

Skidmore College
Kengthsagn Louis
Samantha Bourdeau
Practising Science for a Peaceful Haiti
June 22 – July 31, 2015, Haiti

Background

There are very few schools with science laboratories in Haiti, and most teachers only rely on their students memorizing theories discussed in class, and hopefully applying them where appropriate¹. Unfortunately, students simply learn and forget theories because of the lack of opportunities to test these theories in practical experiments at school. Although some schools did have laboratories before the earthquake, they all went down with the earthquake. Any efforts to reconstruct schools did not include laboratories in their budgets. The absence of science laboratories is very salient in the public and average private Haitian schools. Teachers express desires to integrate practicals as part of their teaching method, but there are no resources to allow them to do so. For example, throughout my childhood and education in Haiti, I never attended a science fair or entered a science laboratory. During my recent summer break in Haiti, I realized that students still go through the same challenges today; which I have since learned pose limitations in one's higher education. In general, students in both public schools and private schools do not have any practical science experience. The outcomes of such learning methods include students with poor scientific literacy, poor critical thinking and limited ability to combine knowledge learned from school with real life. The fact that students are not deepening their theoretical knowledge with experimental exploration affects their creativity and the overall developmental potential of the country.

In an effort to counteract the negative outcomes of such learning methods for the generation of students to come, we intend to restructure a classroom at Lycée Marie-Jeanne into a science laboratory. Lycée Marie-Jeanne is an all-girl high school located in Port-au-Prince, Haiti. Approximately 3, 500 young women attend Lycée Marie-Jeanne each year. My partner (Samantha Bourdeau) and I (Kengthsagn Louis) both graduated from Lycée Marie-Jeanne High School in 2010 and 2011, before attending United World College (UWC). Lycée Marie-Jeanne never had a science laboratory, and the outcomes were evident as we furthered our studies; we experienced challenges as we tried to catch up to our peers in practicals and scientific experiments. We know that the staff and administration at Lycée Marie-Jeanne are really committed in helping their students achieve better education; especially young girls, in a society where women were usually left behind in education. Therefore, we believe that this project will not merely provide a laboratory for the school, but it will help Haitian young women understand and compete in the science field. Lycée Marie-Jeanne's administration fully supports and approves the implementation of the science laboratory in one of the rooms of the school building (See attached letter of support).

Project Objectives

"Practicing Science for a Peaceful Haiti" aims to provide one of Haitian public schools, Lycée Marie-Jeanne, with a science laboratory to stimulate scientific literacy and curiosity in the minds of their students from grades nine through twelve. Here are the steps we will take to achieve our main objectives:

- 1) Raise awareness of the absence of science laboratory in most Haitian schools at Skidmore and collaborate with Skidmore science departments to collect laboratory tools and materials as donations.
- 2) Buy the basic equipment that we will not receive from donations and work with a trusted shipping company to ship the donated tools to Haiti.
- 3) Renovate the allocated classroom at Lycée Marie-Jeanne, so it meets the science laboratory requirements set by the Haitian ministry of education and the school.
- 4) Translate the activity guidelines provided by the Skidmore science departments and work with the teachers to train them to use the laboratory tools efficiently.
- 5) Reach to non-governmental organisations such as bioEYES and Sending Labs to further our objective of training the teachers in using the laboratory tools efficiently.

Expected outcomes

By doing so, we look to give students at Lycée Marie-Jeanne public school the opportunity to better understand science. By giving these students a space to practice theories learned in class, we hope to increase their aptitude to draw connections between social issues and science, and to take actions in their communities based upon these connections. These drawn connections are expected to boost the student's personal development, their attitude towards a more peaceful world, and Haiti's development. We also hope to inspire these young women to believe in their intellectual potentiality and their power to change Haiti.

Implementation

We have already contacted Skidmore college science departments for recruiting donated science equipment for the laboratory. Science equipment is very expensive and receiving donated equipment will allow us to get a more diverse laboratory. Moreover, the shipping of the donated equipment will be less costly than buying them from the United States of America and sending them to Haiti. On another hand, there are no companies in Haiti that sell science equipment. Hence, we have to buy them here or get donations to keep costs as low as possible. Skidmore Science departments such as chemistry, biology and geoscience have accepted and committed to donate some science

equipment to properly furnish the laboratory in Lycée Marie-Jeanne. For example, the geoscience department's given inventory contains two stream tables, a groundwater model, a pump, safety goggles, rock samples and mineral samples. They will also provide activity guidelines for this equipment. The leaders of the project will form a committee with teachers to translate these activity guidelines from English to French and Haitian Creole. Part of the budget will be used to ship these donated equipment through containers to Haiti before the summer. So, they will be there when we get to Lycée Marie-Jeanne in Port-au-Prince, Haiti.

As stated in our objectives, we intend to buy the necessary equipment that we are not receiving from donations such as a plant house, vortex mixer model and gas law apparatus. We have contacted science equipment businesses such as Krackeler Scientific and Carolina Biological Supply Equipment for invoice of our estimated purchases and probable donations.

The final stage of renovating the classroom into a science laboratory will require plumbing, and installation of laboratory benches to properly integrate the equipment and insure the safety of the students, teachers and laboratory technicians. Things such as sinks and wall storage cabinets will be bought in Haiti as they are available and cheaper there.

After renovation, we will use the activity guidelines provided by Skidmore science departments to carry out trials as examples of what the daily use of the laboratory will look like. The administration of the school has agreed to pay the laboratory technician, to buy the refill needed for the chemicals, to schedule the use of the laboratory and to ensure that the safety requirements set by the Haitian ministry of education are met. In a nutshell and most importantly, the laboratory will be used by multiple generations of students attending the school.

We are contacting non-governmental organisations such as bioEYES, which "provides classroom-based learning opportunities through the use of live zebrafish²," and Sending Labs that "provides scientists and their students with lab equipment, training and the opportunity to collaborate with other experts in their field – and use these vital resources to achieve great things³." We hope to build partnerships with these organisations to train the teachers in using the laboratory tools efficiently and effectively.

Timeline of Plan of Action

The project is designed to last for 6 weeks as from June 22nd to July 31st, but there will also be a week of packaging and preparing the equipment for shipment before the summer.

Week 0: Most likely a month before departing for Haiti, we will package and ship the equipment to Port-Au-Prince. According to the shipping companies contacted, early shippings are cheaper and safer than later ones.

Week 1: We will collect the shipped container from Haitian customs, and meet with the workers that will work in restructuring the space.

Week 2: We will buy the things necessary for plumbing and electricity and workers will start to work on the space by then. We will also start working on translating the activity guidelines in French and Haitian Creole alongside the teachers of Lycée Marie-Jeanne.

Week 3: We estimate that workers will be able to start setting up things such as sinks and laboratory benches. We will keep on working on the translation and making sure they are scientifically accurate, yet understandable.

Week 4: We will unpack and install the equipment. Meetings with the science teachers to help them integrating and adapting the activity guidelines into their curriculum.

Week 5: We will do trials using the equipment with some of the science teachers and a laboratory technician using the activity guidelines that will be provided by Skidmore science departments.

Week 6: This week will be dedicated to fix any potential issues that the laboratory might have.

Project Leaders

Kengthsagn Louis: I am a sophomore Skidmore student and an alumnus of Lycée Marie-Jeanne. I plan to double major in Psychology, and Business and Management. I am responsible for contacting Skidmore Science Departments for equipment donations and will bring necessary funding of \$10,000. I will use my experience and skills gained from my introduction to business and management class, MB107, to strategize for the project sustainability. I am currently taking a financial accounting class, which will be useful in assuring the project financials are controlled and reported properly. Contact Info: klouis@skidmore.edu, 518-5380471

Samantha Bourdeau: I am a junior, at Colby College majoring in Biology with a concentration in Neuroscience and a minor in education. I intend to dedicate my time and collaboration to the successful execution of this project. Having been a student of Lycée Marie-Jeanne, I wish nothing more than to contribute to ameliorate the learning conditions at my alma mater. Contact Info: sboudeau@colby.edu, 207-3138015

Finally, as student leaders of the project, we hope this project will train us on how to take actions to help our community based on connection drawn between science and social issues. Furthermore, we expect to gain more knowledge of how we can support other young Haitian women to explore their talents and inspire them to stand-up for themselves.