

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)  
Lift Off - Secondary Space Education (2)

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BLUE-SKY LEARNING: THE WOLVERINE CUBESAT DEVELOPMENT TEAM (2015-2020)

**Abstract**

The Wolverine CubeSat Development Team (WCDT) employs a 'BLUE-SKY Learning' philosophy. Young students have the potential and resources to accomplish remarkable technical feats - even launching their own spacecraft. The WCDT, located within the Weiss School in Palm Beach Gardens, Florida remains the only middle school (grades 6th-8th) program nationwide to have successfully launched a CubeSat mission with NASA's CubeSat Launch Initiative (CSLI). Following the launch in 2018 of their first CubeSat, the WeissSat-1, they were selected for a second satellite, the CapSat-1 in 2019. It is expected to launch in 2021. The WCDT leverages the excitement of young people towards aerospace and the accessibility of CubeSats to engage the new generation STEM workforce.

While in the past only nations could build and deploy spacecraft, today CubeSats, in conjunction with NASA's CSLI, represent a pathway for a middle and high schools to put their student-built satellites into space. The uniqueness of the aerospace experience is ideally suited for gifted students and teachers. The small nanosatellite form factor is approximately 10 cubic centimeters in volume and originally designed to train engineering students through the life cycle of a satellite (design, assembly, testing, and flight) while in college. With the emergence of lower cost access to space, the miniaturization of electronics, and the standardization of the form factor, CubeSats represent a tremendous learning tool to incorporate both hard and soft skills. Students are immersed in the convergent and real-world themes of systems engineering, project management, and authentic research, all while applying maximum creativity and critical thinking to earn or win flight opportunities to space. Students who develop CubeSats are required to both specialize individually and collaboratively to integrate a spacecraft payload and bus, successfully test the vehicle to stringent certification criteria, and are encouraged interact with numerous government agencies such as Congress and NASA.

We live at the precise time in humankind's history that large numbers of people now have access to low cost technology, infinite information, and access to capital resources sufficient to accomplish extraordinary, or even 'BLUE-SKY' goals. The WCDT program has shown that if properly equipped educators may guide and inspire their young students, even 10-12 year olds, to develop their own authentic aerospace program.