



United Nations
Educational, Scientific and
Cultural Organization

Africa Engineering Week Draft Concept Note

Background

Addressing sustainable development within current climate change challenges will require innovative engineering and technology-based solutions. Engineering capacity and competence building activities are critical to ensure an adequate supply of engineers to work on these global challenges. Such activities are particularly important in Africa, where the per capita number of engineering professionals is lower than in other regions. Given this engineering deficit, activities that promote awareness of engineering as a career as well as show how youth studying science, technology, engineering and mathematics (STEM) can become part of the solution have high priority. To increase engineering capacity in Africa, the UNESCO Engineering Initiative (UEI) in cooperation with our partner Intel Corporation would like to establish an Africa Engineering Week.

Many countries, including the United States, Canada, Australia, UK, and Ireland currently hold national engineering weeks, which have been very successful in promoting awareness of engineering as a career among students as well as demonstrating the need for engineering to achieve sustainable development through the three pillars: social, economic, and environmental. Activities that celebrate engineering as well as educational programs that encourage students to pursue engineering studies are held during this week. In both the United States and Ireland, Engineering Family Days give families the opportunity to see engineering in action through demonstrations and hands-on activities, such as water rockets, LEGO robots, and solar orbiter heat shields. In addition, the UK and Australia have created engineering activity packs, which feature downloadable activities, such as construction of a solar cooker or a straw bridge, to facilitate engineering discovery for primary and secondary students during this week.

The activities during Africa Engineering Week will increase the visibility of engineering, which is particularly important in the continent where there is a great need for engineers to achieve the Millennium Development Goals (MDGs) and the Sustainable Development Goals (SDGs).

Africa Engineering Week

Engineering Week is planned to take place September 14th – 19th, 2015. For the inaugural event in Africa, four types of activities are envisioned:

- Educational activities, such as constructing a solar cooker or a straw bridge, which can be incorporated in the science curriculum of primary and secondary school students
- Public awareness events, such as Family Fun Day, where families can learn about engineering through hands-on activities and demonstrations (LEGO robots, water rockets, etc.), hosted by local engineering chapters and national organizations

- Mentoring events, such as Introduce a Girl to Engineering Day, where professional engineers come to schools to talk about practical applications of STEM
- University activities and events, such as lectures in conjunction with university students to highlight the engineering faculties and university “open days” to introduce youth to undergraduate and postgraduate studies of engineering.

Objectives

The objective of these Africa Engineering Week activities is to increase the visibility of engineering and its role in sustainable development, to encourage students to study engineering by supplementing STEM curriculum with practical engineering applications, and to incite more African countries to participate ensuring the sustainability of these efforts.

Overview of Activities

- **Educational Activities**
 - Use downloadable teacher guidelines and student materials, developed by Engineers Australia, to conduct hands-on activities with primary and middle years students (<http://www.engquest.org.au/index.cfm>)
 - Construct a solar cooker
 - Construct a newspaper dome
 - Construct a straw bridge
 - Quizzes and animations associated with projects
 - Use downloadable engineering activity packs, developed by EngineeringUK, to conduct hands-on activities with secondary school students (<http://www.britishscienceassociation.org/get-engineering>)
 - Make a water filtration device
 - Construct a self-propelled helicopter
 - Construct a prototype assembly line
 - Engineering career resources
- **Public Awareness Events**
 - Organize Engineering Family Day, similar to Discover Engineering Family Day in the United States (<http://www.engineeringfamilyday.org>) or Family Fun Day in Ireland (<http://www.engineersweek.ie/events-2013/>) with:
 - Interactive children’s workshops
 - Engineering in action demonstrations, such as underwater periscope, heat shields for solar orbiter, or a robotic arm
- **Mentoring Activities**
 - Organize School Visits, where professional engineers visit primary and secondary school students and talk about practical applications of STEM
 - Organize mentoring activities for girls, similar to the South African Women in Engineering (SAWomEng) GirlEng program (<http://girleng.sawomeng.org.za/>). This program was started in South Africa, but is now growing to Namibia and Kenya and soon to other countries in Africa. The aims are to facilitate interactions between girls and engineering professionals by:
 - Talking to a class of high school girls about engineering careers
 - Inviting a group of girls to your company or lab for a tour
 - Organizing a job shadow day for middle and high school girls