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IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
New Worlds - Non-Traditional Space Education and Outreach (7)

Author: Mr. gabriel Loza Medina
Universidad Autónoma del Estado de México (UAEMéx), Mexico

Ms. Cristina Pérez Ramos
Instituto Nacional de Astrofísica, Óptica y Electrónica, Mexico
Ms. Aracely Michel Sosa Aguilar
Universidad Autónoma del Estado de México (UAEMéx), Mexico
Ms. Lia Sadahi Del Razo Contreras
UAM, Mexico
Mr. JOSE LUIS LOPEZ SANTIAGO
National Technology of Mexico (TecNM), Mexico

SHERP PROJECT: NEUROSCIENTIFIC APPROACH IN TEACHING SPACE SCIENCES AND TECHNOLOGIES

Abstract

During childhood, the most important neurocognitive functions that will become extremely important throughout life are developed. Nevertheless, from 7 to 14 years old, the transformation known as "synaptic pruning" occurs, which consists of the eradication of neurons that were not reinforced throughout childhood. To counteract this, an important key is the constant development of new skills that the tools of the Science, Technology, Engineering, Arts and Mathematics (STEAM) model help facilitate. In this context, children and young people benefit substantially from the implementation of educational robotics. Through challenges based on recreating in an interactive and realistic way some of the space and planetary exploration missions that different space agencies around the world have been implementing, the Sherp project is introduced, which emulates a Martian Rover controlled with a mobile App, which integrates cognitive and socioemotional skills, promoting collaborative work, responsibility and decision making (soft skills). The use of this robot as a didactic device is intended for children and young people to learn to develop their computational logic, mathematical, algorithmic, creative and space-oriented thinking, expanding their cognition and memory retention by providing answers to multidisciplinary problems, of which the application allows them to recognize themselves as protagonists due to the different interfaces available to them. This article presents the results of the use of an adaptive methodology to the different cognitive profiles that education demands by implementing dynamic teaching modes, allowing to attend to the development and strengthening of skills and aptitudes in neurodivergent infants and youngsters. Special emphasis is given to neuroatypical conditions such as high cognitive abilities, autism spectrum disorder (ASD) and attention deficit and hyperactivity disorder (ADHD).