

Bringing hands-on learning experiences to public primary schools.

Kilimanjaro Tanzania.

Worcester Polytechnic Institute

**Project leader; Elitumaini Swai, Home country; Tanzania, University; WPI, UWC attended;
UWCSEA- East Campus**

Part A: FINAL WRITTEN REPORT

Section I: Narrative.

The main goal of the Sayansi Ambassadors project was to provide a hands-on learning experience to public primary school students in Tanzania, which will enable them to develop a deeper understanding of science concepts, arouse curiosity, and see how theoretical science knowledge can be applied to real world practices. Additionally, as science is an unfamiliar concept for many Tanzanian children at public schools, the aim for this project was to help students to see the practical nature of science, inspiring them to see the role of science in addressing community needs. Fostering creativity and a problems solving mindset in-turn allows young people to see hope and possibility in addressing the conflicts that arise from the unemployment crisis in Tanzania.

This project was successfully run through the funds from the Davis for Peace foundation only. I was inspired to do this project during my time working with kids in the Engineering Ambassadors (EA) program at Worcester Polytechnic Institute (WPI). At EA we do science outreach sessions with middle and high school students on STEM (Science Technology Engineering and Math) subjects through hands-on learning experiences. Each day that I spent with the kids made me question why I personally never had these hands-on learning experiences while growing up. I trust they would have had a profound impact on me as they would have made it much easier to understand complex science concepts through practice compared to theory only. The Tanzanian system gears primary subjects towards theoretical learning only rather than practical learning. I believe I would have been better impacted and thrilled to learn science if I were given the chance to practically engage with the material. This personal experience is what made me think that children in the government schools I attended, deserve this kind of learning too, and it was only a matter of having access to resources that would allow me to pursue this goal. Hence, I decided to use this funding opportunity to pay-it-forward to my community. I chose to do this project in my hometown of TPC, Moshi Kilimanjaro, because I have personal experience with the area. Having grown up here, I had faced these limits of the education systems myself and I understand ways in which the educational system conditions affect the young people's sense of possibility. Therefore, I felt the urge to start efforts towards bettering the learning experiences of the students who are and will be attending these government schools. Overall, it was an impactful experience that proved to me that there are uncultivated STEM talents from disadvantaged communities. Channeled into the right direction with the right resources and mentorship would blossom an industrial revolution for Tanzania. Additionally, going back to where I attended primary school made the children aspire and believe in achieving remarkable things despite their background.

The project proved to be unbelievably valuable to the children because the practical learning experience stimulated a deeper understanding of science concepts, and sparked creativity within them. For the first week I met with the Program assistances (PAs) to train, and run them through what the project would entail and the activity that we will be doing with the students. I also conducted short

speeches for each school, on who we are, why we will be visiting the schools to run science experiments. On the project days I delivered a presentation on circuits; how they are made and what areas they are mostly used in, and why it's important for engineers to design them carefully. Afterwards with the help of the PAs together with mentors (science teachers at the primary schools) we handed circuit components to students for them to design their own circuits that can lit a light bulb. Throughout the process we helped them by questioning their ideas and commenting on the procedures, until they could achieve the end goal. Even though we ran the experiments once in every school, we donated sets of kits that can be used by other classes as well as incoming students in other years. Hence, through the presence of these resources in the individual schools has opened room for sustainable practical learning.

In addition to the regular challenges in the educational system in Tanzania, the COVID-19 pandemic situation in the country created many unknowns in the project. If the President had called off for schools to be closed, it would have made it difficult to deliver presentations and conduct workshops in person. Delivering online workshops with technology and electricity limitations in Tanzania would have been exceedingly difficult. The uncertainty of this situation weighed heavily on me during the project, but thankfully I was able to complete the project goals completely and with relatively minor obstacles. One difficulty I encountered was being able to communicate with the teachers on time. This was due to inadequate internet services at their respective locations. Otherwise, there were no difficulties with communication. Government primary school students are taught in Swahili in Tanzania, and as a native speaker of Swahili I was able to connect with the local students and engage with them on a deeper level.

I define peace as a state where there is harmony among members of the community, and with other surrounding communities; and where every member of the community can obtain their basic needs without compromising the sanity of others around them. After spending a week working with the students, I began to re-align my understanding of the definition of peace based on how the students engaged closely with the learning materials. A sense of security and inner peace was vital for students to focus and engage deeply with the learning material. By seeing how focused and determined they were and the smiles they had when they managed to connect circuits, I realized that peace puts individuals in the right frame of mind to achieve anything. Overall, this project made me see the world as an integrated community, filled with so many differences, diversities, and so many opportunities to learn as well as to improve. This opportunity came because of me venturing out and seeing greater things that can be accomplished. Moreover, it has proven the benefits of giving back to our own communities especially to the areas of greatest need.

Personal Statement: This project proved to be unbelievably valuable to the children because the practical learning experience stimulated a deeper understanding of science concepts, and sparked creativity within them. Personally, I learnt that there are uncultivated STEM talents from underprivileged communities, which if channeled into the right direction with the right resources and mentorship, would blossom an industrial revolution for Tanzania.

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Section 2: Photographs

