IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Virtual Presentations - IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (VP)

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RESHAPING THE UAE SPACE SECTOR THROUGH EXPERIENTIAL LEARNING

Abstract

With the rapid growth of the UAE space industry, a continuous feed of motivated entrepreneurs and workforce is required to cater to a sustainable space economy. The STEM regional education market research indicated high enthusiasm amongst the youth to pursue fundamentals of space sciences but lack of effective institutions delivering it. To fill this gap, Laboxatory learning solutions hosted the first ever Space Camp teaching fundamentals of Space Sciences in April 2018 hosting astronaut Dr. Soyeon Yi as a positive role-model. The curriculum-agnostic, gamified learning model enabled students to grasp and apply scientific thinking. With a solidified partnership with the UAE Space Agency, Laboxatory introduced different Academies pertaining to the space industry. This resulted in students increasing awareness and pivoting their career choices towards space STEM majors. Following were the academies delivered towards students in middle and high school:

1. Space Academy covers an overall perspective and endeavors of the UAE Space Sector along with robotics, coding artificial intelligence, 3D printing, and electronics.
2. Space Robotics Academy: The overarching objective is to allow students to use design thinking to 3D print their own rover to explore a representative Martian terrain. Career counselling is provided along with the academy to increase awareness of pursuing STEM majors related to the space industry.
3. Spacepreneur Academy: This academy covers entrepreneurship in the space sector in collaboration with Krypto Labs, a global virtual incubator. Middle school and high school students were introduced to researching problems in the space sector, design thinking and prototyping Minimum Viable Products prior to pitching to angel investors.
4. Astrobio Academy: STEM education to extend survival of human race and sustainability in a harsh Martian ecosystem is covered for youth.
5. Nanosat Academy: Students are allowed to understand the fundamentals and design their own satellites prior to launching and gathering data. The overarching goal is to motivate students to pursue engineering sciences and raise awareness of space technology for meteorology and GIS.

6. Drone Academy: Aeronautics and artificial intelligence is employed to raise awareness and teach fundamentals of building unmanned autonomous vehicles experientially. Students go through the final challenge including answering questions relating to fundamentals of aerospace.

This paper details the outcomes of executing successful programs along with representative data indicating changing of mindset of students pursuing space related STEM majors.