

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)

Lift Off - Secondary Space Education (2)

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SHE-SPACE INTERNATIONAL: ACHIEVING SDG'S 4 AND 5 THROUGH A PROJECT-BASED
LEARNING (PBL) APPROACH TO SPACE SCIENCE AND STEAM EDUCATION

Abstract

She Space International is a first-of-its-kind educational program designed to inspire young girls (14-16 years old) to study science, technology, engineering, arts and mathematics (STEAM) subjects. The basic premise of the program is that exposure to female role models and advanced scientific disciplines, especially in an active research context, encourages young women to continue studying and engaging with science throughout their educational and professional careers. Previous research has demonstrated the importance of female role models to women entering and progressing in STEAM careers. The program began in 2018 at the Earth and Planetary Image Facility (EPIF) at Ben-Gurion University of the Negev (BGU), Israel. The first iteration of the program (2018/2019) was local; including 20 high school-age girls from nearby BGU and the Negev area. Participants were diverse: religious and secular, Jews, Christians, and Muslim Arabs. In 2019, the program expanded internationally to include additional research institutions from: Germany, Brazil, and the USA. During the project, teams of students from each country guided and mentored by faculty and students from research groups within each participating institution produced a joint climate change study based on remote sensing and advanced image analysis techniques. By participating in advanced, hands-on research, students were exposed to cutting-edge academic research techniques. In particular, She Space International participants utilized imaging and communications collected or provided by the satellites and space agencies of their respective home countries: Vens Satellite (Israel), Sentinel-2 (Germany), LandSat-8 (U.S.), and a China-Brazil Satellite (CBERS) for Brazil. During the joint research project, each group studied a research question related to climate change and environmental issues in their native countries. The students in each group then had to work together to produce final, group

presentations combining the results of their individual projects. Participants used advanced scientific research instruments, computer programs, and techniques that are all actively in use at the labs and organizations that helped to run the program. Project participants actively experienced what it is to be a researcher doing scientific work using real, advanced research techniques. In our presentation, the International project and its outcomes will be presented. In addition, we will discuss the impact that the She Space International program had on our participants' comfort with science and their perceptions of their science abilities using pre- and post-questionnaires distributed to all participants of the program. Lessons learned, future research, and future outreach programs will also be discussed.