

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)  
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SPACE EDUCATION AND OUTREACH IN MOROCCO THROUGH THE INTRODUCTION OF THE  
HANDS ON CUBESAT FARM EXPERIMENT"EXOLAB-MOR-1" FOR K6 TO 12 STUDENTS.

**Abstract**

The global space industry has reached an optimum maturity level where the barriers to entry have never been any lower giving a chance to traditional non space fairing countries to join the exciting space race. Although the low barrier to entry to the space industry is encouraging new countries to deploy their own space agencies and establishing the regulatory frames needed to be in place to foster local space industries, one primordial issue still represents a major challenge for the newcomers. For any space industry to succeed and thrive, it needs a stable supply of able talents that are knowledgeable, experienced, and most importantly passionate about the field of space exploration and or industry. This reality is well understood by many of the new players in the industry, but the challenge is still how and when to start introducing Space related topics in the educational curriculums. In this paper we will investigate the introduction of a smart hand-on experiment named Exolab-Mor-1 to three educational institutions in Morocco as a pilot program. ExoLab is an experiment platform that brings together classrooms and the International Space Station in a collaborative investigation of the effects of microgravity on living things. ExoLab is designed with lesson sequence for 6th – 12th grade. The International Space Station (ISS) is home to advanced microgravity research for academia and industry. Working with school districts across Morocco, the implementation team seeks to provide an extraordinary exobiology experience mapped to accepted local science standards while dramatically reducing the cost to access experiments in space. The experiment is designed for Students to look for relationships between the environmental conditions, including the effect of microgravity on the growth of living things in general. It is the goal for the students to understand climate change and learn the process of developing local solutions to local climate change consequences and ultimately learn about space life support systems and food crop production in microgravity. The Exolab-Mor-1 itself is a smart box that includes smart sensors and cameras that

allow students to compare their experiment evolution with other schools worldwide and on the ISS. Furthermore, the students will have access to a very intuitive but powerful Learning Management System that will guide them through this exciting journey, enforce their scientific inquiry and help them build international collaborations at a very young age.