experiment, the students were exposed to a real-world challenge that incorporated Science Technology Engineering Art and Math (STEAM) in a powerful way.

Student Payload

The student payload consisted of two parts. The first was an Arduino Nano with a sensor package that was designed and programed by the students. The second was an art project that all students participated in. Upon landing, the data from the experiment will be analyzed and the art will be returned to the students.

Conclusions

Through the active engagement of leaders at DCS Montessori and the support of DreamUp, NanoRacks, and Blue Origin, the students successfully developed a payload that is expected to fly on an upcoming New Shepard mission. This unique but replicable program has directly impacted hundreds of students and supported the creation and inspiration of the next generation of suborbital, low Earth orbit and deep space researchers.

Figure Insert: DCS Montessori Middle School Students with Payload, June 2017 (Castle Pines, CO)