

Culture Shock: Preparing Students for Globalization of the Construction Industry

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Out of 92 students surveyed in a third year Construction Management course at Colorado State University none of the respondents answered that they had extensive exposure to international cultures in a classroom setting. In keeping with the University mission to achieve excellence in international education in all its instructional, research, and outreach programs, a construction management course was infused to implement a multidisciplinary and multicultural experience. Construction management, interior design, engineering and landscape students were combined into teams with international students and other members of the international community. These teams were challenged to propose design and construction solutions for a new residence. This paper shares the course procedure, infusion techniques and the results of a three year accumulation of course exit surveys from this course. Students and faculty involved with the course support the need for future integration of international opportunities in the classroom setting.

Key Words: Global, International, Multi-cultural, Communication Techniques, Course Infusion

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The current process of construction management has changed dramatically to include the development of specialists, advanced technology, and complex cultural relationships (Gould, 1997). It is becoming more imperative that faculty seek ways to prepare students for the globalization of the industry. There are three major reasons that faculty should strive to incorporate cultural awareness in course content: 1) to facilitate successful project management; 2) to prepare for the adoption of an international building code by the year 2000; and 3) to provide expertise in technical communications with an international market.

Successful construction project management depends on the ability to collaborate. Gould (1997) found that two out of four reasons for the lack of success in construction project management are misunderstanding of cultural differences and ignorance of collaborative techniques. He goes on further to state that “construction is also more of a service industry than a manufacturing or product based industry” (Gould, 1997, p. 8).

Along with the need to facilitate successful project management, an International Building Code (IBC) will be released in two years. The International Code Council (ICC) was founded in 1994 to “develop a single set of comprehensive and coordinated national codes...” (Allen, 1997, p.8). The major catalyst was international trade. To compete with regulatory standardization, the United States must present a unified front (Allen, 1997).

A third, and compelling reason for cultural infusion in the classroom setting is to provide a viable background for technology linkages between foreign countries. The National Research Foundation states that young professionals will be required to comprehend the connection between technology and culture, as well as understand foreign languages and regional differences (Mead, 1997). Construction firms are no longer limited geographically by communication systems. Project overhead has been reduced by technology transfers between distant locations (Moavezadeh, 1991).

Although the construction industry recognizes the need to adapt to a global economy, students at Colorado State University (CSU), and undoubtedly many other universities, receive limited exposure to foreign cultures in the classroom setting. Three years of careful observation of a course in architectural and construction planning, showed there to be only five international students out of a total of approximately 180 enrolled in this course--which is required by two major programs. In addition, exit survey results revealed that extensive travel to foreign countries, and exposure to visitors from foreign countries in home and work settings was virtually non-existent for the majority of students.

The following paper outlines the course procedure, infusion techniques and exit survey results. Faculty involved with the project faced many unforeseen challenges. Most of the difficulties arose from communication barriers and disrespectful attitudes towards foreign practices. These experiences send a strong signal to construction educators to adapt their courses to promote cultural awareness.

Course Procedure

Students in Construction Management and Interior Design are required to take a four-credit lecture/lab course entitled “Architectural and Construction Planning”. Content for the course includes: Building design concepts, project planning and working drawings applied to wood frame residential structures, and investigation of alternative building systems. In preparation for the course, students are required to have one to two semesters of construction graphics and materials and methods of construction.

Traditionally, faculty who offered the course introduces students to all phases of residential design from concept, schematics and design development to construction documentation of a house. Each student was assigned a local site and challenged to design a 1,800 square foot residence. The building program varied from instructor to instructor. The common factors between all offerings of the course were that each student was required to design a house and to come up with their own graphic solution.

In 1995, after participating in a yearlong multicultural infusion training program, the process for the course was changed. The course content and products remained the same—houses were still designed and documents were produced. Students, however, were now placed in design teams that represented a cross section of disciplines. Construction management students were required to work with interior design students, and with business, engineering and landscape students enrolled in the course as an elective.

Table 1

Comparison of Course Procedures between the Infused and Traditionally Taught Course

INFUSED	TRADITIONAL
Team-based architectural planning	Individually-based architectural planning
International clients	No Client
Design Review Presentation to Industry	Class Presentation
Structural Overlay with Environmental Systems	No Structural Overlay with Environmental Systems
Individually Prepared Set of Contract Documents with Peer Evaluation	Individually Prepared Set of Contract Documents without Peer Evaluation
Trip to Permit Office	No Trip to Permit Office

The design teams were then assigned one to two “mock” clients. The clients were provided by Colorado State University’s Intensive English Program. The University offers eight weeklong programs to visitors from around the world who are preparing for university education at an American institution. For example, two Intensive English students from Japan might be assigned to a team of two to four CSU students.

Prior to the first day of class, the construction faculty member spent time with the intensive English teacher to determine the best matches for each team. For example, non-traditional aged CSU students might be paired with younger, foreign students. In certain cases, women from Saudi Arabia could not be placed on a design team with men. The day before the mock clients were introduced to the CSU teams, the Intensive English teacher provided them with background on the course and went over a list of potential questions that the design teams might ask. In addition, the international participants were encouraged to share family photographs and floor plans of traditional building construction from their country.

The CSU teams were visited by the Intensive English teacher prior to the initial client meeting. The instructor carefully went over six basic tips for interviewing foreign students/clients. These tips were developed by Elliot Skolnick, graduate instructor in the English program:

1. Warm-Up. Allow your client to get to know you before you begin to ask questions about the building. Many Americans are too quick to start business conversations before addressing the human qualities and needs of individuals. Most foreigners see this habit as extremely rude. CSU students may want to start off the conversation by asking: “How are you? How long have you been attending classes at CSU? What are you planning to study?”
2. Proximity, Touching, Staring. Each culture has its own unique comfort level with personal space. Some cultures (South American) promote close physical contact and touching, while others, (Middle Eastern), do not allow men to touch or stare at women. A gentleman from the Middle East is considered to be rude if he looks into the eyes of a woman. Many American women may find this to be uncomfortable, and disrespectful.
3. Questioning Techniques.

- a. Complex questions—do not ask questions that have two parts or are extremely long.
 - b. And/or questions—“do you like a house out of brick or stone?” This question does not allow the interviewer to find out whether the foreign student likes only brick, only stone or both brick and stone. It is better to say “would you like your house to be built with brick?”
 - c. yes/no questions—some oriental cultures find it rude to say “no”. And Americans may find their Japanese clients are extremely vague. Also, yes/no questions may not provide enough information.
 - d. open-ended questions—these are questions that have no prescribed answers. Sometimes the foreign student has a good command of English and can easily expand on an answer. Often, however, the student is unwilling to provide additional information.
 - e. restate don’t repeat—an American typically makes the mistake of just asking the same question twice, versus trying to understand which words are not easily translated by the client. It is better to search for synonyms or watch for visual clues when a client seems to feel comfortable with the question.
 - f. louder is better—often when a client has difficulty understanding building terminology, the interviewer automatically asks the question more loudly. The client is usually not deaf, just unfamiliar with the wording.
4. Check for understanding. The American students may assume that their client understands scale of spaces. For example, one group was told by their Japanese client that they wanted a 20 foot long children’s room. After further investigation, the client was measuring in “ping”, not “feet”. Fortunately, the misunderstanding was caught before documents were produced.
 5. Cross-Cultural Difference. Spaces and building construction methods vary from culture to culture. Some cultures require complete visual separation for genders, others have spaces dedicated for worship in the home. Most residential construction outside the United States is masonry versus wood frame. Students interviewing clients need to carefully determine differences and advise their client.
 6. Speed, Vocabulary, and Slang. A common mistake for Americans is to speak very quickly and to use slang. Describing the building “footer” can be confusing for the client. One team said that their client did not know what a fence was—so students were challenged to draw or describe the object.

The client meetings were set up to take place in the classroom for one to two hours per week for six weeks. Teams and their clients could meet at the selected site, visit model homes or go to construction sites. It was also a course requirement to share one social event with the client. Sometimes the client invited the students to a Japanese restaurant, or cooked dinner and gave a slide show about their country. In one case, a client from the United Arab Emirates was taken to a Fraternity house and served spaghetti.

Information collected by the design teams from their client was compiled with additional data from Web sites, library collections and interviews with additional international members of the community. Site conditions, zoning, codes, covenants, mechanical/ electrical/ plumbing requirements also were required to be incorporated into the design. The goal was to involve students in all aspects of a planning process as closely as possible. Project notebooks were kept by each team that recorded meeting minutes, phone conversations, project data and weekly team progress evaluations.

The sixth week of the course, design teams and their clients were required to present their solutions to a design review panel made up of practicing professionals from the Fort Collins community. Realtors, architects, engineers, and construction managers evaluated the students' proposals and offered feedback for changes. Students conducted peer evaluations of each team's presentation. Three-dimensional massing models were constructed—complete with contours and site features. A schematic design drawing set was required for submission and evaluated by the course instructor.

The remainder of the course focused on construction planning. Students spent one week making design changes and producing a structural report. Teams had to select a structural system, determine joist size and spacing, calculate structural loads and spans for bearing capacity, size girders and column spacing, indicate load bearing walls and header dimensions. Foundation and framing diagrams were produced for each level of the house. The framing diagrams were then overlaid with proposed mechanical, electrical and plumbing systems. The instructor evaluated each team's submission for accuracy and correctness.

Once the design was modified to incorporate the design review board's comments and building systems analysis, students individually drew or fabricated models of their house. Specifications and schedules were produced. Upon completion of the construction drawing set, students visited the building permit office for a tour of the facilities and were given a lecture on the permit review process. The course thereby, reflected each aspect of the architectural and construction planning process prior to start of construction. Cultural sensitivity and collaboration were integrated into the course procedure at every stage of the course.

Infusion Training and Techniques

As part of the University mission, the Provost's Office sponsors a multidisciplinary group of faculty, staff and administration in a yearlong training process. The primary objectives of the training (now in its tenth year) are to:

1. Acquire knowledge that leads to the development of sensitivity to human diversity;
2. Help address the diverse student audience;
3. Improve the depth of courses by infusing content with multicultural references;
4. Develop an annotated bibliography on diversity issues;
5. Disseminate to colleagues ways in which curriculum can be modified;
6. Evaluate the impacts derived by students and faculty from modification of the course.

Participants of the yearlong training commit to attending retreats, monthly seminars, and social events that incorporate cultural issues. Each faculty member is assigned a mentor and follow-up on course procedure is required. A course that is traditionally offered in the program curriculum is infused. The majority of faculty members introduce cultural aspects through literary sources and group activities.

The architectural and planning course highlighted in this paper however, is unique in that it involves students with real people from foreign countries. This difference holds students accountable for application of communication/collaboration techniques—since their house plans reflect a visual understanding of their client’s needs. Design teams had to understand scale, placement and types of objects, as well as building materials and site conditions. A common complaint by the design teams was that their client wanted to place a high masonry wall around the property for security reasons, or that their client wanted a separate entrance for men and women. Many clients did not believe in attaching a garage. These requests highlighted tangible cultural differences.

The Results

Students enrolled in the Architectural and Planning Course were asked to complete an exit survey (instructor prepared items) following their final client meeting. The responses from 92 questionnaires submitted over the course of three years were documented. Data for three out of eight of the survey questions have been tabulated.

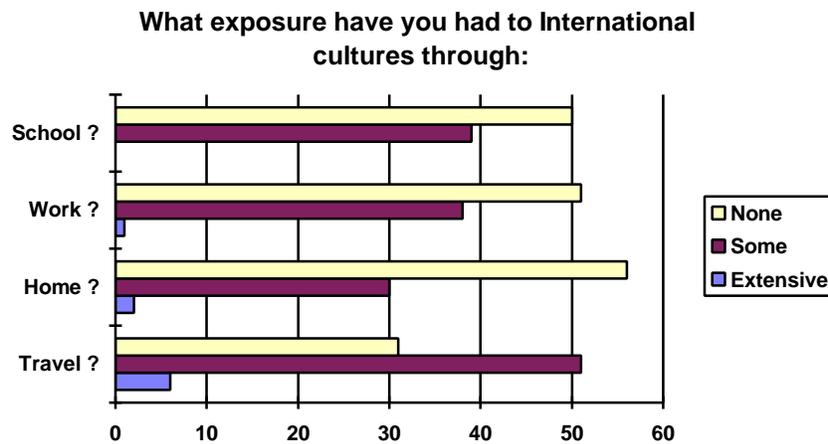


Figure 2. Number of Responses to Level of Exposure to International Cultures

1. School--Students who responded that they had *some* contact with international cultures through a school setting generally stated that “my school had a foreign exchange program”, or “I took a foreign language class”, or “I studied history”. In no case did respondents say that they had previous experience working on class projects with international students or members of the community. Many students who marked *none* on the survey noted that the infused course was the first time that they had exposure to an international culture.

2. Work—Students who responded that they had *some* contact with international cultures through work stated “my job employed people from Mexico”, or “I worked in a Mexican restaurant”. Students who had *extensive* contact replied that they worked in a foreign country or that they worked for a family business run by immigrants.
3. Home—students who marked *some* on their response, stated that they hosted a foreign exchange student. Others noted that they “watched TV”. Students who marked *extensive* had a parent or relative living with them from a foreign county.
4. Travel—students who marked *some* had interesting interpretations of the question. One student responded that he/she had been to “Maine”. Another said that he/she went to “Florida”. One wonders if the students should take a geography class or if the United States has such distinct cultures that the people in another state seem like “foreigners. Most students said “I went to Mexico (or the Caribbean) for Spring Break” or that they studied abroad over Spring Break. Students who had *extensive* travel experience generally indicated that they and their family made frequent trips abroad.

The second and third questions on the exit survey relate to the impact of the infused course on their education.

Question 2:

Do you think that there is a need for multicultural diversity training in your education? Yes 79 No 11

Students who replied yes, stated a variety of reasons for requiring the training. One said, “yes, so we don’t piss any cultures off”. Another student answered “yes, because America is the melting pot and foreign cultures can be considered to make significant profit”. The few students who saw no need for the training answered “I don’t plan on working with foreigners”, and, “No, I don’t think it’s relevant to dwell on other cultures, this is the United States.” One student felt “it should be an option...if people don’t want to learn about other cultures, you shouldn’t force them.”

The third question questions dealt with the success of the infusion. Students were asked:

Question 3:

Do you think that your class assignment to work with a foreign student increased your awareness of another culture? Yes 69 No 22

One student who replied “yes”, stated “It opened my eyes that there are several different styles to work with. I have been so focused on American design that I didn’t realize how naive I was.” Another said, “I did not know much about Saudi Arabia until I did this assignment”. A third student replied, “We learned how different other cultures can be from our own, it opened my eyes.” And, lastly, “I thought having foreign students really pushed us to learn communication”.

Students who responded that the assignment did not increase their awareness indicated various reasons. Several did not get to know their clients. Or their client's English was poor. Or, "it was too difficult". Another student said, "My main goal is not to learn about cultures, but the building process". Or, "This is an architecture class, not a culture class".

Conclusions and Lessons Learned from the Infusion Process

Both the Construction Management faculty member and the Intensive English instructors who organized the infusion of the architectural and construction planning course were surprised by the lack of prior contacts between American and International students. The following is a list of some key findings:

1. American students need to be "required" (receive a grade) before they will initiate a contact with an international student. When the course was offered the first year of infusion, students were told to invite their international client(s) out for a social event. None of the students did this. The following years, students were required to write a one page summary about a social event with their client. The paper was collected for a grade.
2. American students need to research their client's respective culture prior to the first client meeting. Some students would come up to the faculty member after the client's country was assigned and ask where the country was located. Many students had no previous knowledge of the customs, language or religious practices of their client's country.
3. Basic rules of etiquette and communication need to be covered. When the course sections were large (over 46 students in a lab section with up to 12 international clients), team meetings with the clients were difficult to monitor by the instructors. Often the instructors found teams were discussing their plan solutions--while completely ignoring their client. Sometimes the client would show up for a meeting (with family photos and cultural information) and none of the design team students showed up for class. (Attendance was required and graded.) In a severe case, two Japanese women shunned a construction management student, because they felt he was rudely commenting about their need for a religious figure to be placed in a space. The women would come to the client meeting and turn their back on the American—as if he did not exist. Fortunately, the Intensive English teacher pointed out the situation and the design team met in private with the construction faculty member and the problem was solved.
4. Encourage American students to apply interview techniques. Some students found that their communication skills with a foreign student were not strong enough to overcome cultural boundaries. This inability to creatively collect information from their client greatly impacted the design team's solution. Other teams greatly enriched the communication process by bringing in photographs of similar projects, magazines of American or international designs. Many students sketched out definitions to difficult words and construction concepts.

5. Follow-up/closure of the event should be required. The international students find that this class assignment is the highlight of their contact with the University. Many have been touched by the efforts made on their behalf by the American students. Some of the international students cried during their presentation, because they had never felt so appreciated in the United States. Most of the design teams presented professionally bound copies of the house solution to their client on the last day of class.

Table 2

Comparison Between the Advantages and Disadvantages of an Infused Course

ADVANTAGES	DISADVANTAGES
American students have a “real life” experience with international students	Course preparation and coordination is too time consuming. Faculty members spend a great deal of time inviting guests, setting up final field trip, and coordinating student teams with the Intensive English Program instructors.
The Interview techniques presented at the beginning of the course provide students with tools for communication.	Method of evaluation. Team projects often do not reflect the quality of individual effort. (note: by the third year, grades were based on an <i>average</i> between individual grades for quizzes and exams and combined with team scores. Also, peer reviews were implemented.)
Students have a basis for comparison between their lifestyle and that of another culture.	Team assignments are important for a successful outcome. Some teams were poorly matched by personality, discipline, ability and compatibility with the client.
Creation of a product allows for immediate feedback as to the success of the communication.	Lack of education in team problem solving skills led to poor time management and communication. Lack of written communication skills or verbal skills also affected the quality of the project solution.
Students are introduced to construction materials and styles utilized in other countries. Including methods of measurement.	Students may have difficulty making decisions as to whether they should follow covenant guidelines or their client’s directives.

The advantages outweigh the disadvantages if a construction program is committed to improving undergraduate education in cultural diversity of collaboration experiences. In addition, many disadvantages could be resolved by preparing students for the infusion in prerequisite courses. Overall, the infusion techniques for the architectural and construction planning were regarded as highly successful by the Intensive English Program. Faculty and international students have twice nominated the project for a university-wide award for diversity. Some American students and their clients maintain relationships outside the classroom. A few students have been invited to travel to their client’s country.

Students involved with the course infusion have been prepared for globalization of the construction industry. As stated in the introduction, facilitation of successful project management “depends on the ability to collaborate”. Students working in teams had the opportunity to apply and test their skills to a real life design/build project scenario. Participants that challenged themselves to study construction methods and materials utilized by their client’s country prepared themselves for a competitive construction market guided by a set of international codes and system of measurement. Some students even drew their plans in metric scale. Students who participated in the infusion project also may be able to eliminate costly construction errors involving long distance communication and technology transfer. Design teams practiced communicating with their international clients via email and phone.

In conclusion, the infusion project supports the need for integration of international opportunities and collaboration in the classroom setting. Whatever the outcome however, students, clients and course facilitators are challenged to be sensitive to the needs of others, whether they are cultural differences or basic personality traits. And, as Gould (1997) reminds construction management educators “Even though large products often are constructed, a project’s success is more dependent on the people involved than on a particular piece of equipment.”

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