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Academic Programs for Hydrophilanthropy: Commonalities and Challenges

Authors: Rabi H. Mohtar, Texas A&M University
Stephen Silliman, University of Notre Dame
Kurtis G. Paterson, Michigan Technological University
William P. Ball, Johns Hopkins University
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For students at U.S. institutions, international research and service-learning projects have become an increasingly valued aspect of a university education. These programs have different structures, but encounter similar challenges. Researchers including Texas A&M University's Rabi Mohtar (faculty at Purdue University during this study) examined four international experience models for water resource development in developing countries ("hydrophilanthropy"): Johns Hopkins University's Engineers Without Borders student chapter, Purdue's Global Design Teams, Notre Dame's Long-Term Research Program, and Michigan Tech's Peace Corps Master's International Program. These models, along with example projects, are explained below. Although this study highlights engineering design programs, findings can be extended to architecture and design-related endeavors involving student service in international communities.

Researchers found that regardless of program model, international service-learning has strong positive impacts on students and (when properly designed) on host country stakeholders. Benefits to students include enhanced communication skills, cultural awareness, and "sense of professional contribution to society".

Johns Hopkins University Student Chapter of Engineers Without Borders: An interdisciplinary team of students designed a pumping system using recycled materials to transport water from streams for subsistence agriculture. Students transferred the technology to the community by involving faculty and students from local Zakhe Agricultural College. The project has improved food access through enhanced irrigation, but difficulties included timely funding mechanisms and training communities for system maintenance.

The Example of a Design Experience via Global Design Teams: The types of partnerships involved in Purdue's Global Design Teams include NGOs, universities, and businesses. Projects seek out the involvement of Purdue alumni in the host country, who have been instrumental in linking students to community needs. Teams include undergraduate

FACTORS INFLUENCING SERVICE-LEARNING OUTCOMES

- Period of relationship between student team and local population
- Interdisciplinary student teams
- Faculty qualified to guide international projects
- Technical support throughout all project phases
- Cultural awareness and language preparation plans
- Project assessment
- University logistical support for concerns like immunizations, visas, and insurance
- Logistical support in the host country
- Financial resources (e.g. permission to associate student projects with the university insignias and name; foundations like Rotary Clubs and Alumni Foundations)

and graduate students, and students new to the program may participate in an “observer” capacity. Students have developed solutions to a safe water challenge in Bangladesh. Regular phone and internet meetings with Palestinian Hydrology Group engineers and traveling to Bangladesh helped students design a water distribution system for 2,100 households.

The Long-Term Research Program: The University of Notre Dame offers a “Long-Term Research Program” in which students take preliminary courses during a spring semester, undertake summer field work in countries like Benin, and analyze and publish outcomes in the fall (some students contribute without field experience). Students have trained community members to monitor ground well water quality and developed a K-12 educational exchange program between Benin and U.S. schools. The multiple semester commitment has been difficult for some students, but intensive preliminary orientations have alleviated the issue of program drop-out.

The Peace Corps Master’s International Program: Michigan Tech’s partnership with the Peace Corps allows students to tie on-campus courses with Peace Corps service for an engineering graduate degree. Funding derives from Michigan Tech’s scholarships for all Peace Corps students, USAID, National Science Foundation grants, alumni, and the host community. Multiple years spent in-country allow students to develop projects of a larger scale. However, students and faculty cannot influence country placement, which makes faculty advising difficult. Further, female students often find establishing influence more difficult due to male-dominated cultures in certain countries.

IMPLICATIONS

Multiple models for university-based international development can be successful; therefore, examining traits of successful programs and how programs can cooperate and complement one another is critical. Commonalities of successful programs include long-term relationships with stakeholders, quality interdisciplinary student teams, and faculty qualified to guide international projects. Necessary resources include logistical assistance in the host country, technical support in communication with teams throughout all project phases, and financial support.

Additionally, continuing challenges of these programs should be considered. For instance, local languages or dialects are typically location-specific; thus, building language skills can be impractical except for long-term projects like Peace Corps placements. Other issues include student mismatch with project, health and safety, continuity and assessment, and limited time in the focus country. Because outcomes are proportional to the amount of time spent in-country, continuity should be developed by integrating teams across class years and requiring returning students to brief incoming students. Further, university reward structures can provide incentives for faculty, as international projects require significant commitment.

With unique constraints and objectives at different universities, one program type does not fit all, but all types can have significant positive impact when developed with sound practices and strong resources.

EXAMPLE PEACE CORPS MASTER’S PROGRAM EXPERIENCE

Through the efforts of one Peace Corps Master’s student, a community in Uganda adopted a clean water strategy including:

- 2 shallow wells
- 38 latrines
- 25 household filters
- 145 household hand-washing stations

Additionally, the initiative led to two music, dance, and drama shows that effectively educated the community about water resources and health practices.

Peace Corps students have found that in communities initially lacking in project capacity, finding the local “outlier,” a forward-thinking person with the work ethic to see a project through, has been greatly helpful in achieving successful outcomes.

International service can also impact faculty; when faculty advisors “expand their technical contributions to communities with significant needs...the faculty has a keen sense of meaningful service to society”. Students working under faculty with this sense of service and big-picture vision typically catch on to this enthusiasm for professional service.

Rabi Mohtar, Ph.D.



TEES Endowed Professor in Biological and Agricultural Engineering and Civil Engineering

Founding Director of Qatar Environment and Energy Research Institute

Inaugural Director of the Global Engineering Programs at Purdue University

Editor: Amy Albright

Contact: TTC Program Coordinator Jaimie Masterson at jmasterson@arch.tamu.edu