

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

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FROM EARTH TO MOON AND BEYOND – IMMERSIVE STEM EDUCATION BASED ON  
REMOTE SENSING DATA**Abstract**

“You realise that the Earth is nothing but accumulated cosmic dust having formed a rock that is encompassed by a flimsy, fragile atmosphere. To grasp this, I needed the view out of the window.” German ESA Astronaut Alexander Gerst’s perspective on Earth was changed sustainably by the view from the International Space Station (ISS) onto our home planet. To give pupils that same perspective, within the means of public education, was one of the goals of the project “Columbus Eye” and of its successor “KEPLER ISS”, accompanying Gerst’s “horizons” mission in 2018. The presentation will demonstrate how Earth observation instruments on board the ISS – like the “High Definition Earth Viewing” (HDEV) experiment and the “Hyperspectral Imager for the Coastal Ocean” (HICO) – are used to create propaedeutic learning materials. Due to the concepts of intermediality, interactivity and interdisciplinarity, the materials communicate information about and handling of natural and man-made phenomena in ways that appeal to teachers and pupils alike. Among others, augmented reality apps were developed to enable pupils to experience a similar overview effect like astronauts in space. The education materials are integrated in STEM lessons (Geography, Mathematics, Physics) and will act as the backbone of the national school competition “self-eSTEAM”. The competition is conducted simultaneously to Gerst’s space flight and combines STEM and arts subjects in order to foster creative and methodological competences at once. Accordingly, the talk will not only present evaluation results of a feasibility study but also the next step of remote sensing with immersive education approaches: The fascination of space travels will be used to answer a typical geographical problem known from Earth. By using augmented and virtual reality applications, pupils will be put in the role as Moon and Mars explorers in order to

work with remotely sensed data for finding the best location. Hence, similar to Gerst their view will also wander from our Earth to the Moon and beyond.