Experience WASH in Malawi

**Technology**

- **Pit Latrine Desludging**
  - Collaboration with Malawian entrepreneurs. Project aims to break the cycle of diarrheal disease in LMIC by focusing on the design of a pit latrine pumping system (desludging) to remove waste efficiently so that the latrine may be continuously used.

- **Well Drilling**
  - Collaboration with SMART Centre for Water and Sanitation in Malawi to develop simple, market-based, affordable, repairable, technologies (Smart Tech) for well drilling and pumping that are manufactured using local resources.

- **Automated Disease Screening (Computer Vision)**
  - Computer vision software to screen and image a set of images for a disease to help maximize the human resources in hospital labs in LMIC. Current applications are for TB and Cholera, but many other infectious diseases could be targeted as well.

**Advocacy**

- **Malawians Against Physical Disabilities (MAP): Improving Access to Latrines**
  - In a country of 17 million people, Kachere Rehabilitation Centre (KRC) is the only in-patient rehabilitation facility in Malawi. Virginia Tech Mechanical Engineering is partnering with MAP to improve access to pit latrines for persons with mobility impairments.

**Education**

- **TALULAR**
  - Teaching and Learning Using Locally Available Resources

  "They use everything from old light bulbs, matchboxes and cans to plastic bags and toilet paper rolls. One of the best examples he gave us was a 'television' made from a box with a roll of paper inside and two sticks... He (Gibson Zembeni) told us a great story with it. We got some really great ideas to use in the classroom. The concepts are not only resourceful for teachers in Africa, but teachers all around the world can also use them!" - Krista Patrick, Virginia Tech. USA student teacher visiting Malawi

**Medicine**

- **Passive Infant Warmer**
  - Working with Domasi Rural Hospital, project aims to design a thermal protection system for pediatric patients that functions independently of the electric grid, and is able to be locally manufactured and maintained. After summer 2016, community led follow up project includes collaboration with Kamuzu Central Hospital to design infant thermal system for ambulance transport.

- **Temperature Monitoring for Malnourished Children**
  - Bluetooth temperature sensors are used to monitor the axillary temperature of children on the malnutrition wards in LMIC hospitals/clinics. Data is sent to an app on a phone or tablet.

**Findings:**

- Four faculty and six students participated in Teaching and Learning, resulting in collaborations with hospitals and schools in Zomba, with the ministry of health, and NGOs for research, education, and service. Four medical devices were introduced via Community Based Participatory Research.
- Experience WASH involved 15 US students, 8 Malawan students, 2 US faculty, and 1 Malawian faculty for a course at Mzuzu University. Three tracks were completed, including Fish Contamination in the Market Supply Chain, Hygiene and Sanitation Assessment of Public Sites, and Mapping WASH Services in a Community.
- The Service-Learning group consisted of one USA undergraduate, one graduate student, and one faculty from VT. They introduced a pit latrine desludging system, a water well digging system, and a medical device to colleagues at the University of Malawi-Polytechnic. 1127 students attended engineering outreach sessions.

**Vision:**

- Utilize a community wellness model as the framework to integrate the activities of a disparate group of young investigators and mentors.

**Primary Goal:**

- Foster global perspectives of students
- Stimulate ideas for improving conditions in a developing country
- Create sustainable relationships that promote transdisciplinary models for development
- Encourage evidence-based applied scholarly research.

**Mission:**

- Transdisciplinary collaboration established in September 2015
- Based upon a community wellness model of health
- Designed to meet the challenges of resource-limited environments through community based participatory research/design/pedagogy.

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