

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Ignition - Primary Space Education (1)

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USE OF SPACE ANALOG MISSIONS AS AN EDUCATIONAL TOOL IN PRIMARY SCHOOLS

Abstract

Space exploration is a field that inspires a wide range of people, from children to university students, including the general public. With a return to the Moon planned for 2024 and the rapid expansion of the private industry, educating the next generation for this challenge becomes a priority. As many interdisciplinary programmes in universities are developed, the increasing interest in do-it-yourself projects can be observed. In addition, nothing inspires children more than the wish of becoming astronauts. By combining these two previously stated themes, space analog missions, simulations of life on another celestial body, are used as an educational tool for children, in our case in a primary school.

In the frame of an EPFL semester project, such a program was run at the Vivalys primary school¹ in Switzerland. A class of 16 children between the age of 6 and 9 successfully designed and conducted a simulated Mars-based mission from September 2020 to March 2021, in spite of the difficult COVID situation. The Vivalys Mission has been entirely integrated to the school year's program by adapting the educational subjects (mathematics, sciences, geography, French, sports, history, and arts), attending workshops, and performing hands-on experiments. Systems engineering approaches were adopted allowing the class to acquire knowledge regarding stakeholder analysis, risk management and decision tools. The young team made mission design choices and presented them to experts during reviews. Leadership, teamwork and autonomy were demonstrated and practiced. This tool is innovative: a do-it-yourself approach combined with education and practical work.

The educational impact was studied using assessment strategies such as evaluations, rubrics and personal interviews. The progress and skills acquired, as well as their increasing will to work in the space field, are highlighted in the results². Following the success of this program, the local primary schools showed interest in running a similar project. Thanks to this first case study, lessons learned such as adapting the curriculum, organizing exterior activities, and enhancing the participation of adults, were collected.

This is the first step towards impacting different age groups, starting in pre-school right up to secondary education. The success of our study underlines the current need and enthusiasm for such projects and will be further developed in the upcoming years becoming easily accessible to schools across Switzerland and the world, also through the promotion at IAC.

¹<https://www.vivalys.ch>

²Analogue Missions: Learning by doing, *Chloé Carrière, Prof. Volker Gass, 2021*