

Internationalizing the Construction Management Curriculum through a Travel-Study Experience: A Case Study

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The Department of Construction at Southern Illinois University Edwardsville (SIUE) offered a new technical elective titled *International Construction* in Spring 2009. This course was composed of three parts: seminars in international construction topics, followed by an intensive travel-study experience in Mexico and a dissemination module. The 12 hours of international construction instruction included seminars from the following four perspectives: international, corporate, cultural, and project. While in Mexico, students were able to observe the similarities and differences between the construction industry in Mexico and in the US. This paper discusses the challenges and opportunities encountered during the development of the course, the travel-study experience, and the lessons learned.

Key Words: travel-study abroad, construction management, international construction

Introduction

The construction industry has historically been composed of companies focused on one or more local or regional markets, with few companies working internationally. This was reflected in SIUE's Department of Construction curriculum, which focused primarily on the engineering and management concepts needed to build in an established market without international influences or differences. Increasingly, however, contractors (1) face international influences on local projects (e.g. materials and laborers from other countries); (2) focus increasingly on the global effects of facilities and the construction process; and (3) grow new markets in other countries. In order to address the need to include an international perspective to the Construction Management curriculum, the Department introduced a new technical elective, titled *International Construction*.

Literature Review

Increasingly, international and global influences on projects require graduates to work within a context of globalization, with knowledge of methods for incorporating global concerns, such as sustainability, into design and construction decisions (Levitt 2007). The National Research Council concluded that among the skills needed by construction graduates to compete in a global construction market are "an understanding of the intimate connection between technology and culture, and an understanding of foreign languages and regional studies" (NRC 1988). Several construction management programs in the US have developed summer travel-study programs. Auburn university offers travel-study programs to China, United Kingdom and Ecuador (Auburn, 2009), East Carolina University offers a travel-study to China (Cornell & Lu, 2009) and Bradley University offers a travel-study to a different location each year (Bradley, 2009). According to Cornell and Lu, one of the reasons why construction management travel-study programs are not as popular in construction management programs as in other areas such as business administration is that many construction management students work on their internships during the summers (Cornell & Lu, 2009). To address the need for addressing international issues and opportunities in construction while avoiding conflicts with summer internships, the authors developed and implemented a concentrated spring break travel study experience.

Program Development

The International Construction technical elective was composed of three parts: seminars in international construction topics, followed by an intensive travel-study experience and a dissemination module. The 12 hours of international construction instruction included seminars from the following four perspectives: international, corporate, cultural, and project. During the first eight weeks of the spring semester, the class met weekly to address the topics listed in Table 1. Each week, a different region of the world was specifically addressed to give students a view of the construction industry in several parts of the world. The textbook that was used in this course was *Global Engineering and Construction* by J. K. Yates (2006).

Table 1 Seminar Topics

Topic	Region
Syllabus, overview of course, organizational meeting	N/A
Globalization – forces, effects	Africa
Risk management – insurance, partnership, bonds, managing currency and interest rate risk	Asia
Entering market	Middle East
Project management	Western Europe
Productivity and incentives	Eastern Europe
Legal and ethical issues	Latin America

The second part of the course consisted of a one week intensive travel-study experience to Mexico. The original itinerary was to travel to a US contractor's Mexico offices and jobsites. During the Fall of 2009, however, the contractor contacted the instructors to let them know that the company was restructuring their Mexico offices and they did not have any available projects in Mexico. The instructors were faced with two choices: either to cancel the travel-study or identify one or more travel-study opportunities where they could achieve the same objectives. Dr. Carla Lopez del Puerto is originally from Mexico and an alumna of Universidad de las Americas (UDLA) in Puebla Mexico. She contacted the Civil Engineering department at UDLA and was able to establish a cooperation agreement between the two universities. UDLA agreed to provide classrooms and four hours of instruction for the travel-study program. The authors made arrangements for tours of several of a leading developer's jobsites in Mexico City as well as to a new \$350 Million dollar cement plant and to jobsites in Puebla. The authors received a \$14,287 USD Excellence in Undergraduate Education grant to subsidize the expenses for the travel-study experience. The office of international programs at SIUE subsidized a cultural component to the travel-study experience. For this cultural experience, the authors arranged a visit to Teotihuacan due to its proximity to Puebla and the opportunity to discuss its construction and cultural importance.

Logistics and Itinerary

The travel-study group flew into Mexico City airport Saturday morning where a van with a driver was waiting for them to take them to Cholula, a town seven miles away from Puebla. During their first evening in Cholula, the group visited downtown Cholula and walked up the pyramid of Cholula. On Monday morning, the students joined a concrete construction class offered to UDLA students in Spanish. The students were paired with UDLA students to help with translation and to establish rapport. Most of the students pointed out that they enjoyed the classroom experience, despite the language barrier. In particular, they noted that they enjoyed the opportunity to see an example of how students learned about construction in Mexico. During the evening, the group visited downtown Puebla, where they had a guided tour pointing out the different construction methods and materials used throughout the centuries to build Puebla's downtown.

On Tuesday, the students attended the first of two lectures at UDLA specifically targeting issues important to construction and engineering in Mexico. These lectures were presented specifically for the group, and in English. In the morning, the students learned about seismic design, a particular challenge for engineering and construction in Mexico. The students viewed pictures of structural damage during the 1985 Mexico City earthquake, which had a magnitude of 8.1 on the Richter-scale and killed over 10,000 people, and learned how Mexican building codes changed as a result of this tragic event. In the afternoon, the group visited a sewer construction project, and observed the differences in safety precautions and construction methods observed on site. In the evening, the student

construction club at UDLA organized a social event for our group, where the students were able to interact with UDLA's students.

On Wednesday the group traveled to Mexico City, which is 50 miles away from Cholula, to visit several world-class jobsites under construction by GICSA, Mexico's largest retail developer. The group visited the first LEED-certified project in Latin America, as well as two 26-story mixed use buildings, a hotel and a shopping center in Mexico's City wealthiest area. This allowed students not only to see construction projects first-hand but also to see the two sides of Mexico: very poor rural areas and luxury developments in Mexico City, where construction sells for over \$1,000 USD/SF. These projects demonstrated exceptionally high quality and safety standards and challenged assumptions that students had about safety and quality in Mexico.

On Thursday the students attended a second lecture on construction and engineering issues in Mexico. This lecture was about water quality in developing countries. The instructor addressed some of the financial and cultural barriers that prevent Mexico from having safe drinking water. In particular, the instructor demonstrated that since not all of Mexico has access to water, the population generally prefers water quantity over water quality, and this has an impact on decisions about investments in infrastructure. On Friday, the group traveled to Palmar del Bravo, Puebla, a rural area in the State of Puebla where Cruz Azul, a major cement producer, opened a \$350 million dollar cement plant. The tour of the plant was extensive and allowed students to see the whole cement production process in an automated system.

On Saturday, the group traveled to Teotihuacan. Here, they reflected about how the pyramids were built without modern equipment, how long it may have taken to build it, and the production rates and human resources required to build Teotihuacan. The group returned to the US on Sunday. The travel-study itinerary is shown in Table 2 below.

Table 2 Itinerary

	Sunday	Monday	Tuesday	Wednesday
Morning	Travel to Puebla	Lecture 1: classroom immersion	Lecture 2: regional issues in construction and engineering	Mexico City jobsite tours
Afternoon		Puebla downtown tour/exercise	Sewer project site visit	
Evening	Pyramid of Cholula		Inter-university Dinner	

	Thursday	Friday	Saturday	Sunday
Morning	Lecture 3: regional issues in construction and engineering	Cement plant tour	Teotihuacan	Return flight to US
Afternoon	Cholula			
Evening	downtown tour/exercise			

Final Project

During the week in Mexico, students were asked to select a topic related to construction to observe its similarities and differences in comparison with US construction practices. The final project for this course consisted of conducting a literature review and writing a paper about the differences and similarities that the students observed during their one week travel-study experience. Table 3 shows the topics chosen by students as well as some of their key observations. Students were encouraged to take pictures during the week abroad and include them as appendices in their papers.

Table 3: Selected topics and student's observations

Topic	Observations from students' papers
Differences in construction safety between Mexico and the US	"If OSHA was to conduct inspections onto a jobsite in Mexico, they would most likely put companies out of business with all the fines they would charge"
The economics of material selection in modern Mexican Construction	"In the United States, wood is readily available and relatively inexpensive, therefore it is the most common material in residential construction. In Mexico...most homes were made out of concrete masonry blocks"
Cross-cultural training programs	"Educating employees on business practices in other cultures not only prepares them for working in other cultures but also helps them to remain competitive when bidding against foreign competition"
Water treatment in the developing world	"Mexican citizens use tap water to grow crops and nourish their livestock; they boil and buy bottle water for drinking"
Water treatment in the developing world	"In the US we take for granted that we can drink a glass of water right out of the tap. Residents of Mexico are reluctant to pay the costs for clean tap water because they are used to boiling water or buying bottled water to cook with or drink."
Current status of the electrical infrastructure in Mexico	"I rural areas I saw many safety violations such as numerous tangled and jumbled wires on power poles. However the high tech electrical system in the cement plant that we visited shows how Mexico is moving away from their labor intensive methods towards more capital intensive methods."
Real estate development in Mexico	"Mexican contractors often team up with world renowned designers to deliver luxury developments for their clients."

These observations demonstrate that the students made a wide range of observations (and in some cases, generalizations) related to the construction industry and to the built environment. The students also demonstrated a thought process about their observations that included economic and cultural factors.

Outcomes and Evaluation

Students completed a travel-study evaluation a week after they returned from the travel-study experience. This evaluation was in addition to the standard course evaluation given at the end of the semester. Six out of seven students responded to the evaluation. The students reported that they were very satisfied with their travel-study experience. The students were asked whether or not they would recommend this experience to their peers and whether or not they thought that the program should continue. All of the students answered yes to both questions. Five out of the six students had traveled abroad in the past. The countries that were most often mentioned were Mexico and Canada. Half of the students had only been to resort areas of the countries that they had visited. This experience therefore provided the student group a more diverse exposure to a foreign country. Students were asked about how the cultural and professional experiences affected them as people and as professionals. Judging from the responses, shown in Table 4, this concentrated, immersive experience has increased the students' cultural awareness and preparation for careers in international construction, while not necessarily making international contractors out of the entire group.

Table 4: Students' evaluations of effects of the cultural and professional experiences

	Strongly disagree	Slightly disagree	Neutral	Slightly agree	Strongly agree
Study abroad has made me more receptive to different ideas	0	0	0	2	4
I have increased interest in social issues	0	0	1	2	3
My interest in world events has increased	0	0	0	4	2
My experience has changed my career plans	0	0	1	5	
My tolerance of other people and customs has increased	0	0	1	3	2
I understand Mexico better	0	0	0	1	5
My ability to adapt to new situations has increased	0	0	0	3	3
My interest in working in international construction has increased	0	0	2	2	2
I feel better prepared to work in international construction	0	1	1	0	4

Conclusions and Lessons Learned

One of the most important lessons learned during the development of the travel-study program is that it is essential to develop strategies well in advance to mitigate risk. In particular, it is helpful to diversify the study abroad experience by working with several companies / organizations when developing the itinerary. The original travel-study itinerary consisted of working exclusively with one contractor to visit their jobsites and offices in Mexico. When this contractor abruptly stopped work in the area of interest, this plan was no longer an option. Fortunately, this happened far enough in advance that the instructors were able developed an alternative itinerary. Another important lesson learned is the need for flexibility during the travel-study. Due to cultural differences, companies in Mexico often take the last minute approach to things. Additionally, in the case of student illness, study abroad leaders need to have strategies to attend to the students' well-being while maximizing the travel-study experience for the entire group. Scheduling of the travel-study program during spring break proved to be very effective. There was no conflict with summer internships and the class was able to meet weekly for eight weeks to prepare students for the experience. The short time frame for the experience requires rigorous planning and a fast pace, but opens students' eyes to the opportunities and environment abroad with ample time to prepare during the half semester in advance of the trip and to reflect in the half-semester after the trip. In addition, this format provides an eye-opening cultural and professional experience for students who may not be interested in committing to a career in international construction, and hence may not be willing to study abroad in a longer format course of study.

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