Co-Curricular Programs in Liberia for Student Pipeline Into Engineering

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Background

- Currently there is an estimated 85% unemployment rate for youth in Liberia.
- Even though demand for engineering professionals is high, the majority of youth do not consider careers in engineering due to lack of understanding of the field and lack of role models.
- Further, oftentimes engineering graduates leave the university unprepared for the jobs available. Thus, companies must train them on their own, or hire employees from outside the country,
- At the beginning of the century, Liberia emerged from a decade-long civil war that decimated the country's infrastructure, including the higher education system
- The University of Michigan College of Engineering was awarded part of a USAID grant to improve the universities of Liberia, called Excellence in Higher Education for Liberian Development (EHELD).
- Due to the importance of agriculture and engineering in the economy of Liberia, the focuses of this grant are the engineering and agriculture programs at two major Liberian universities.
- UM has the specific role to implement summer co-curricular programs, with an emphasis on female student participation..

Educational Objective

Recruit quality students into engineering and agriculture

Empower those students and excite them about their career

Program Overview

Pipeline

Smart Start → Fast Start → Summer Start → Extracurricular & Scholarships → Jobs

Smart Start

- High School visits
- One-day
- Excite students
- Demonstrate possibilities
- Social marketing

Fast Start

- Two-week residential
- 10th, 11th, 12th grade high school students
- Prepare students for college
- Expand their minds for opportunities
- Half male, half female participants
- Curriculum includes Life Skills, What is Engineering and Agriculture, Agriculture Exploratory, Computer Skills, and Engineering Design Lab
- Developed open education manuals that are now used by Peace Corps and teaching institutes

Summer Start

- Prepare students for upcoming year and jobs
- Incoming freshmen and sophomores
- Emphasis on soft skills
- Expand horizons for their careers
- Four-week residential
- Half male, half female students
- Half agriculture, half engineering students

- Returning students from previous Summer Start participated
- Returning students partnered with GIEU students from UM
- Worked on projects at the intersection of engineering and agriculture, including: solar power for computer lab, drip irrigation for student agricultural plot, biosand filter for a high school
- Implemented an irrigation system

Preliminary Outcomes

"I have been made to understand that every engineer connects one to the other, whether geology, civil, mining, electrical, etc., and even agriculture. We all can work together as a team to build our country Liberia."
-Sophomore engineer female

"I don't see my career as just a career anymore, but as a something that is very important to the world and also as very challenging, so I need to be very prepared in order to meet up with the task out there."
-Sophomore engineer female

"The Summer Start program has helped me to become more passionate about the people in my community and the country at large. It made me realize that there is a huge demand for my area of specialization as a mining engineer to grow the industrial sector of Liberia. As a student of mining engineering I see myself creating things that would benefit my community. It makes me love my career and I see engineers as living engines to power the economy of a nation."
-Sophomore engineer male

"My thinking about my career has been in different way, assuming that agriculture was just for subsistence and thinking that is all about one person in attitude. But from the knowledge I have achieved since the start of this summer start program, that it is a teamwork. Team working will bring relies in our agriculture sector to our nation."
-Sophomore agriculture male

Conclusion and Future Work

- We developed a pipeline of co-curricular educational programs for Liberian youth to encourage more students into engineering and agriculture
- We gathered preliminary data of the influence of these programs on student's attitudes toward their career
- In the future, we plan carry out a more rigorous study on these attitudes, and how they are influenced by these programs.
- We will particularly look at the female student experience,
- These programs will be carried out the next three years, for the remainder of the EHELD grant.

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