

<code_gh>

Kevin Ntoni | Nathaniel Kweku Wullar | Rupert Tawiah-Quashie

<code-gh> is a 3-week (9-day) training program that aims to give high school students in Accra a chance at the tech world. Our ultimate goal is to contribute to peace and sustainable development by providing participants with digital skills (in the form of training and mentorship) and information on ways to subsequently leverage those skills for economic gains.

Background

According to the International Labor Organization, as stated in an article by [statisca.com](#), there has been a surge in unemployment rates from 4.13 to 4.53% in just one year. These unemployed youth can, out of sheer frustration, resort to unethical sources of income, creating chaos. The current minister of Finance, Alan Kojo Kyeremanteng, reiterated the role of the private sector in solving this challenge and building a sustainable workplace ecosystem. In an effort to contribute to sustainable development in Ghana, technology is set to play a pivotal role. According to an article by the World Economic Forum, “strong demand for STEM (Science, Technology, Engineering, and Math) and Information and Communication Technology (ICT) skills exists across a wide range of Africa’s industries”. This shows that there is a necessity to improve and invest in these sectors, first to cultivate interest amongst the youth and to facilitate advancement in these sectors.

ICT is taught in primary and junior high schools in Ghana. These classes, however, are to a large extent not being practical enough to give students a chance to scratch the surface of the field. It becomes just any course where students resort to rote learning to meet a requirement. Over the years some effort has been put into supporting the Ghanaian youth like the National Builder’s Corps (an initiative that provided employment for citizens with at least a High School Diploma certificate) and providing laptops to deprived communities. Despite the fact that this has made some strides over the years, the demands to create sustainable development cannot be exhausted by just these. There should be a more pragmatic approach to leveraging technology.

The few who know about computer science are bombarded with lots of myths such as tech is for an elite few, the stability of tech jobs is very low or that you need very sophisticated high-cost tools if you want to delve into that area. These myths eventually discourage the youth from giving it a try. Students/ people who have a love for STEM courses are eventually made to choose between Health Sciences and teaching the Basic Sciences as a result of the flaws in the structure of the educational system. The ecosystem for technological education is very unhealthy and needs a lot of support. Our challenge, therefore, is to, first of all, create awareness of this diverse field and contribute to demystifying such opinions about coding and its applications.

I realized that this gap in knowledge with respect to financial and technological literacy has contributed to wrong decisions made by some youth that has ultimately affected the peace in some shape or form. This lack of knowledge on biases and other issues allows them to be exploited by ill-meaning people to perpetrate violence. I believe in the power of equitable access to knowledge and its implications on Ghanaian youth and hence reached out to friends to organize this tech-focussed boot camp with some financial education and biases.

Our aim is to help students to see this intersection of all these fields. With our expansive knowledge as a team, we aim to create a program that not only educates participants on technical skills but also connects to Ghanaians doing wonderful things in tech and business and creating a space for brainstorming issues and empowering them to be change-makers.

Our core team comprises of the following:

- Kevin Ntoni - Economics, Math - Middlebury College, Middlebury, VT
- Rupert Tawiah-Quarshie - Computer Science and Mathematics - Hampshire College, Amherst, MA
- Nathaniel Wullar - Computer Science and Electrical and Computer Engineering - Duke University, Durham, NC
- Medad Lamptey - Computer Engineering - Kwame Nkrumah University of Science and Technology, Ghana
- Baffuor Ntiamoah - Incoming Product Manager at Microsoft - Computer Science - Tufts University, Boston, MA

The second issue we aspire to tackle is the difficulty in finding a definite structure when exploring programming and computer science. There is no doubt that there is a lot of information about tutorials for novices. The tutorials can be expensive or simply difficult to follow. In the end, we have a plethora of information that puts young learners with little to no structure or motivation to work. Our team will develop an easy-to-follow tutorial structure to support students to create a path in the tech industry for themselves.

Goals

A 3-week course which is divided into two phases: the Skills stage and the Working phase with the aim of :

- Introducing students to coding in Python

- Introducing participants to UI/UX Design
- Introducing participants to freelancing, budgeting, and management

Project

The target audience will be high school students between the ages of 15-21. The program will move into project-based learning and highlight the importance of ethical collaboration.

The project will be in 5 phases

Phase 1 (Outreach and Conferences): Our team will reach out to teachers and students to invite them to two conferences that aim to put a spotlight on the world of technology. These in-person conferences will feature workers in various fields of the tech space from coding to digital design. These information sessions would be held to educate participants on technology, computer coding, freelancing, and its benefits in the world today. We would also share with participants various projects we have worked on and our iterative problem-solving approach. This is to reassure participants of the worth of the program and how they could also use this to impact their communities.

Phase 2 (Selection Phase): Students will fill out a form and a maximum of 30 students will be selected. The selection process will be based on an interview with the applicant that evaluates the commitment to learn and work collaboratively. The proposed start date is August 8, 2022, on the Tema International School campus. Program days will be Tuesdays, Thursdays, and Saturdays

Phase 3 (Exposition): The exposition will aim to introduce theoretical concepts relating to the field of study. It will consist of two hours, where the mentors/tutors will take the students (participants) through the theoretical part of the field, as well as career opportunities and structured resources, then a 30-minute lunch break. Currently, we aim to cover fields such as, but not limited to, Web and Mobile Application Design, UI and UX Design, Internet of Things (IoT), Cybersecurity, Financial Analytics, Machine Learning, Data Analysis, and Robotics.

Phase 4 (Interactive demonstration): This will be followed by three hours of interactive demonstration. Participants will be placed in groups to work on a simple project, taking design principles into consideration, and give feedback on the knowledge gained from the studies. The hope is that their interest will be heightened after being shown the vast possibilities of what they could use the knowledge they have gained to do. This will also be used as a way to foster group studies and teamwork. In the last week of the program, we will present certificates to all participants and mentors. These groups will be given themes based on the Sustainable Development Goals (SDGs) and will have to identify and solve problems in a given field with the knowledge obtained. For example, a team is given an agriculture theme. The students will have to find a current problem, do a risk analysis of the problem, and aim for a Minimum Viable Product for a solution. In the case of agriculture, it could track the amount of water, fertilizer/ seeds corresponding to productivity or marketing for the farmer or even access to storage facilities.

Phase 5 (Awards & Fun Activities): On the final day we will have an educational field trip as well as outdoor games and activities to celebrate the hard work and success of the team of participants and mentors. In all of this, we also want to highlight the importance of ethical collaboration and hence will create a buddy system for students working together to be matched with friends from other groups for the development of more ideas.

Our competitive advantage will be the access to mentors, and the practicality of the use of tools that participants will be introduced to.

Outcomes and Continuity

I understand that <code_gh> will give participants the first step in technology-related careers who are motivated to explore, set, and achieve goals. Participants will have mentors to guide them in this career pursuit and be challenged to take on issues in Ghana and explore the use of technology in solving these problems. The following is an outline of the evaluation and assessment of the program:

- 30 students complete the 3-week program.
- Participants leave with a better understanding of coding and the tech sphere.
- Access to a well-structured set of resources for given fields of interest
- Participants matched to mentors in areas of interest

I would like <code_gh> to be an annual event and this will require additional funding. After the break, I intend to seek additional funding in the form of sponsorships and collaborations from the government and private corporations. <Code_gh> will be a stepping stone for the next generation of technology innovators. The completed project will also be taken up with the students and tested as well as submitted for innovation competitions.

Name: Kevin Ntoni									
Project Name: Code Gh									
School: Middlebury College									
						TOTAL FUNDS REMAINING:			
								0	
Total Additional Funding:									
						TOTAL EXPENDITURES:			
								10350	

Student Expenses (Assuming 40 participants are selected)					Project Expenses				
Travel (Including Airfare)	Lodging	Communications	Food (Biweekly)	Miscellaneous	Non-Student Travel and Lodging	Direct Equipment and Supplies	Marketing and Event Support	Staffing Costs	Miscellaneous
Flight from New York, JFK to Accra, Ghana (round trip): \$1,500	Accra (Airbnb for 3 weeks): \$600	Calling card & Phone plan: \$50	Accra (biweekly): \$200	0	Ghanaian Visa: \$150	Design and Printing for Pamphlets and Posters: \$500	Refreshments for <code_gh> participants (weekly): \$200	Mentors and Instructors stipend (\$50 per person): \$250	Donation for Project Sustainability (Upgrading and replacing broken computers): \$500
Travel within Accra: \$200		Internet Service: \$50			Flight from New York, JFK to Accra, Ghana (round trip): \$1,500	Internet Plan(weekly): \$100	Location Setup and Equipment Distribution: \$400		Excursion cost for participants (\$10 per participant): \$300
						Utilities (weekly): \$200			
						Renting Computers(weekly): \$100			
						Renting Room for Program (weekly): \$250			
Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
1700	600	100	200	0	2450	3250	1000	250	800
Total Student Expenses:					Total Project Expenses:				
2600					7750				