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## **AC 2012-3163: CONSTRUCT COSTA RICA: INTERNATIONAL SERVICE LEARNING**

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## **Service Learning Experiences as Real World Experiences**

Much of the research concludes that service learning enhances the student's education including the areas of: work ethic, critical thinking, problem solving, social issues, and reasoning.<sup>1,2,3</sup> One goal of Purdue University, the College of Technology, and the Building Construction Management Department is to infuse global awareness in both undergraduate and graduate students. A study abroad course is one way to accomplish this goal. International experiences give our students an edge over other students and allow them to apply their knowledge to solve problems outside of their comfort zone. Understanding different materials and methods of construction expands their knowledge. The overall experience adds to their marketable skills when entering the workforce. Most students in this department tend to be kinesthetic learners so participating in a hands-on service learning project allows them to apply technical knowledge and utilize management skills. This paper outlines the development, facilitation, and evaluation of a study abroad experience in Costa Rica.

Keywords: Service learning, undergraduate education, Study Abroad, Globalization

### **Introduction of Service Learning**

The original fathers of curriculum believe that there was a link between community engagement and actions which apply knowledge.<sup>4</sup> Service learning is already a very well researched topic. According to the National and Community Service Trust Act of 1993, it is defined:

“A method under which students or participants learn and develop through active participation in thoughtfully organized service”<sup>5</sup>

Not all see Service Learning as an academic replacement for the pencil and paper calculations or controlled lab experiments, but those who support these have had positive results. The Kolb (1984) model for learning aligns well with service learning because it allows for all types of learners and it involves concrete experience.<sup>6</sup> Broader definitions have been used to outline the relationship between the service and the learning.

“a type of experiential education in which students participate in service in the community and reflect on their involvement in such a way as to gain further understanding of course content and of the discipline and its relationship to social needs and an enhanced sense of civic responsibility.”<sup>2</sup>

A very popular diagram to visualize this concept is through the Furco diagram in Figure 1. The main objective of this model is to differentiate volunteering and field experiences to overlap with the academic component to produce a true service learning experience.

### ***FURCO Diagram, by Andrew Furco***

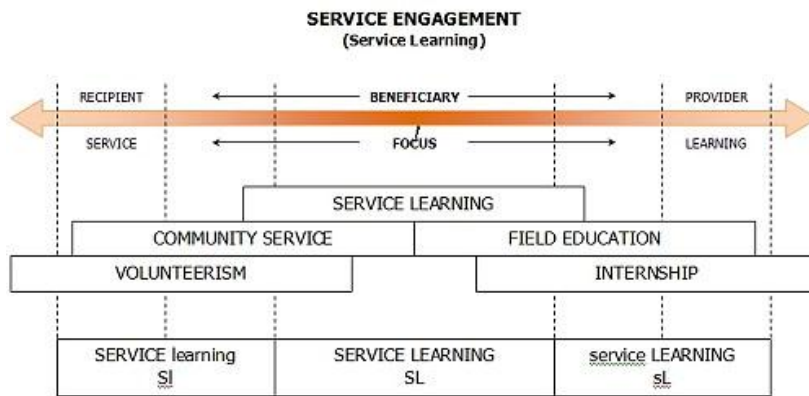


Figure 1: Furco Service Engagement Diagram <sup>7</sup>

Much of the research concludes that service learning enhances the student's education including the areas of: work ethic, critical thinking, problem solving, social issues, and reasoning. <sup>1,2,3</sup> When these service learning activities have occurred during a study abroad program, the outcomes included: cultural awareness, foreign language skills, and different construction practices. <sup>8,9</sup> Some of the common outcomes reported by the students include:

- Greater motivation
- Ability to integrate
- Development of leadership and communication skills
- Accessing understanding in different ways
- Teamwork
- Project planning
- Life-long learning

The final part of the service learning experience is to ensure that the students are connecting the activity to the academic objectives. <sup>10</sup> This is done by reflection activities throughout the experience. It is important to assist the students into differentiating the learning experiences. The reflection should connect with, but not be limited to, academic context and learning objectives, personal experience, connection to and implications for the profession/discipline, and or social/community issues. Methods of facilitating the reflection process include: written questions, notebooks, journals, blogs, small group discussions, readings, or any combination. Many teaching points may not be seen as learning by the student if he or she does not reflect. Another aspect of the learning may not be technical, but rather about communication or social learning which is more difficult to assess. The interaction with the students during reflection and through facilitated discussions showed the moments of awareness of their surroundings.

### **Development of Costa Rica Service Learning Program**

One goal of Purdue University, the College of Technology, and the Building Construction Management Department is to infuse global awareness in both undergraduate and graduate students. A study abroad course is one way to accomplish this goal. International experiences

give our students an edge over other students and allow them to apply their knowledge to solve problems outside of their comfort zone. This study abroad program was developed through shadowing an existing program and making connections in country for future trips.

Get help from someone with experience. In the fall of 2010, faculty members in a workshop shared stories of current projects. One faculty member had extensive experience with international programs in agriculture. This faculty member had a 3-year grant involved with visiting Costa Rica. To improve this international experience, a service learning project was added and the project was construction related. Construction is a very easy area to provide a service while learning due to the nature of the topics which the students learn, i.e., wood, concrete, demolition, etc. This conversation led to opening the Agriculture Study Abroad Program (SAP) to construction management students. The College of Agriculture has a long history and their own study abroad office, so this collaboration was a great learning experience.

During the spring of 2011 both faculty members visited Costa Rica for a reconnaissance trip to understand the service project. This included visiting and documenting the project, meeting the leaders of the community, and acquiring quotes for materials. This trip occurred during Spring Break, two months prior to the trip with students. It was an invaluable experience, especially concerning the materials necessary for the project.

Upon return, the students who were signed up for the trip were given more overview of the project. They had input on the direction of design and assisted in acquiring materials which would not be available in Costa Rica. One example is a power tool that could be purchased in the United States for \$30 but would cost over \$300 in Costa Rica. The students applied for and were granted a \$1,500 grant that would be used to purchase materials and tools both before and during the project.

Construction management (CM) students in partnership with agriculture students embarked on a 20-day trip to Costa Rica in May 2011. This opportunity was done as a first time experience for the construction management faculty, as the agriculture department has a long history of Study Abroad Programs (SAP). This trip would be to build relationships and knowledge of the area for future trips. The Construction faculty member became lead on the service learning portion of the trip with a construction type project. The Costa Rica trip included two projects.

### **Facilitation of the Project**

The projects were located in the Limon, Guacimo, and Iroquois Community of Costa Rica. This is approximately 80 kilometers Northeast of San Jose. The community is adjacent to Earth University, an agricultural college built in 1985 with funds from United States Agency for International Development (USAID). This international, private, non-profit university works under a model which students work two days a week on the farms to pay for their tuition. This is another aspect of service learning. The Iroquois community is made up of approximately 100 families who earn an average of \$200 per month. Many of the homes had the male being the head of the household hopefully employed, while the women kept the home and mothered the children. The project was chosen due to connections the previous two years with the Ag faculty member. The students stayed in the community while they participated in projects. They stayed

two nights with families. Wendy, a local woman was paid to cook the food which they ate with the community.

The construction faculty member arrived in the community four days before the students were to arrive in Costa Rica. This was necessary to order and deliver materials and prepare the foundation. The foundation needed to be completed at least one week before the arrival of the students. As the foundation was had mixed and poured with the faculty member and home owner, the load bearing corner posts for the walls were installed. Upon completion of the prep work, the faculty members returned to San Jose to begin the actual study abroad experience.

The first 10 days of the SAP was traveling through the pacific and dry tropics of Costa Rica. Students visited the Pacific Ocean, Earth La Flor in Liberia, Monsanto's cotton production, sugar cane fields, Mango groves, dairies, and other sustainable agricultural projects. These were educational opportunities related to the Ag students.

On the 11<sup>th</sup> day of the trip, students arrived in Iroquois to begin working on a home addition and health care center renovation. Activities included a 10' X 10' room addition was added on to a home (see figure 2). Students were learning about building materials and methods in Costa Rica as well as Spanish language related to construction projects. One of the major adjustments was the materials which were not to U.S. code. Another conflict was the emotions and personalities of students that became heightened during working in the heat. The leadership and communication skills applied in this area were greatly acknowledged.



Figure 2: Room addition on home in Costa Rica

Simultaneously, students shared their time with renovations on a health clinic in the community. Figure 3 shows some of the finished metal door that was installed in a concrete block wall. This door was a requirement for a code requiring egress in case of earthquakes of the help clinic. Without this door the healthcare facility would have been closed and the next available clinic was 30 miles away. It would have cost \$2 per person to ride a bus to and from the next clinic.

Community partners stopped throughout the days of work and assisted in the transformation of this project. The work included sanding, repairing and painting of walls and entry ways. Students performed the demolition of a concrete block wall to make way for the installation a metal door to bring building up to code. Students worked with local people to increase Spanish speaking skills, organizational skills, and basic construction skills.



Figure 3: Emergency exit for health clinic in Costa Rica

The 10 students along with the faculty were impacted by the overall experience of the trip. The final day in the community, tears were shed by all as they were overcome with the emotion of bonding over the project. The community members were touched by the respect they were given and the wonderful work that was completed for their community. The students were touched by the thought that they were leaving and would not see their new friends again. Although all exchanged Facebook addresses so they could keep in touch.

## **Evaluation**

Throughout the trip, students were assigned questions and times in which they would share and reflect. This became an important aspect of the trip where students could relate to one another and validate what they were feeling or experiencing. Much of the learning was done through observing the surroundings. Comparing and contrasting U.S. versus Costa Rica to better understand construction materials and methods were a major theme. The team work also challenged students to step up and utilize leadership, communication and coping skills to complete the project in a safe and timely manner. Student reflections from the Costa Rica project indicated that they enjoyed helping the community and interacting with the community. Comments related to problem solving skills included:

1. Materials were not like the U.S. so we had to use what we were given
2. Shortages of materials required solutions which would not be used in the U.S.
3. Culture differences required problem solving and Spanish knowledge

Evaluations were given to the students who were part of the Costa Rica Study abroad group to specifically rate the study abroad experience. The results were high in that they scored 4.0 (out of 5.0 being strongly agree) and above on all questions with the highest average 4.56 being that they felt their contributions were appreciated by the community partner.

Table 1:

*Study Abroad Costa Rica May 2011 Evaluations*

<b>Student Evaluation Question</b>	<b>Average Score</b>
Learning was more meaningful in this class than other classes I have taken	4.11
I took more responsibility for my learning in this class than I typically do in other classes	4.00
The community service was relevant to the academic course materials and content	4.11
I was more motivated to learn in this class than in other classes I have taken	4.11
I felt my contributions were appreciated by the community partner	4.56
The instructor should use the community partner we worked with for future service-learning projects	4.33
The instructor's expectations for the service learning project were clear to me	4.11
Scale of 1 being Strongly Disagree and 5 being Strongly Agree	

**Future Service Learning Projects**

A new Study Abroad course has been developed to which will include: Culture and history of Costa Rica, common building practices, geography, and language. Materials and methods of buildings including topics related to sustainable and green products. Costa Rica has the motto of *Pura Vida* translates pure and life so students would stay true to this by exploring the sustainable solutions to building methods in Costa Rica. The session after the trip will be to reflect and document the service learning experience. The primary candidates for participation would be student with interest in building construction or service learning activities.

The highlight of this course is a week-long trip to Costa Rica during Spring Break. Student participants will travel to Costa Rica for a week long experience of construction materials and methods. They will visit with BCM alumni, visit construction projects, and participate in a service learning project. The trip will be planned around construction sites that are active during the time that the students will be in Costa Rica.

**Conclusions**

Service learning courses align well in construction management programs and can be useful in creating positive community engagement. Faculty can grow from the experiences through

collected data that can be used to create scholarly work or build new projects. Students, faculty, and community partners can continue to find ways to fund projects with grants aimed at making these connections and continuing the solutions to solve grand challenges and problems facing humankind. A major goal of the College of Technology and Building Construction Management department is to continue to create opportunities for synergy and collaboration and instill the sense of lifelong learning.

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