

A LEARNING THROUGH SERVICE APPROACH FOR ARCHITECTURE AND ENGINEERING

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Esther Obonyo was awarded a Fellowship by the Carnegie African Diaspora Fellowship Program to travel to Kenya during Summer 2014 to work with the University on Nairobi in a project is directed at designing and developing a research and education framework for providing intensive undergraduate research training for high caliber University of Nairobi (UON) engineering and architecture students, based on a Learning through Service (LTS) approach. The co-investigators were Prof. Pats Odiza, Acting Principal, College of Architecture and Engineering at the UON and Exastus Abonyo, chair of the Department of Architecture.

Dr. Obonyo mentored six students during her two-month African in Diaspora residency. The students were Joseph Kivuva (civil engineering); Rose Oturi (architecture); Ruth Lelei (architecture); Phaustine Wêkesa (civil engineering); Chris Okayo (electrical engineering); and Hatim Dossaji (civil engineering). She designed group activities revolving around the “Engineering for Base of the Pyramid (E-BOP)” theme through which she enhanced the students’ understanding, application and evaluation of engineering solutions to the social needs of low income communities. There were several field trips to carefully selected sites including:

the Kibera Slum in Nairobi, which with an estimated population of at least one million people, is regarded by many as the largest slum in Africa; one of the most polluted parts of the Nairobi River; the IBM R&D Lab in Nairobi; and the Kenya Vision 2030 Head Office. Dr. Obonyo also travelled with the students to low income housing projects being implemented by the National Housing Building Research Association in Tanzania. There were several group deliberations on the challenges of urban growth based on recent efforts in Kibera. The Government of Kenya, in collaboration with other stakeholders, initiated two programs: the Kenya Slum Upgrading Program (KENSUP) in 2004 and the Kenya Informal Settlement Improvement Project (KISIP) in June 2011. The programs were directed at improving the livelihoods of people living in the slums and informal settlements through providing security of tenure, housing improvement, physical infrastructure and social amenities.

While touring Kibera, the group identified several examples of positive developments such as two small biogas plants. The group also noted that a significant number of slum dwellers still use “flying toilets” because the existing facilities are based on a pay per use model. The adjacent “Rala Flats” that were supposed to benefit some Kibera residents also appeared to have had very little impact. A small fraction of slum dwellers

moved into the flats. Many of them found the cost of living in the formal housing system without a steady job unsustainable. During the visit to a section of the Nairobi River, the team observed the direct effects of a failure to provide infrastructure for sanitation and waste in Kibera. The water was visibly polluted and also had a strong unpleasant smell. There were some horticultural activities nearby which raised concerns among the students that some of this vegetables were sold in the main markets in Nairobi exposing the general public to a milieu of infections. The visit to the IBM labs in Nairobi was directed at enhancing the students understanding of how large corporations are using market-based approaches to address the Grand Engineering Challenges. The team interacted with different IBM groups making a contribution to problems such as pollution, traffic management and crime prevention using a data analytics approach.

At the end of the two months, the students indicated in their post experience feedback that program had a real life touch which enhanced their understanding of the role of designers. The students also indicated that their appreciation of the overlaps that exist across the different design functions. The teaching at the UON are still largely done in the traditional disciplinary silos.

Esther Obonyo is associate professor of building construction.