



Engineers Without Borders

Iowa State University

Spring 2021 Newsletter

History

In 2013, the Iowa State Chapter of Engineers Without Borders was paired with Ullo, a community in Northern Ghana. Since then, EWB-ISU has sent travel teams to Ullo for a couple of weeks during the Summer and Winter Break to assess the community's needs, monitor current projects, and implement new projects. Ultimately, we concluded that a water distribution system for the boarding high school in Ullo was the best option. A team in the Winter of 2017-'18 determined the best source of water, and the Winter 2018-'19 team completed the implementation of the system. In addition to monitoring the system, new projects have started in Ullo, including cookstoves, a clinic, shea-nut, and an agriculture and irrigation project.

Mission

Engineers Without Borders at Iowa State builds a better world through engineering projects that empower communities to meet their basic human needs and equip leaders to solve the world's most pressing challenges.



Our Current Projects

Clinic

The Clinic project is one of our newest and largest projects. Our goal is to build a new clinic and improve healthcare for the people of Ullo and surrounding communities as well. Currently, the clinic in Ullo consists of five rooms across two buildings. The first phase of the clinic project consists of eleven rooms, with later phases adding around twenty more. This clinic is expected to serve 10,000-20,000 people. The Ghanaian government, the Ullo community, and the district have all expressed support for this project, and the government has committed to staff and furnish the new clinic. We plan to begin the implementation of the first phase of the clinic this coming Fall of 2021.

Water Monitoring 2.0

In 2018 we implemented a water distribution system at the Ullo Senior High School. The system provides water to over one thousand students at the school. Already it has shown to have a positive effect on the students and the community with higher attendance rates and higher test scores. The water distribution provides them with safe drinking water and reduces the time spent each day traveling to collect water. As we are in the monitoring phase for the water distribution project, we are looking for ways we can improve upon the system so that it is functioning to the highest of its abilities and will continue to meet the community's needs. Currently, our team is designing a new low-maintenance chlorination to ensure access to clean drinking water. In the future, we plan to assess the feasibility of the clinic drawing water from this system.

Kitchen and Household Stoves

Ullo's existing stoves are inefficient in firewood consumption and produce a lot of smoke. We are working to design more efficient household and kitchen stoves to better the quality of life for cooks and lessen the environmental impact. We are currently in the design phase using the assessments made by KNUST after a recent trip to the Ullo community.

Rainwater Catchment and Irrigation

We are designing and installing a rainwater catchment and drip irrigation system for the school garden in Ullo senior high school. The rainwater catchment system will collect water during the rainy season to later be used for agricultural purposes. This project will both provide a means of crop production during the dry season and act as an educational tool for the Ullo Senior High School agriculture department. The KNUST team has implemented the first phase of this project: installing gutters on the school and laying pipes to 4 tanks that will be used to help irrigate year-round.

Ullo-Shea

The collection and selling of shea nuts are a large source of income for the women of Ullo. Currently, due to inefficient drying and storing methods, the shea nuts are not reaching their selling potential. We are working with the women of Ullo to develop methods to help extend the production period for shea nuts to help these women improve their business.

Domestic Project

A small team of EWB members has been working with the Ames community to find a local project for the club to get involved with. The domestic project is currently focused on building charging stations for the Food at First food pantry in Ames. These stations will allow Ames community members who may have difficulty accessing reliable power outlets to charge their electronic devices. This project had to undergo a complete redesign as we did not have access to the equipment on campus after we were sent home in the Spring of 2020 due to the COVID-19 pandemic. The charging station was successfully implemented at Food at First in March 2021, and we are looking forward to hearing about their experience with it.

Fighting COVID-19

We returned to campus this Spring, and we wanted to make sure that we continued to have options for everyone to be comfortable meeting and follow guidelines put in place by Iowa State. We have continued to use a Microsoft Teams page for the club with every project group having their own personal channel to work and communicate on. We continued to adjust our normal meeting schedule to account for social distancing. Each team had their own classroom to meet in weekly as well as virtually through Microsoft Teams. Then we met once a month as a whole club tuning into a meeting from our reserved classrooms as teams. Masks were required at all club events of course!



Domestic Team in-person meeting.
Mask up!

Student Innovation Center Display!



This display featuring Engineer's Without Borders ISU's work, was created for the Ignite Innovation Showcase which took place in April. Located in the Student Innovation Center on campus, this display has been constructed to showcase our club as innovators on Iowa State's campus. We are thankful that this space has been dedicated to recognize all our member's hard work in getting us where we are today and the impact we have made as an organization in our over 10 years as a chapter at Iowa State University.

Rainwater Catchment Implementation

Our goal for the Rainwater Catchment and Irrigation project is to construct a rainwater collection system and passive irrigation mechanism in Ullo, Ghana. After months of video calls and retrieving measurements from the village, Phase One was implemented in April by KNUST. They were able to install gutters on the side of the school dining hall and routed piping from the gutters down to four large tanks that were placed on top of previously powered concrete slabs.



Installation of the gutters on the school



Tanks to which gutters and piping were routed

In the upcoming months, the Rainwater Catchment and Irrigation team will be collaborating with KNUST to prepare to install Phase Two. This phase will send piping from the tanks to a nearby underground cistern to store more rainwater. After that, even more piping will be installed leading to the garden on the school grounds. This garden will be partially covered with a large array of small diameter pipes with much smaller holes to allow water to slowly drip out of the piping and onto the garden. This will involve another design review, creating several documents, and finalizing trip plans with KNUST.

Food at First

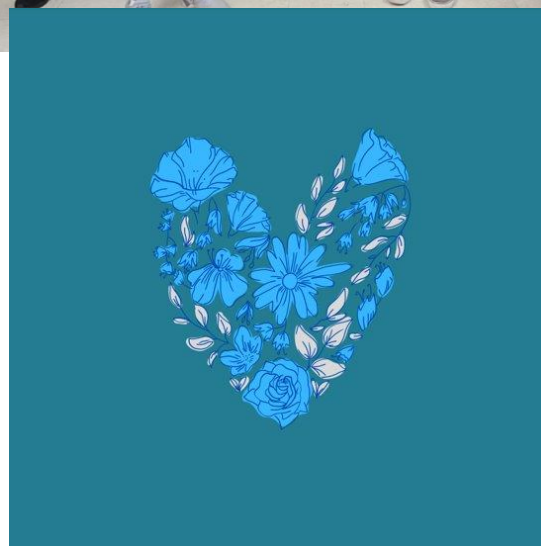
Our team has been working on creating a device charging station for the local food pantry, Food at First. They provide free meals daily and a perishable free market. This station allows seven phones to be charged with cables that are provided and spaces for additional devices to be plugged into a provided surge protector. There are only two wall outlets in the dining room at Food at First, but hundreds of people come through each week. Many people rely on these outlets to charge their devices, but there are just not enough to meet demands currently.

We have had to complete a redesign after quarantine since we no longer had access to the equipment we had previously had. We have completed all documentation and fabrication for the station, and it was installed at Food at First this week.

Remembering Yaakov

On April 24th, we lost one of our own members, Yaakov Ben-David in a tragic boating accident. As a chapter, we organized resources to be available for members at the meeting following this great loss, and we have worked to create a supportive community to surround those affected by this tragedy.

"Yaakov was really an essential member of the Shea Nut team and put forth a huge amount of dedication. He joined the team as a freshman and brought so many new ideas that progressed the vision of the shea project. He quickly stepped up as a leader and began building contacts across Ghana, including building a partnership with the Global Shea Alliance and Shea Network Ghana, which led to his push to switch to become a business student. He was so motivational and creative and had a strong "say it as it is" voice that was so important to have. He put in extra time outside of meetings and was so good at thinking outside the box to better the lives of those in Ullo. He was incredibly passionate about this project and motivated us all to be the best version of ourselves. We'll miss his insights into the team and having his lively spirit around. We lost him too soon, and our deepest condolences go out to his family and loved ones" – Reed Duncan, a member of the Shea Nut Team





A SPECIAL THANKS TO OUR SUPPORTING DONORS!



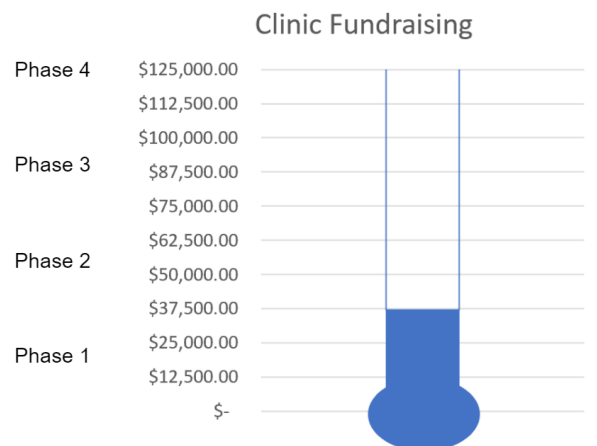
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