Implementation of Safe Water Practices to Improve Public Health

Engagement Scholarship Consortium
Denver, Colorado

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- PhD student in Environmental and Ecological Engineering (EEE) at Purdue University
- Project team member for 1.5 years
- Traveled to the DR in May 2019, will travel January 2020
- Spring 2019 project leader
Jessica Puente Castro

- Master's student in Environmental and Ecological Engineering (EEE) at Purdue University
- Project team member for 2.5 years
- Traveled to the DR in May 2019
- Current project leader
Workshop Objectives

1. Define the motivation for and mission of your project and your approach to achieving these goals

2. Provide guidelines for the preparation of evaluation and assessment materials for your project

3. Use your assessment materials to determine the probability of your project’s sustainability and economic success
Motivation, Objectives, and Approach
Access to safe drinking water was declared as a **basic human right** by the UN in 2010.
Project Objectives

Implement water treatment systems in rural communities of the DR to provide:

- Access to safe, potable water
- Water, Sanitation, and Hygiene (WASH) education
- Water security and ownership by local communities
- Business opportunities

Provide Purdue students and faculty:

- Experiences in global learning
- Opportunity to gain cultural awareness
- Work in interdisciplinary teams to create and implement solutions
Mission: Provide rural communities in the Dominican Republic safe water access as a means to improve public health through implementation of sustainable, community-scale water treatment systems.

Key Values
- Interdisciplinary
- Student-led
- Service-Learning
- Holistic approach
- Cultural engagement
Holistic Approach

**Design**
- System installation and maintenance, technical training

**Communications**
- WASH education, contact community partners, update social media

**Entrepreneurship**
- Ensure sustainability through business models and partnerships

**Monitoring, Evaluation, and Publication (MEP)**
- Evaluate project success, collect data, publish data
Water Treatment Systems

CORAASAN

Cistern → Sand Filter → Cartridge Filter → Storage Tank → UV Filter → Auto-chlorination → Botellones

Handwashing Station
WASH Education

- Provide interactive lessons for the teachers to present
- Paint the walls around the system and a mural at the handwashing station
- Supply classrooms with a “textbook” including lessons and activities for handwashing, filtration, and disinfection
Motivation, Objectives, Approach

What was/is your motivation for pursuing a service-learning project?

What is the mission statement for your project?

What short- and long-term goals can you set to help you achieve your mission?

Establish a reasonable timeline for these goals.

Outline your approach to meeting these goals.
Evaluation and Assessment
Focus Groups and Surveys

Community Baseline Surveys
Focus Groups
Observational Studies

Survey of DR Community Members

<table>
<thead>
<tr>
<th>Importance of Need for Access to Safe Water</th>
<th>Count</th>
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- Men
- Women
Community Baseline Surveys

Demographics
- Gender, Age, Occupation
- How many members of your household work?
- Primary material of home?
- What is your main method of transportation?

Water-Specific Questions
- Main source of water during the dry season? Rainy season?
- Have your children had diarrhea in the past three weeks?

Ranked Necessity of:
- Infrastructure
- Potable Water
- Access to Health Services
- Economic Opportunities
- Resources for Children
Focus Groups, Observational Study

Focus Groups

- Ask specific questions to help interpret the data collected during baseline surveys
  - Clarify why diarrhea is “not applicable” to children
- Ask additional questions to determine best methods of increasing project success
  - How do you communicate information within the communities? What about public health information?

Observational Studies

- Observe handwashing, sanitation, and clean water practices
- Bathroom – did they wash their hands? Soap? How did they dry their hands?
- Kitchen – source of water for cooking? Did they boil it?
- Cleaning – source of water? Did they add a cleaning solution?
Water Quality Monitoring

- Apera Test Meter (pH, Conductivity, Temperature)
- Turbidity
- UV Transmittance
- Free and Total Chlorine
- MPN of E. coli
Evaluation and Assessment

How can you evaluate your project to determine its impact?

How can your partners help you identify impact?

What data can you collect to verify impact?

What can you do if you are not meeting your goals?
Project Sustainability
Current Project Status

- Las Canas
  - Groundwater vs. Rainwater
  - Unreliable electricity
- Los Peladeros
  - Paint runoff from roof
- El Mamey
  - Desires government approval
- La Torre
  - Inefficient gutters
- Desecho
  - Difficult to access
Entrepreneurship

Building partnerships

Full-time entrepreneur

Create a small business

Purdue University INvventure Business Planner Agricultural Economics
Project Sustainability

Is your project capable of having **long-term impact**?

What **data or information** provides support for this claim?

How do you **define sustainability** for your project?

How can you **increase project sustainability**?
Lessons Learned

It is easier to succeed when a community is willing and eager to work with us.

Open and constant communication is crucial.

DR student involvement helps increase understanding of the system.

Systems must satisfy community needs and preferences.
Next Steps

- Resolve current community issues
- Perform focus groups and observational studies to improve our approach
- Form partnerships in the DR
- Install a 5th system in Desecho
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THANK YOU
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