

## **Preparing the International Construction Practitioner**

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### **Abstract**

The construction world gets smaller each day, in part due to the increasing number of multinational companies letting construction contracts in various parts of the world. This situation is often addressed in University-based construction education programs in the form of a semester- or quarter-long course. The time has passed when such a course could be viewed as elective, and therefore not important to most students graduating with construction-related degrees. Educators must now impart the skills necessary for graduating students to work in varied geographical regions; for companies owned by parties around the globe; on projects staffed by non-homogeneous and culturally-diverse groups speaking more than one language; for a client that could be based anywhere in the world. To properly address this challenge requires that construction-related faculty build international networks and establish a structure that readily enables them to adequately prepare their students for today's global construction industry. Establishment of the international construction education team (ICET), within an internationally recognized body such as the Associated Schools of Construction, is recommended. Several key focus areas to be considered by ICET are proposed including faculty exchange programs, faculty and student e-mail and snail-mail exchange programs, contractor participation, course content and objectives, textbook selection criteria, web-based and other sources, and student team project selection. Experiences gained while teaching graduate-level international construction courses are included.

### **Keywords**

International Construction, ICET, construction pedagogy, multinational

### **1. Introduction**

The faculty that are preparing tomorrow's construction practitioners face tremendous challenges. In the past, construction education could focus on local markets; spending little, if any, time on international issues that most students would be unlikely to encounter upon graduating. Such classrooms were often filled with students from the same cultural and geographic background. The classroom and construction industry have changed. Today globalization affects the way that all business is conducted. From internet-based project management to the increasing influence of multinational corporations, graduates of construction programs must avail themselves of a broader scope of education. Although educators more often use traditional approaches to teach international construction subjects, new strategies are necessary that take advantage of current technology. Faculty has an increasing responsibility to increase its own exposure to construction practitioners and teaching colleagues in other parts of the world. One way to address this need is to establish efficient networks that facilitate successful international components for all construction education programs.

Recommendations are offered that can increase educators' ability to prepare graduates for the diverse construction marketplace. At the core of these recommendations is the establishment of the International Construction Education Team (ICET), a group that can effectively mitigate the obstacles preventing more effective international construction education. Experiences from graduate classes on the subject of international construction are followed by several conclusions.

## **2. Traditional Approaches to International Construction Education**

Long ago construction education could only be done face-to-face as the master craftsman guided the activity of his apprentices. Learning changed dramatically when such knowledge was converted to written form and the modern classroom emerged. Today, many construction educators utilize traditional approaches to incorporating international construction into their curriculum. These approaches include the textbook, field trip, guest speaker, and the "fend for yourself" project approach. The traditional approaches that follow have limitations, whether used alone or in combination.

### **2.1 The Textbook Approach**

With the textbook approach, textbooks are used to convey the many complex issues surrounding international construction. In the better textbooks, case studies present synopses of large international projects in various parts of the world (Mawhinney, 2001). Other textbooks, claiming to present international construction material, focus exclusively on one country or a very small geographic region. Unfortunately, the fact that a book provides helpful information does not certify its appropriateness as a textbook. Some such books may be terrific reference material but, like a dictionary, their sole use in the construction classroom is hardly conducive to learning. Other excellent books, such as "Hong Kong Bank: The Building of Norman Foster's Masterpiece," present valuable and detailed perspectives on a single project (Williams, 1989).

### **2.2 Field Trip Approach**

Field trips to various countries are a terrific way to learn about international construction. There are exceptional faculty members that spearhead such efforts (Kramer, 2003). However, because of the Herculean effort required to assemble such trips, they are not very common. The cost of such trips can often deter even the best students. Because universities cannot afford to absorb the cost of sending students around the world, students must, to a large degree, absorb the cost of these trips. It follows then that the number of students able to participate in trips shrinks as the cost increases. Then there is the element of time; students often do not have several weeks of "free time". Field trips arranged by universities can demand weeks or months of a student's time. In some universities, large percentages of student populations are prevented from participating in these offerings because they cannot afford to leave their jobs for extended periods of time. Nonetheless, offering these opportunities to students that can afford the costs is beneficial.

### **2.3 Guest Speaker Approach**

Some faculty, experienced and inexperienced, solicit the participation of international construction practitioners as guest speakers. This is an effective way for students to gain exposure to the first hand experiences of practitioners. However, the availability of these professionals is often very limited due to demands of their jobs. Also, by relying on experiences in a particular overseas market that are decades old, they can convey misinformation about the accepted practices of that market or misimpressions about a particular culture.

## **2.4 “Fend for Yourselves” Project Approach**

Some international construction classes place major emphasis on a team project. This approach usually involves assignment of students to small groups (i.e., two to four students per group) that must work together to complete a defined project. These projects challenge the resourcefulness of the student team. Although the internet and its search engines offer some ability to search for and find international construction contacts in other countries, establishing communication can be quite a different matter. The limitations of traditional teaching approaches multiply with increased globalization, giving us reasons to change.

## **3. Reason to Change**

There are a number of reasons to change the way international construction is taught. Some of the reasons include increasingly non-homogeneous populations and advancing technology.

### **3.1 Non-Homogeneous Populations**

Non-homogeneous populations are growing as an artifact of the overall mobility of people around the world. The advances in transportation systems during the latter half of last century has made travel and relocation much more convenient and, as a result, more common.

#### **3.1.1 Classroom Diversity**

Students from different cultural backgrounds, different countries, and having different languages are all converging on schools around the globe. It is this diversity that demands approaches to teaching international construction that maximize the use of these divergent perspectives. At the same time, faculty are no longer constrained to teaching in one country. It is entirely possible to have a Pakistani faculty member teaching an American student in a Hong Kong University. Failing to address the different perspectives offered in this kind of setting would border on negligent.

#### **3.1.2 Industry Diversity**

The tendency for professional construction personnel to move from one job location to another, while not a new phenomenon, is increasingly required. Financial considerations, for the construction company and the individual, are often the driving force behind these relocations. In the U.S., and elsewhere, it is not uncommon to have three to four nationalities working on the same construction project. Such environments, where several languages are often used, demand excellent communication, interpersonal, and team-building skills.

### **3.2 Company Diversity**

Construction companies and their clients are increasingly connected with more than one country.

#### **3.2.1 Diverse Construction Company Ownership**

More construction-related companies in the U.S. and elsewhere are being acquired by business entities outside the U.S. One example of overseas ownership is the American company Turner Construction, purchased by the German company Hochtief AG in 1999 (About, 2002). In the case of J.A. Jones, purchased in 1979 by a now bankrupt German company, Philipp Holzmann AG, is being sold piece-by-piece. Recent offers to purchase the North Carolina-based company have come from Saudi Arabian and

UK companies (Howard, 2002). A final example is Beers Construction, formerly a US company, purchased in 1994 by the Swedish company Skanska AB (Beers, 2002).

### **3.2.2 Global Clients**

Multinational companies continue to offer construction contract opportunities to contractors around the world. Some suggest that winning a contract with a multinational company may open doors to other contracts with the same company in other locations (Kangari, 1997). In addition to experience, these winning construction companies must have a well-educated group of employees. The employees must be conversant with the challenges of the international construction marketplace, in order to have a reasonable chance of making a profit. Multinational companies like Duke Energy International, Pepsi-Cola International Bottlers, Coca-Cola International Bottlers, Chevron Petroleum Company are a few of the many companies that offer international construction contract opportunities (Duke, 2002; Zafer, 2003).

### **3.3 Technology**

There are technologies that have enhanced available construction information and the ability to communicate. Digital cameras capture the detail of construction conflicts in electronic form; no longer does one have to put up with the limited ability of Polaroid cameras or otherwise wait for film to be processed. Instead, the internet today allows images capturing such conflicts to be sent to designers in offices half-way around the world, where design decisions for resolving the conflict can be made. The internet also allows for much more frequent and reliable communication in many parts of the world. Not only can messages be sent at light speed over the internet, but digital photographs and drawing files can also be transmitted. The need to have paper drawings decreases each year as computer graphics and CAD software improves. In some parts of the world, project management and team coordination is done via increasingly sophisticated web-based project management tools. These technologies are just a few of many that can support new approaches to teaching and learning international construction.

## **4. A Graduate Teaching Experience**

A 16-week graduate-level international construction course was taught during the Spring of 2002 and again during the Spring of 2003 at Southern Polytechnic State University in the US town of Marietta, Georgia. The 2002 and 2003 classes had an equal number of native U.S. students and students that were studying in the U.S. but were from another country. Students were put in teams that included at least one native U.S. student and at least one student from another country. In addition to twice-weekly lectures covering material from textbooks, case studies, videos and guest speakers, the students were given a 16-week team assignment. Each team was to act as a general construction or construction management company that was interested in expanding operations into an overseas market. Once the market was selected, the team was to explain how to establish themselves in that market and explore a particular project. The students were encouraged to contact practitioners, government entities, or academic institutions in the target country that could assist them with their projects. While the internet and traditional sources (e.g. journals, books, etc.) provided some valuable information to the teams, gaining input from human contacts proved far more difficult. Without an existing network, students did not have sufficient time to establish meaningful dialogue with knowledgeable contacts. The professor's network also proved to be insufficiently broad to accommodate the teams' interests in diverse locations such as Canada, Chad, China, Egypt, Japan, Malaysia, and Thailand.

## **5. Recommended Changes**

There are several changes that can be made to improve the educational preparation that students receive in universities around the world. To effect these changes, the International Construction Education Team

(ICET) should be formed. ICET would be comprised of a group of educators and practitioners committed to working together for the benefit and improvement of construction education. This group should be created within an internationally-recognized body, such as the Associated Schools of Construction. While formal structure is important for ICET to function and have positive impact, encouraging informal and frequent dialogue is suggested. The objective is to avoid the creation of an elite club that is only accessible by a few. Instead, ICET would help to promote regular communication between construction professionals and educators all over the world. ICET could establish a web site where individuals could register under the country they live and work in. Annually, ICET could distribute to participating universities updated lists of industry and academic contacts from Algeria to Zimbabwe. Preliminary recommendations for ICET include faculty exchange programs, use of e-mail, fax and “snail” mail exchanges, and the participation of construction practitioners.

### **5.1 Faculty Exchange Programs**

International faculty exchange programs are more likely to flourish when faculty interaction crosses international borders. ICET can facilitate such interaction in several ways. ICET can serve as a hub through which international conferences are organized, conference announcements are shared, and other forms of communication are encouraged.

### **5.2 Mail Exchange**

The network established by ICET would benefit student learning. By having access to helpful and knowledgeable construction industry contacts, students could experience first-hand some of the difficulties of communicating across cultural and geographic boundaries. As an example of the two-way nature of this tool, students could also gain experience as “consultants” for students in other countries; providing local information and perspectives.

### **5.3 Practitioner Participation**

ICET’s network can also engage construction professionals. Industry contacts can interact with students; sharing lessons learned and strategies for meeting the demands of international projects, clients, and cultures. Students can benefit greatly from directly hearing about the challenges faced by individuals working on projects outside of their home countries. Companies benefit from exposure to intelligent students that are gaining sorely needed skills and background.

### **5.4 Course Content Guideline**

The one hundred member ICET can also facilitate the development of a recommended curriculum for students of international construction. The team can facilitate preparation of guidelines for courses dealing with international construction. For example, members can offer textbook recommendations; identify the most important subjects to cover in an international construction course; and highlight examples of “best pedagogical practices”.

### **5.5 Student Team Project Selection**

Student projects present another opportunity for ICET to broaden learning experiences for construction students. Via an ICET web site and annual register, ICET can be instrumental in connecting eager student teams in various countries with other students, faculty, and practitioners in different areas of the world.

## 5.6 Sources for the Educator

The number of construction educators with extensive international construction experience is limited. As a result, most of these professionals can benefit by having the added global resources available through ICET. From information on local materials and procurement practices to local customs and case studies, the educator can bring new life to an otherwise less engaging course.

## 6. Conclusions

There is a growing disconnect between what is happening in the construction industry and what is happening in the classrooms of construction educators. Construction today demands internationally conversant practitioners. At the same time, construction educators and their students are limited in their ability to solicit input from colleagues, students and practitioners in distant places. No further excuses should be made for the lack of easily accessible communication links between the construction people of different nations. As a remedy to this situation, and using readily available information technology, ICET can offer the global construction community (i.e., educators, students, and professionals involved in the construction industry) better opportunities for preparing the international construction practitioner.

## 7. References

- About Turner: The Turner corporation announces record results for the year ended December 31, 2001* (2002). Retrieved June 28, 2003 from [www.turnerconstruction.com/corporate/content.asp?d=50&p=9](http://www.turnerconstruction.com/corporate/content.asp?d=50&p=9).
- Beers Construction announces name change* (2002). Retrieved June 28, 2003 from [www.constructech.com/online\\_news/news\\_0202/020201IN.asp](http://www.constructech.com/online_news/news_0202/020201IN.asp).
- Duke Energy International awards Tasmanian gas pipeline five mile bluff to Port Latta construction contract* (2002). Retrieved June 28, 2003 from <http://www.dei.duke-energy.com/newscenter/2002/010202.asp>
- Howard, J. (2002). *Bidding for J.A. Jones heats up; Saudi prince may be among suitors*. Retrieved June 28, 2003 from [sanjose.bizjournals.com/triad/stories/2002/12/02/focus6.html?t=printable](http://sanjose.bizjournals.com/triad/stories/2002/12/02/focus6.html?t=printable).
- Kangari, R. and Lucas, C. (1997). *Managing International Operations: A Guide for Engineers, Architects, and Construction Managers*. New York: American Society of Civil Engineers (ASCE) Press.
- Kramer, S. (2003). Abstract for *International Construction: A European study abroad class designed for American building science students*. Retrieved June 5, 2003 from [www.scpm.salford.ac.uk/bear2003/abstracts/Kramer.doc](http://www.scpm.salford.ac.uk/bear2003/abstracts/Kramer.doc).
- Mawhinney, M. (2001). *International Construction*. Oxford, England: Blackwell Science Ltd.
- Williams, S. (1989). *Hongkong Bank: The building of Norman Foster's masterpiece*. London, England: Little, Brown and Company.
- Zafer Construction Company* (2003). Retrieved June 28, 2003 from [www.zafer.com.tr/framealt.htm](http://www.zafer.com.tr/framealt.htm).