NTU and UNESCO to create mini-lab kits for youths in developing countries

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Youths in developing countries will soon get to conduct science experiments in class, using equipment designed and created by engineering undergraduates from Nanyang Technological University (NTU).

NTU is partnering the United Nations Organisation for Education, Science and Culture (UNESCO) to create mini-laboratory kits for students in high schools and colleges with limited resources or without proper laboratories. The first prototype is expected to be ready by March 2015.

The kit will be developed using state-of-the-art 3D printing for intricate equipment that could not be made using conventional manufacturing methods. Final year students from NTU's Renaissance Engineering Programme, Singapore's top engineering programme, will customise the kits to match specific scientific subjects. They will be guided by NTU faculty and postgraduate students with experience in science education and social entrepreneurship.

Professor Teoh Swee Hin, director for NTU's Renaissance Engineering Programme (REP), said, "With these mini-lab kits, schools without proper laboratory facilities will be able to conduct classroom experiments for the very first time, and provide their students with important hands-on experiences in science.

"Through our partnership with UNESCO, NTU will foster a culture of

scientific research amongst youths and ignite their passion for learning and discovery," added Prof Teoh, who is also the Chair of NTU's School of Chemical and Biomedical Engineering.

Dr Gwang-Jo Kim, Director for UNESCO Bangkok said, "These microchemistry kits would provide a hands-on approach to teaching young students. They are cost effective and safe, in so far as pupils never need to use more than a couple of drops of chemicals for experimentation."

"Many countries still took a purely theoretical approach to science teaching, not out of choice but of necessity. They simply could not afford the exorbitant cost of equipping schools and universities with laboratories. Through this collaboration we expect to break that barrier and try to produce science experiment kits micro-scale in size as well budget for the same," Dr Kim added.

Upon the successful completion of the pilot phase in one of the countries in the Mekong region, several thousand kits are expected to be distributed to the wider region such as Cambodia, Laos, Myanmar, Thailand and Vietnam.

The mini-lab kits will include booklets detailing experiments, along with a variety of scientific equipment and tools which allow students to conduct work in biology, chemistry, and physics. The kits will be prepared in dual-language, English and the relevant local language.

"By involving our students in the development process of the mini-lab kits, they will not only learn how social entrepreneurship could be used as a tool to improve social equality, but will also have a hands-on opportunity to positively impact our world," said Associate Professor Cho Nam-Joon, Deputy Director for REP, who is leading the project's implementation.

NTU and UNESCO will run the programme for three years. Guidelines will also be developed for future use by partner organisations who wish to distribute these mini-lab kits to other regions in the world.

Provided by Nanyang Technological University