
AC 2012-3336: ADDRESSING GLOBAL DEVELOPMENT CHALLENGES THROUGH CONSTRUCTION EDUCATION

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Addressing Global Development Challenges Through Construction Education

Abstract

Conflict, chaos, environmental degradation, and humanitarian crises correlate with a lack of economic prosperity and social development. People turn to crime, drugs and other social acts of self-degradation after losing hope and confidence for a better life for themselves and their families. Lack of education and employment opportunities increase the potential for involvement in illicit activities. It is therefore important to provide at-risk population with the skills necessary to secure gainful employment and resist involvement in self-destructive activities.

The construction industry which is a significant contributor to the gross national product of the United States, and many developing countries, holds the potential to employ many adequately trained workers through the creation of small and medium sized businesses. Improving business skills and hands-on learning in construction processes can result in significant benefits for resource-poor populations in terms of their everyday lives. Teaching students how to transform ideas, relationships, and collaborative partnerships into action plans can result in new business ventures that can stimulate economic development as well as steer graduates away from crime, drugs and other acts of self-degradation. Careers in the construction industry can open doors to at-risk groups giving them hope and confidence in a better life.

This paper explores the role of construction education and humanitarian organization partnerships as an agent for positive change in the resource-poor communities. These partnerships have the potential to not only improve education and employment opportunities for people at-risk but also to create more robust programs for construction education in the United States. Construction skills training programs can positively affect the program participants and their families as well as the target community of the host country. For a resource poor individual who participates in the program, the skills and training provided can allow for lawful, sustained employment and economic prosperity, when unlawful options are prevalent. Sustained employment creates local small business opportunities and allows the program participants to train and employ other at risk individuals in their local communities. As at-risk individuals begin to prosper, their quality of life increases and they are able to provide their families with opportunities that would not be possible in the previous state of poverty. Increased individual prosperity leads to economic growth within the host community.

Aside from the primary objective of improving living conditions in impoverished communities and addressing global development challenges, the construction education programs in the United States that develop and implement these programs realize benefits. The faculty and staff members who participate in the training are directly exposed to global perspectives and diversity in education. In turn, construction education faculty and trainers return to their educational institution with new knowledge and research topics to benefit the international community. Participating faculty share their experiences and diversified knowledge in their classrooms creating more robust education and globally minded students. This paper concludes with

recommendations to construction education programs and faculty who are interested in using their knowledge and skills to improve the quality of life in resource poor communities.

Introduction

Conflict, chaos, environmental degradation, and humanitarian crisis correlate with a lack of economic prosperity and social development. In situations of humanitarian crisis, people often lack the hope and confidence for a better life and, in desperation, turn to crime, drugs and other social acts of degradation to escape poverty. Unfortunately many people in impoverished countries where human crisis often occur lack the resource for subsistence and access the education or employment opportunities that reduce the risk of poverty. Humanitarian organizations recognize the importance of providing people at-risk with basic necessities as well as the skills necessary to secure gainful employment and prosperity. If people at-risk can avoid the hopelessness of poverty they are more likely to resist involvement in illicit activities which lead to social degradation for entire communities.

Humanitarian Organizations and Higher Education:

There are many humanitarian organizations that focus their resources on improving the lives of at risk individuals in the resource poor countries of the world. The ways in which humanitarian groups provide assistance varies between organizations and among the aid programs administered within each organization. Some charitable programs provide assistance in the form of food, water, shelter and other supplies for a time; perhaps during or after a natural disaster or to address acute malnutrition^{1,2}. Other humanitarian programs provide resources to sustain and promote self-sufficiency in food production¹. While still other organizations focus on providing individuals with opportunities for education or training to promote skills that lead to sustained improvement in human living situations³.

Several of the leading humanitarian organizations that employ education as a tool to promote sustained individual and community development are the European Commission's Europe Aid program the Education For Employment Foundation (EFE) and Higher Education for Development (HED)⁴⁻⁶. EFE focuses its efforts of the Middle East and North Africa by providing individuals with education to allow them to gain access to sustained employment and economic prosperity. HED works in cooperation with the United States Agency of International Development (USAID) to provide educational programs which address international development concerns around the world⁴. In order to accomplish this goal, HED and EFE partner with colleges and universities in order to involve institutions of higher education directly in improving the lives of individuals in the developing world. HED's overarching goal is to provide education that will increase human and institutional capacity within the host country to address global development challenges⁷. Aside from opportunities to accomplish charitable efforts in the host country, the involvement of institutions of higher education in humanitarian efforts provides institutions with opportunities to satisfy their public mission and vision statements while improving the quality and diversity of education and research at participating universities and colleges.

While the mission and vision statements for colleges, universities and academic programs highlight varied aspects of providing education to those who attend these institutions, many also indicate goals that address global awareness and social responsibility. The acknowledgment of a global perspective is a common occurrence within North American university mission statements; see Texas A&M, Colorado State University, Georgia Institute of Technology, etc.⁸⁻¹⁰. For example, Colorado State University's Department of Construction Management's mission statement indicates the desire to advance knowledge for the betterment of society through teaching, research and service to local, national, and global communities¹¹. Purdue University includes the following statement in their mission "[to] contribute to the welfare and advancement of human societies throughout the world"¹². In line with these university goals, partnerships between humanitarian organizations and higher education provide students and faculty with service and research opportunities that further the understanding of global economies, provide global perspectives and diversify education.

HED is one of several humanitarian organizations that structure their aid programs to target two specific goals; addressing global human need and providing future leaders with opportunities to exercise social responsibility. Engineer's Without Borders (EWB) is an organization that provides humanitarian aid through student leadership on campuses across the nation. EWB's mission is to "support community-driven development programs worldwide by collaborating with local partners to design and implement sustainable engineering projects, while creating transformative experiences and responsible leaders"¹³. The EWB's mission statement succinctly

When humanitarian organizations support institutional partnerships in higher education to facilitate the creation of educational training programs in impoverished communities, the results are mutually beneficial. The outcome of these partnerships simultaneously addresses one of the dual benefits (impoverished community/ American student) of partnership between humanitarian organizations and institutions of higher education.

It is clear that humanitarian efforts that directly provide for the physical needs (food, clean water, infrastructure, etc.) of individuals in the resource poor communities have merit and make significant impacts around the world. However, collaborative institutional partnerships and the local human capacity building in impoverished communities is an important goal of sustained humanitarian aid. This paper, and the partnering model presented, is intended to facilitate true collaborating between faculty at partnering institutions of higher education while providing human capacity building training to participants in an impoverished community. The intent of the education and training programs is to facilitate sustained local development by providing at-risk individuals with necessary skills to gain, and sustain employment, in their local communities. Physiological necessities and infrastructure created to address these needs can be either proximal or distal outcomes from increasing human capacity. Program participants, educators and skills trainers have the potential to learn about other communities, face challenges and develop solutions, as well as expand their social conscience. The following partnership model describes humanitarian and higher education collaborative partnerships for the development and implementation of training programs in resource poor communities around the globe.

Partnering Model

meets the goals, mission, and vision of both the aid organizations and the partnering universities or colleges. Partnership programs address global human need while creating socially aware and responsible students, faculty and administrators at partnering institutions of higher education.

The first step in this process is the gaining of support from the humanitarian organizations and the institutions of higher education. Partnerships are generally accompanied by funding provided to the partnering institutions to develop and administer a training curriculum or educational program in a host country. The flowchart below (Figure 1) provides a basic framework by which these partnership and program can exist.

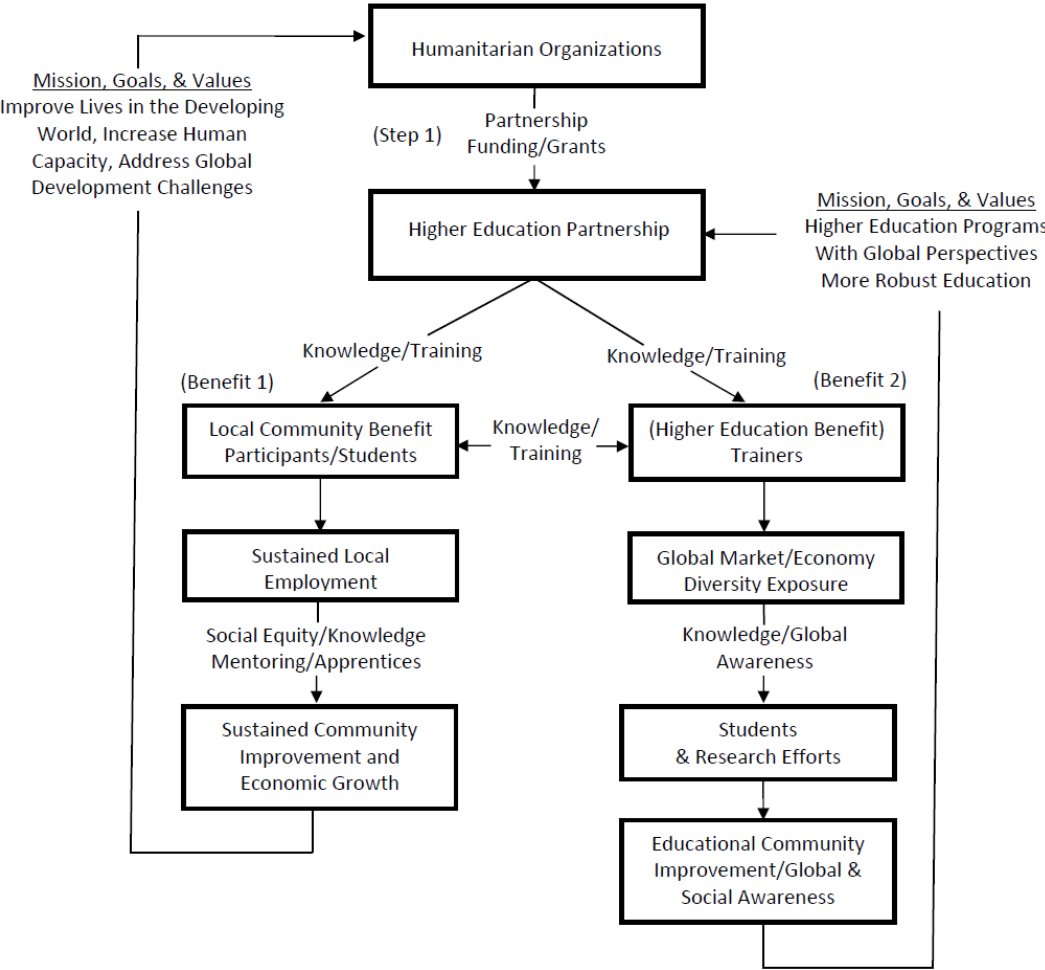


Figure 1: Partnership and Benefit Model

From a humanitarian aid perspective, one of the primary goals of these humanitarian and education partnerships is to impart knowledge on the participants to promote sustained individual and community growth to address development concerns in the host country (Benefit 1). From the humanitarian organization’s perspective funding these partnerships for this purpose is likely the primary goal. However, a secondary benefit exists for the faculty and students who participate in these programs, through university partnerships, experience increased diversity, global market exposure and hands-on experiential learning in their academic fields. The

knowledge gained in these settings, and through these partnerships, allows participating faculty the opportunities to exercise social responsibility (Benefit 2).

A key imperative to understand the dual benefit structure (Figure 1) of these partnerships is seen in the transfer of knowledge between the partnering faculty as well as the program participants in the host country and those providing the construction skills training at the ground level. While one of the clear benefits experienced by program participants is the gaining of hard and soft skills in a marketable trade, the local trainer who disseminates the training materials also experiences learning in several aspects. In its purist form, this partnering model is intended to solicit equal resources and divide responsibilities fairly among the institutions to avoid the hierarchical nature in which a “developed country” is provided all the input and facilitation to aid an undeveloped country.

Benefit One - Host Country Prosperity

Aid organizations and higher education partnerships that implement humanitarian educational programs in impoverished countries can positively affect individuals, families, and target the community of the host country. For an individual humanitarian program participant, the training and skills provided can allow for sustained employment and a lawful option (when unlawful options are prevalent) for gaining the income needed to support a family. Sustained employment creates local small business opportunities and allows the program participants to train and employ other at-risk individuals in their local community. As individuals begin to prosper, their quality of life increases and they are able to provide their families with opportunities that would not be possible in the previous state of poverty. Individual prosperity leads to economic growth within the host community.

A survey of humanitarian organization goals, missions and vision statements indicates several common themes; to improve lives in the developing world, increase human and institutional capacity and address global development challenges^{5, 7, 14}. Many humanitarian aid organizations also acknowledge that education and employment opportunities are targeted as a productive means by which to achieve this overarching mission.

In the case of this partnerships model, the institutions of higher education collaboratively produce a training curriculum for the target population in the host country. The training program context is based on community needs assessments and observed opportunities for employment within the local economy. It is not the intent of these programs to provide skills that encourage individuals to leave their communities or migrate to new geographical areas in order to find employment. While it is possible that the opportunities provided through newly gained skills could allow program participants opportunities outside on the target community, the intent is to bolster the local economy for true community growth and economic prosperity.

As participants are trained, they gain the necessary skills for employment in existing businesses or start small businesses of their own. Either participant outcome initially provides income for one individual or one family within the community. However, it is hoped that these newly trained individuals will begin to share their knowledge with others. In the case of small businesses, owners may hire additional individuals from the community as apprentices who will

be trained in employable skills. The creation of small businesses in a community provides support for many individuals and families. Economic prosperity will begin to permeate the community which has the potential for large impacts in meeting the shared overarching goals of humanitarian aid organizations^{5, 7, 14}:

- 1) Improve lives in the developing world
- 2) Increase human and institutional capacity
- 3) Address global development challenges

Benefit Two - More Robust Programs in Higher Education:

Aside from the primary objective of improving local communities and addressing global development challenges, the universities and colleges that partner with humanitarian organizations to implement these programs realize benefits. The faculty, staff, and students of the educational institutions that participate in these partnerships are directly exposed to global perspectives and diversity. The nature of the participant and trainer interactions, facilitated in these partnerships, encourage mutual learning that, not only impart knowledge on the trainee, but also diversifies the trainer's knowledge, background, and perspectives.

Through participation in these humanitarian programs faculty, staff and students return to their educational institution with new knowledge and research topics that benefit the international community and expand diversity. In the classroom, participating faculty impart their more diverse knowledge and experience to their students, creating more robust and globally focused educational programs. Students who directly participate in these partnerships are given opportunities to apply their professional skills in hands-on applications. The students who do not directly participate in the partnerships also benefit when faculty bring their experience back to the institution and challenge students with opportunities to exercise social responsibility and understand global issues through a lens of global awareness.

Humanitarian and higher education partnerships can be effective, not only meeting the goal of fostering student skills and professional development but also meets the globally minded vision of universities and their engineering and construction management departments⁸⁻¹⁰:

- 1) Creating programs and students with global perspectives
- 2) Providing students with opportunities for service
- 3) Bettering society through teaching/research/service to a global community.

Case Study- Green Construction Human and Institutional Partnership

In recent years the USAID has increasing the amount of its resources it deploys in Mexico. From a financial standpoint contribution to project in Mexico by USAID have increased from \$28 million in 2010, to a projected \$70 million in 2012¹⁵. These funds have contributed to humanitarian and higher education partnerships in Mexico through its Training, Internship, Exchange and Scholarship (TIES) program which provides opportunities for disadvantaged youth to gain training in skill to benefit at-risk communities¹⁵. Outside of TIES the USAID is funding individual higher education partnerships to increase the educational access of individuals at-risk of poverty as a means to address community development challenges.

One current, and ongoing, humanitarian aid and education partnership is the Green Construction Humans and Institutional Partnership in Mexico. The project, funded by USAID and administered through HED with 25% matching funds from CSU, is a collaborative program in between CSU, Universidad Iberoamericana (UIA) Tijuana campus, and the Mi Casa Resource Center (Mi Casa) of Denver, Colorado. As part of this project the Department of Construction Management at CSU and the Department of Economics and Administrative Sciences, and Architecture at UIA are creating a green construction training curriculum with input from Mi Casa's experience in assisting at-risk Latino populations to achieve sustained employment.

From the humanitarian perspective the specific target population for this program is the growing group of unemployed, at-risk youth in Tijuana, Mexico. Half of new residents in Tijuana live in neighborhoods with inadequate infrastructure and limited clean water supplies, which increases the risk of transmitting infectious diseases¹⁶. Young adults who live in Tijuana and neither work nor study are more likely to live in poverty and may be at greater risk for involvement in illicit drug use or drug trafficking. This group of at-risk youth lacks the education or technical skills needed to make them productive members of society. A growing risk factor among Mexican youth and young adults is the rise of illicit drug trafficking and use. Over the past several decades Mexico has changed from being primarily a drug transportation hub to a drug trafficking and producing nation. Studies in Mexico have found that illicit drug use rates in are highest in Mexican cities that border the U.S. such as Tijuana and Ciudad Juarez^{17,18}.

The construction industry, which is a significant contributor to the gross national product in the Mexico, holds the potential for the creation of many small and medium sized businesses in Mexico as well as to employ workers who have adequate training. Improving business skills and hands-on learning in construction processes can result in significant benefits for Mexico and individuals at risk terms of their everyday lives. Teaching students how to transform ideas, relationships, and collaborative partnerships into action plans can result in new business ventures that stimulate Mexico's economic development as well as steer graduates away from crime, drugs and other acts of self-degradation.

It is in view of these purposes that this multi-institutional, multi-disciplinary educational partnership is designed to upgrade human capacity, knowledge and skill level of UIA faculty (institutional capacity) as well as provide workforce development and education to youth-at-risk in the area of green construction (human capacity). This educational aid program is multifaceted in that it provides education and human capacity building opportunities to both the faculty at UIA and CSU as well as the at-risk target population of Tijuana, Mexico. Three faculty members and CSU, three faculty members from UIA, and several graduate students have partnered to complete the project's first phase. The project's second phase will commence in April of 2012, with the programs first a pilot study Cohort:

The first phase of the program consisted of building relationships between CSU, UIA, Mi Casa and other stakeholders as good working relationships are essential to the success of this partnership. The first phase focused on developing the Green Construction human development curriculum. The success of the program is contingent on its acceptance by the construction industry in Tijuana. In light of this requirement the partnership team formed an advisory board that consists of thirty-three (twenty-eight from Mexico) industry members, nongovernmental organization, and government agencies. The advisory board contains six faculty members from

UIA (3) and CSU (3) who have partnered to oversee the program, involve graduate students, design the curricula, and participate in training the local trainers who administer the construction skill building intervention to the local population. The advisory board provides input from public and private stakeholders in the development of the curriculum to ensure that the program meets its participants need and that graduates will have the necessary skills to successfully transition into the construction workforce.

The second phase of the project consists of the training of youth at risk in the technical and soft skills of green construction. The green construction training modules were developed in Spanish by with industry collaboration (Phase One) and local construction trainers in Tijuana administer the curriculum to program participants. The green construction program consists of 360 hours of curriculum taught over the course of 10 weeks. Students have to meet the following criteria before been admitted to the program: 18 years or older, passing score on basic adult education proficiency tests, passing occupational career test which assesses interest and appropriateness for a career in the construction industry.

This partnership meets the intended goals of USAID through the training of youth at risk in skills that allow the gaining and sustaining of employment in Tijuana. Sustained employment and income will provide youth at risk with the necessary opportunities to escape poverty and support themselves through legal and gainful employment. Employed individuals in Tijuana are able to support families and provide their children with the necessary means for healthy living and other opportunities, such as education, associated with a higher standard of living. Through this collaborative and multidimensional program this educational and institutional partnership meets the overarching goal of humanitarian aid; to improve lives in the developing world, increase human and institutional capacity, and address global development challenges.

In addition to meeting humanitarian goals, this partnership simultaneously meets the secondary goals of increasing human an institutional capacity and providing a global perspective for students at the participating educational institutions.

Conclusions

This partnership model can be used to promote integrated learning in many disciplines. Through this program, faculty members from US and foreign country institutions can forge partnerships with one another to strengthen academic programs at both institutions by promoting faculty, curriculum development and international cooperation. Through research and teaching, faculty share their diversity experience and global awareness with their students. Diverse and globally-minded students, with relevant job skills, and an understanding of cultural issues are valuable assets in the workforce. Student at participating institutions benefit by gaining global perspectives and the opportunity to exercise social responsibility in both resource-poor countries and their local communities.

Construction educators may consider the following recommendations when forming partnerships between US institutions and institutions in resource-poor countries:

Pre-Proposal

- Build strong relationships between faculty and administrators at collaborating institutions
- Assess institutional strengths and weaknesses
- Identify collaboration opportunities based on institutional strengths and weaknesses
- Identify and establish funding requirements based on specific programmatic needs
- Identify funding opportunities that match institutional strengths
- Establish success metrics, include metrics based on funding agency interests
- Collaborate with local industry during funding proposal development
- Include local non-governmental agency and non-profit collaborations when possible
- Form an advisory board consisting of local industry and community leaders.
- Align training with locally verified and long-term employment opportunities

Post-Award

- Develop curriculum with local input based on locally sustainable practices
- Employ local practitioners to provide skills training whenever possible
- Establish cooperative agreements with local industry to facilitate participant employment upon completion of the training
- Establish a training program pilot test with a small but representative sample population
- Assess the program continually during pilot test, modify training curriculum as needed
- Assess the training program periodically during full implementation and modify curriculum as needed
- Collaborate with local employment resources to facilitate participant placement upon completion of the training

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