



2009 Project Implementation Overview

# Ghana School Library Initiative

<http://ghanainitiative.wordpress.com>

## Introduction

Essentially a squatter settlement, Ashaiman was first settled in 1952 as construction started on the port in nearby Tema. Today, Ashaiman is still one of the fastest growing cities in Ghana, with a population exceeding 200,000. It is as diverse as it is large, with approximately 50 different ethnic groups from across Ghana and the rest of Africa taking residence in the city located 4km away from Tema and 30km away from Accra.

Ashaiman's condition has earned it a reputation in Ghana. Many Ghanaians have never stepped foot into the area, for fear of being assaulted by armed robbers. However, in the past five years, change has slowly swept across the ignored city. Police are cracking down on criminals. Local banks and microfinance organizations have set up shop in Ashaiman, bringing many residents into the modern financial world for the first time. Still, there is so much to do to elevate the status of Ashaiman and improve the living conditions of its residents.

Princeton University's Engineers Without Borders (EWB-PU) chapter recognized Ashaiman as a community in need when they visited the area in 2007. In a place where even the most affluent lack books, EWB-PU spent two months in the summer of 2009 partnering with the Evangelical Presbyterian (EP) Basic School to complete the first phase of what is now known as the *Achieving Greater Heights Community Library*.

Between July 6 and September 4, 2009, various Princeton students and mentors traveled to Ghana in order to:

1. Construct the reinforced-concrete frame of a new school- and community- library structure;
2. Set up a temporary library with 1000 books shipped from Princeton. These books had been collected through a book drive and various donations during the spring semester;
3. Evaluate availability and cost of internet access and determine the necessary computer infrastructure to be installed on a later trip; and
4. Evaluate literacy games and programs to be run at the library by working daily with a group of 3-6<sup>th</sup> grade students.

## Library Structure

Our main goal for the 2009 summer trip was to construct the reinforced concrete frame of the library structure over a five-week period in August and September. During the first week of August, the library site was surveyed and markers were set around the site to indicate wall and column positions. Excavation, though it started behind schedule, was able to make up the lost time and was completed in three days rather than the five as budgeted. As construction continued, other tasks—from pouring the mat to setting the columns—took less time than

anticipated, ultimately allowing the EWB-PU team to finish construction two days ahead of schedule.

EWB-PU faced no shortage of challenges while onsite. Material acquisition undoubtedly presented the greatest difficulties. While rebar was available locally, the project required large amounts of cement and pozzolana ash, and these materials had to be purchased directly from the manufacturers. Whilst these arrangements were made, the team made progress on bending rebar and constructing wooden framework for the concrete. Once all materials were in place, concrete work commenced.

The first step was to erect the footings and piers, the supporting portions of the columns that lie below-grade. However, in contradiction to information given in a geotechnical site report commissioned by EP Basic, the piers could not be made as deep as originally planned due to a high water table. Fortunately, because hard, load-bearing clay was uncovered, the original design could be supported with modified, shallower piers.

Getting out of the ground proved to be full of trials for the EWB-PU team. At first, due to mistakes made by the contractor, the footings and piers were placed incorrectly. By working late into the night, however, EWB-PU was able to remove the hardening concrete, reposition the pier rebar, and repour the concrete. Further challenges were encountered with the steelbenders: the pier rebars were bent to incorrect sizes and quantities, requiring that new rebar be ordered and bent. After addressing these issues, both the piers and the gutter were then poured. The next step was to fill sand in the foundation up to the height of the slab—this was done by hand, and everyone from to community members to EP students to the EWB-PU team helped out.

At the midpoint of the construction phase, the EWB-PU professional mentors swapped. Two days later, the sub-ground slab terrain was layered with aggregate and a waterproofing membrane. The entire 8" slab and surrounding apron was poured in two days. With the structure finally out of the ground, the columns were erected and the ring beam poured in a speedy four days. Due to close supervision by EWB-PU, further mistakes and delays were largely minimized. In the end, construction was roughly \$3300 over budget, largely because we needed more quantities of materials than originally estimated.

## Temporary Library

EWB-PU shipped roughly 1000 books from Princeton to Ghana. The books had been collected throughout the spring semester in conjunction with the Princeton Public Library. While the ship was docked in port, EP Basic hired a local carpenter to make shelves for a temporary library. These shelves will later be moved to the library structure once construction is complete. Following the unloading of

the books, the books were sorted by reading level into seven groupings: Early Readers, Lower Primary, Upper Primary, Young Adult, Adult, Non-Fiction, and Reference.

The temporary library will be run by the school. While no one will be able to check out library resources, students, teachers, and community members are all welcome to come and use the books in the school compound. In the coming phase of the project, more community members, students, and parents will be registered in the library patron database to facilitate the check-out of library books, games, etc.

## Computer Infrastructure

The EP Basic School has a computer lab, funded through donations from the PTA. However, out of roughly 20 computers, only six are working properly. The school is not yet connected to the Internet, though DSL connectivity is available through a local telephone operator. However, while common computer hardware problems can be repaired locally, software problems—especially viruses—can be debilitating. Computers, both at EP Basic and in Internet cafes across Ghana, are choking on viruses. Moreover, viruses are spread through ubiquitous USB flash drives, so even computers that are not online become infected. The EWB-PU team took three HP Mini netbooks with them to Ghana to pilot an eGranary Digital Library resource and assess the feasibility of a larger 50-netbook network. Though these three machines were equipped with Princeton-approved McAfee's anti-virus software, the netbooks nevertheless became hopelessly infested with viruses. The difficulties presented by this virus situation means that Linux distributions may be better suited for our needs than Windows.

After resolving the computer software problem, EWB-PU plans to address the disastrous government-produced computer curriculum currently in practice at EP Basic. Deployment of a computer lab in the library will be supplemented with a new curriculum, developed in partnership with the local Johnson Park Elementary staff.

## Literacy Programming

Over the course of the 2008-2009 academic year, EWB-PU team members worked to create a set of activities and lesson plans to be implemented in the library. In order to pilot these resources, the EP Basic administration selected fifteen students from grades three through six to work with the EWB-PU team members. A summer workshop was held with these students for three hours a day over four weeks. Throughout the process, each student was taken aside to individually be assessed on reading fluency and comprehension. The EWB-PU team used Reading A-Z leveled books for the assessment. While reading levels

varied (from levels *I* through *P*) and were generally below grade level, all of the students were eager to read. Lastly, each class of students worked together to write their own script for a five-minute skit. The students learned how to do character sketches, describe settings, and format scripts. They found props, added a song and a dance, and on the day after construction ended, performed for an audience of over 40 parents, teachers, and friends.

## Community Building

This summer's implementation trip marked the first time an entire team of EWB-PU members came to the Ashaiman community. Accordingly, EWB-PU team members made it a point to take the time to network with important individuals in the Ashaiman and EP communities, in order to ensure the success of the library project. Through the church, EWB-PU came to gain the support of the Member of Parliament for Ashaiman and the Ghana Education Service Director for Tema. The EWB-PU team also met with the leader of one of Ashaiman's major mosques, so as to connect with the area's large Muslim community.

## Lessons Learned

The implementation trip was a learning experience for all team members.

1. On the construction site, have a single person in control. All team members should communicate with this single person, and only this person—not other team members—should give orders to workers;
2. Budget should anticipate a 25% excess in materials from calculated amounts;
3. Business cards and phone numbers shouldn't be handed out too freely;
4. Bring gifts in excess because there will always be someone that you forgot;
5. Set up meetings early, because things will take longer to get done than anticipated;
6. Bring and use a receipt book. Make sure to have carbon paper;
7. Get a head start on the final accounting by using the official spreadsheet and categorizing expenses against the appropriate person's cash advance or reimbursement;
8. Keep blogs up-to-date, and post lots of pictures;
9. Meet with workers before construction to go over safety and logistical procedures;
10. Supervise skilled workers carefully, because mistakes cost time and money.