HOW ONE OF OUR YoSA STUDENTS IS DEVELOPING HIS SCIENCE FOR THE BENEFIT OF AFRICA

Gracious Fanuel is one of Young Scientists for Africa's (YoSA) success stories. This student, from an impoverished community, near Kilimanjaro, in Tanzania, pursued science as a means to improve his limited opportunities and work his way out of poverty. He has since grown his passion and commitment to scientific innovation, now using his research to benefit the lives of his fellow Tanzanians.

In secondary school, Gracious revived his science club, running science project exhibitions and inspiring record numbers of students into STEM subjects. Following outstanding Ordinary Levels, he was selected to attend a government high school on the other side of Tanzania. Though this opportunity meant leaving his family far behind, his science thrived, and Gracious went on to run the Physics Club, developing Humanoid Robots using only local materials. This remarkable student then represented his school in a science competition run nationally by ProjeKt Inspire, a Tanzanian organisation encouraging almost 20,000 children into STEM subjects. Variations of Gracious' robots have been exhibited at the Tanzania International Model United Nations (TIMUN), the Saba Saba Youth Festival, and even on his own YouTube channel – *Robotics from Scratch*.

In 2018, YoSA collaborated with ProjeKt Inspire to identify young talented scientists; through this, Gracious was awarded a scholarship to attend the London International Youth Science Forum (LIYSF). He thrived from the experience: exhibiting and presenting his robotics project at the Science Bazaar to other students from around the world, visiting leading science facilities at Oxford University, Cranfield University, and the Royal Institution, and forming lasting friendships and networks. The director of LIYSF was so impressed by Gracious that he was invited to return to the Forum in 2019 as a student-staff ambassador. This second visit to the UK provided him with a unique opportunity to develop his leadership and management skills, and better communicate his science.

Later, through YoSA's connections with the Next Einstein Forum, he was introduced to a leading African scientist, Fredros Okumu, who then offered Gracious an internship at the prestigious Ifakara Health Institute. This was an exceptional opportunity for the engineering student to gain cross-disciplinary insight into the healthcare sector. During his internship, Gracious was challenged to present the prototype of his automatic mosquito net at the Bagamoyo Ifakara Innovation Workshop. For his outstanding innovation, he was awarded start-up funds of $2500 to develop his prototype into marketable products. Using readily available and sustainable energy sources and materials, Gracious hopes his technology can be utilised to help solve the mosquito problem in his community.

Now studying for his undergraduate degree in Electrical Engineering, at the respected Dar es Salaam Institute of Technology, Gracious knows his future in science is bright. His ultimate goal is to establish a company that will begin mass-producing his automated nets, and other robotic inventions, to improve the lives of his fellow citizens. Through the support provided by YoSA, Gracious now has a real chance to achieve his potential and contribute to the scientific advancement needed in Tanzania.

"YoSA and LIYSF have transformed my life - I have learnt many new ideas that will impact my society. Some people may think Africa is not passionate about science, but the representation of young African scientists at LIYSF reveals that Africa has scientists who are eager to bring positive change and solutions through science."

ALUMNI STORIES