

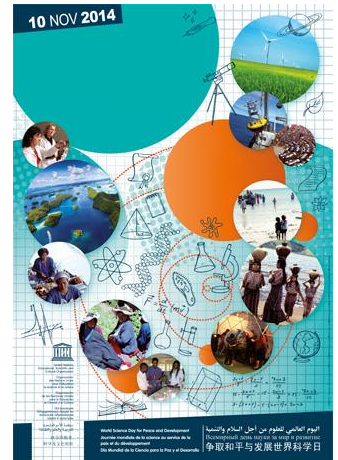
World Science Day for Peace and Development 2014

Quality Science Education: Ensuring a sustainable future for all

About World Science Day

Established by UNESCO in 2001, World Science Day for Peace and Development is celebrated worldwide annually on 10 November. This year's theme is '*Quality Science Education: Ensuring a sustainable future for all*'. By throwing bridges between science and society, the aim is to ensure that citizens are kept informed of developments in science, while underscoring the role scientists play in broadening our understanding of the remarkable, fragile planet we call home and in making our societies more sustainable. Recent themes have also included 'towards green societies' (2011), science for the rapprochement of peoples and cultures (2010) and astronomy (2009).

World Science Day offers an opportunity to demonstrate to the wider public why science is relevant to their daily lives and to engage them in debate on related issues, which has also generated concrete projects, programmes and funding for science around the world. Several ministries have announced an increase in spending on science, for instance, or the creation of a university or research body. The Day has also helped to foster cooperation between scientists living in regions marred by conflict.



World Science Day was instigated as follow-up to the [World Conference on Science](#), organized jointly by UNESCO and the International Council for Science in Budapest (Hungary) in 1999. The Day offers an opportunity to reaffirm each year our commitment to attaining the goals proclaimed in one of the twin documents adopted by the World Conference on Science: the [Declaration on Science and the Use of Scientific Knowledge](#) and to follow up the recommendations contained in the Conference's Science Agenda: [Framework for Action](#). The biennial [World Science Forum](#) is always held as close as possible to World Science Day.

UNESCO Activities for Science in Kenya

UNESCO Regional Office for Eastern Africa in Nairobi has been partnering with the Ministry of Education Science and Technology, the National Commission for Science Technology and Innovation (NACOSTI) and the University of Nairobi in organizing various mentoring activities on access to necessary science, technology, engineering and mathematics (STEM) curriculum for girls from primary to secondary schools. Such events include *Introduce a Girl to Engineering* that took place from 1 -5 September 2014 during Africa Engineering Week where professional engineers engaged with girls on the importance of engineering for society together with demonstrations on what the various courses in engineering are all about with practical applications of STEM. In addition, a series of university activities have been organized with open campus lectures in conjunction with introducing youth and undergraduates to postgraduate studies of engineering. UNESCO has also been supporting the organization of 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.) with local engineering chapters and national organizations.

Kenya Celebration on World Science Day

UNESCO believes that more people would be attracted to engineering as a career if the role of engineering was more visible and better understood and is working to raise awareness on the importance of engineering for sustainable development. For this year, UNESCO together with the Government of Kenya, the National Commission for Science, Technology and Innovation (NACOSTI), and University of Nairobi is organizing a **Scientific Camp of Excellence - Mentoring Girls in STEM for a Secure Sustainable Future** to celebrate the **World Science Day** at St. George's Secondary School in Nairobi from **10 to 14 September 2014**. The objective of the World Science Day activity 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 raise awareness among governments and the general public on the need to increase participation in engineering courses for enhanced economic and sustainable development.

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World Science Day for Peace and Development 2014

Quality Science Education: Ensuring a sustainable future for all

Event Programme: Scientific Camp of Excellence Mentoring Girls in STEM
for a Secure Sustainable Future

Date: 10 to 14 November, 2014

Main venue: St. George's Secondary School in Nairobi

DAY 1: 10/11/2014 Opening Ceremony

Time	Activity	Facilitator
08.30-09.00	Registration	University of Nairobi, Students
9.00-10.00 Opening Ceremony	Welcome and Opening Remarks	Principal St. Georges & UoN
	NACOSTI	CEO, Dr. Moses Rugutt
	Directorate of Gender	Director, Mrs. Katherine Muoki
	UNESCO	Director, Mr. Mohamed Djelid
	Dean, School of Engineering, UoN MOEST (PS/Science & Technology)	Prof. P. Odira Prof. Collette Suda
10.00-10.15	Tree Planting Ceremony	PS & UNESCO Director +others
10.15-10.45	GROUP PHOTO/HEALTH BREAK	ALL
10.45-12.00	Overview of the Camp + Talk by UNESCO Science Specialists	A. Ochanda, UNESCO
12.00-13.00	Question and Answer Session	ALL
13.00-14.00	LUNCH	
14.00-15.00	Mentoring on STEM	A. Ochanda, UNESCO
	Mentoring on Career Choices	Dr. F.N. Karanja, UoN
15.00-16.00	Mentoring on Life Skills	Catherine Mumbi Wanjohi
16.00-17.30	Question and Answer Session	ALL
17.30-19.00	SUPPER	
19.00-20.30	Networking and Sharing School Experiences	Teachers to be in charge

DAY 2: 11/11/2014 Career Talks in STEM - Visit to School of Engineering

Time	Activity	Facilitator
08.00-08.30	Registration	University of Nairobi, Students
08.30-09.00	Career Talk: Engineering and Technology	Dr. F.N. Karanja
09.00-09.30	Career Talk: Physical Sciences	Dr. L. Olaka
09.30-10.00	Questions and Answer Session	
10.00-10.30	HEALTH BREAK	
11.00-11.30	Career Talk: Health and Biological Sciences	Dr. G. Omosa
11.30-12.00	Career Talk: Agricultural Sciences	Dr. C.M. Onyango
12.00-12.30	Question and Answer Session	
12.30-13.30	LUNCH	
14.00-17.00	Visit: Engineering Laboratories	Dr. F.N. Karanja
17.30-19.00	SUPPER	
19.00-20.30	Self- Driven Activities	Teachers to be in charge



DAY 3: 12/11/2014 Visits to Academic Institutions

Time	Activity	Presenter
08.00-08.30	Registration	University of Nairobi, Students
08.30-10.00	Visit: Agricultural Sciences Facilities	Dr. C.M. Onyango
10.00-10.30	HEALTH BREAK	
11.00-13.00	Visit: Biological and Physical Sciences Facilities	Dr. L. Olaka
13.00-13.30	LUNCH	
14.00-16.00	Visit: Biological and Physical Sciences Facilities	Dr. L. Olaka
17.30-19.00	SUPPER	
19.00-20.30	Self- Driven Activities	Teachers to be in charge

DAY 4: 13/11/2014 Visits to Industry

Time	Activity	Presenter
08.00-08.30	Registration	University of Nairobi, Students
08.30-10.00	Visit: CISCO	CISCO
10.00-10.30	HEALTH BREAK	
11.00-13.00	Visit: CISCO	CISCO
13.00-13.30	LUNCH	
14.00-17.00	Visit: Safaricom	Safaricom
17.30-19.00	SUPPER	
19.00-20.30	Self- Driven Activities	Teachers to be in charge

DAY 5: 14/11/2014 Visits to Industry

Time	Activity	Presenter
08.00-08.30	Registration	University of Nairobi, Students
08.30-10.00	Visit: Portland's Cement	Bamburi Cement
10.00-10.30	HEALTH BREAK	
11.00-13.00	Visit: Unilever	Unilever
13.00-14.00	LUNCH	
15.00-16.00	CLOSING CEREMONY	
	Presentation of Certificates	ALL
	Sharing Experiences and Feedback	ALL
	Vote of Thanks	
17.30-19.00	SUPPER	
19.00-20.30	Networking	Teachers to be in Charge

DAY 4: 15/11/2014: Departure of Students and Teachers



About Engineering and Applied Sciences Camps of Excellence University of Nairobi Project

Background

Within the past five years, the University of Nairobi's graduation statistics has consistently indicated that much fewer female students are admitted into Engineering and Applied Sciences courses. The University of Nairobi being the largest university in Kenya, this is an indication that generally fewer female students are admitted into engineering and applied sciences course across the country. The table below indicates the gender distribution of graduates from the University of Nairobi in engineering and applied sciences courses.

	Architecture & Engineering		Biological & Physical Sciences		Agric. & Vet. Sciences		Health Sciences	
	Males	Females	Males	Females	Males	Females	Males	Females
2009	428	88	313	151	198	121	436	182
2010	403	89	420	162	271	136	406	230
2011	499	84	463	202	219	110	361	299
2012	526	123	594	237	228	143	359	313
2013	596	165	580	247	288	171	397	372

Table 1: University of Nairobi Graduation statistics by gender

While it is known that many times admission into university in Kenya is dependent on marks scored in high school and the cut-off points, it is also possible that there are other factors influencing the choice of engineering and applied science courses among female high school students.

Therefore, the concept of camps of excellence (which has been successfully implemented in Botswana and Zimbabwe through the forum for Women Engineers and Girl Scientists in Africa), the project incorporate mentoring systems for female students to increase female students' enrolment into engineering and applied science courses and taking up science-based professions.

Objectives

The camps of excellence project will mirror the design of the camps in Botswana and Zimbabwe with the following objectives:

- To provide support and nurture the girl scientist in her educational endeavours
- To encourage the girl child to take up science related subjects in high school
- To increase enrolment into engineering and science related courses at the tertiary level;
- To demystify engineering and science-based courses with a view to making students link them to their day to day experiences.

Female students in their second and third years of high school from sampled high schools will be selected with the help of the school-based science clubs and the school administration. The Camps will be held twice a year during school holidays where the students will be mentored on opportunities in engineering and science careers, with the hope that the enrolment of female students in the sciences will increase. Further facilitation will be held to encourage the development of life skills among the students. A tracking mechanism will be developed to monitor /track the performance and career progression of the mentored students.

The specific objectives of the camps will be to:

- Educate the girls on different career opportunities in the science related fields, creating awareness among them on the many areas of engineering and science related careers that they may not know about



- Educate the girls on the admission requirements in engineering and science related courses in tertiary institutions with the hope of dispelling the myth that these courses are very difficult
- Expose the girls to the university environment and especially the different fields in Engineering, Physical, Biological, Health, Biological and Agricultural Sciences.
- Expose the girls to work environment in the industry to help the girls relate what they learn in school to practice. This will help them conceptualize what the sciences are about.
- Provide the girls with an opportunity to relate with women scientists for role modelling and mentorship.
- Expose students to the university environment and especially to the schools of engineering and physical sciences.

Expected Outcomes

The expected outcomes will be increased interest in engineering and science and technology courses by secondary school students and , increased admission of female students into engineering and science related courses at tertiary level and increased number of women choosing science-based careers. In addition, we expect that the students having interacted with women scientists as role models and mentors will be encouraged to stay focussed on the chosen fields knowing that their mentors chose these fields and succeeded. The participating students in the camps of excellence programme will be more aware of admission requirements and available professional opportunities including what it takes to grow in these professions.

UNESCO and Science for a Sustainable Future

Creating knowledge and understanding through science equips us to find solutions to today's acute economic, social and environmental challenges and to achieving sustainable development and greener societies. As no one country can achieve sustainable development alone, international scientific cooperation contributes, not only to scientific knowledge but also to building peace. Therefore, UNESCO works to assist countries to invest in science, technology and innovation (STI), to develop national science policies, to reform their science systems and to build capacity to monitor and evaluate performance through STI indicators and statistics taking into account the broad range of country-specific contexts:

- Science and engineering education at all levels and research capacity need to be built to allow countries to develop their own solutions to their specific problems and to play their part in the international scientific and technological arena.
- Linking science to society, public understanding of science and the participation of citizens in science are essential to creating societies where people have the necessary knowledge to make professional, personal and political choices, and to participate in the stimulating world of discovery. Indigenous knowledge systems developed with long and close interaction with nature, complement knowledge systems based on modern science.
- Science and technology also empower societies and citizens but also involve ethical choices. UNESCO works with its member States to foster informed decisions about the use of science and technology, in particular in the field of bioethics.
- Water is fundamental for life and ensuring water security for communities worldwide is essential to peace and sustainable development. The scientific understanding of the water cycle, the distribution and characteristics of surface and groundwater, of urban water all contribute to the wise management of freshwater for a healthy environment and to respond to human needs.
- Scientific knowledge of the Earth's history and mineral resources, knowledge of ecosystems and biodiversity, and the interaction of humans with ecosystems are important to help us understand how to manage our planet for a peaceful and sustainable future.

UNESCO Resources

- UNESCO Director-General 's message on the occasion of the World Science Day for Peace and Development 2014
<https://www.youtube.com/watch?v=Ybiny-SE-qY>
- About UNESCO and Science: <http://en.unesco.org/themes/science-sustainable-future#sthash.vqB3mURC.dpuf>
- Chemistry - All about you: <https://www.youtube.com/watch?v=xN-uZKPUqYA>
- Bridging Cultures through Science for a Sustainable Environment:
<http://unesdoc.unesco.org/images/0021/002186/218619e.pdf>
- UNESCO publications on Science by theme:
<http://www.unesco.org/new/en/natural-sciences/resources/periodical/a-world-of-science/find-articles-by-theme/>



World Science Day for Peace and Development 2014

Quality Science Education: Ensuring a sustainable future for all

Message from Ms Irina Bokova, Director-General of UNESCO, on the occasion of the World Science Day for Peace and Development, 10 November 2014

Quality Science Education: securing a sustainable future for all

More than ever, in this new age of limited resources, we need to nurture the boundless energy and creativity of young women and men to tackle complex new challenges. Quality science education is vital for this, to lay the foundations for a more sustainable future for all.

We need concerted action today to halt the decline of enrolment of young people in science, starting at an early age. It is not enough to put science in the school curriculum -- we must build a supportive environment, by crafting educational policies that give equal access to girls and boys and by investing in laboratories and resources where they can take the lead. We must recognize the importance of traditional and indigenous knowledge, while also harnessing new information and communication technologies for innovation and creativity. All of this is essential to foster more equitable and inclusive growth and to improve employability and entrepreneurial opportunities, while strengthening social resilience and health.

To these ends, UNESCO is working to integrate Science, Technology, Engineering and Mathematics (STEM) into national development and education policies, in such countries as Tanzania, Kenya, Nigeria and Seychelles. In September, we launched the Global STEM Alliance with the New York Academy of Sciences, to connect the dots between government, the United Nations, the private sector and academia, on an issue at heart of all efforts to build a sustainable future. Girls and women are a special focus of UNESCO's action -- through the L'Oréal-UNESCO For Women in Science programme, to inspire and support girls and women into scientific careers, as well as through the UNESCO Global Partnership for Girls' and Women's Education.

We need new alliances to take our vision forward – across the United Nations system, with Member States, within and between societies. This is why, on this World Science Day for Peace and Development, UNESCO is launching with Roche and Nature Education the UNESCO World Library of Science -- a free online resource for science learning, which contains hundreds of peer-reviewed articles, using text, pictures, illustrations and videos to make scientific concepts easy to understand.

Quality science education is a pillar for a more sustainable future – we must invest in it, to empower every woman and man, to catalyse the innovation and creativity we need for the century ahead. This is UNESCO's message today.