Paper ID: 43959
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IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Lift Off - Secondary Space Education (2)

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EDUCATIONAL PROJECT "ENGINEER CLASS IN A MOSCOW HIGH-SCHOOL" AIMED AT INCREASING THE EFFICIENCY OF STEM-EDUCATION

Abstract

The educational project "Engineer class in a Moscow high-school" have started in Russia in September 2015. It is an efficient tool which motivates high-school students to properly study science disciplines in high-school and then allows them to pick future profession related to STEM. As part of the project at Bauman Moscow State Technical University (Russia), 475 teachers of specialised educational entities supervised by Moscow Educational Department took part in the project at these topics: - Technology - Mathematics for future engineers - Information Technology for future engineers - Physics for future engineers. This special educational projects was developed for the teachers, aimed to improve their specialised competencies. The teachers participated in 33 seminars and have received methodology for conducting 6-7 classes on each subject. This would allow them to implement these methodologies into standard and extra-curriculum activity related to engineer education, taking into account conditions and capabilities of each educational entity. As part of the implementation of the programs of auxiliary education three cycles of practical classes for teachers took place, based on activity-competency approach in specialised engineer education, each cycle consisted of 36 hours and specialised at forming research competencies of students of engineer classes at: - implementation of individual projects; - studying information technology topics in order to study and develop modern IT approaches in engineer activity; and - studying physics topics with highest importance for engineer subjects. The report represents the results of meta-subject practical aerospace classes for high-school students. As an example, the program "Fundamentals of designing an interplanetary experimental spacecraft for the flight to researched planet" was reviewed. The program consisted on 22 hours of education and included the fundamentals of design of interplanetary spacecraft and the rover for the research of the planet with the use of SolidWorks application, and also the calculation of the interplanetary trajectory. The experience obtained in development of the project "Engineer class in Moscow high-school" may be implemented at educational entities in several countries in order to promote STEM-education and to augment the pool of scientists, engineers and mathematicians who will conduct research of space in the future.