

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
Lift Off - Primary and Secondary Space Education (1)

Author: Prof. Elmarie Biermann
French south african Institute of Tehnology(F'SATI), South Africa

Mrs. Ingrid Esterhuizen
South Africa
Mrs. Alta Greeff
Curro Holdings, South Africa

THE YOUNGER, THE BETTER: HUMAN CAPACITY DEVELOPMENT THROUGH SPACE
EDUCATION IN PRIMARY SCHOOLS

Abstract

Primary school learners are naturally curious about outer space and there is a wealth of interest to be harvested. The purpose of this paper is to provide a framework for channelling this interest into nurturing some of the critical skills that are required for a career in astronautics.

The Mathematics, Science and Technology curricula in primary schools can be enhanced through the introduction of programmes that have proved successful in teaching engineering and programming concepts. One such programme is the First Lego League (FLL).

The FLL is an international training programme and competition involving teams of up to 10 learners, aged 9-16. Teams are required to design and build within 8 weeks a programmable robot capable of performing a number of challenges or tasks. The learners also conduct a research project based on the theme of the annual challenge. This research project has to illustrate how technology can be used to solve present and future challenges, for example social problems and energy consumption. Technical and expo-type presentations, which in turn nurture communication skills and promote public awareness, are also an aspect of the competition.

Critical skills enhancement efforts can only be effective if schools are introduced to the programmes and if teachers are empowered to become trained champions for the cause.

Our proposed framework is centred on promoting aeronautics as a field of study amongst teachers and learners (aged 9-13) in the primary education sector through:

1. enhancing critical skills related to Mathematics, Science and Technology;
2. supporting access to a well-developed tool for the above purpose;
3. training teachers to run the programmes in their schools;
- and 4. providing learners with an environment of active participation.

The proposal considers some of the challenges faced by South African schools, such as funding and lack of teacher training. South African teams (though limited mainly to the Gauteng and Cape Town regions) have participated in the FLL in the past. In 2008, teams from disadvantaged communities in Pretoria were introduced to the African FLL. This was achieved through a targeted training and participation agenda in which teams were provided with the necessary hardware and software as well as mentors and specialist training. The programme continued in 2009 and 2010, proving there is a workable solution.

Keywords: Lego, FLL, Space Education, Primary School, Human Capacity Development.