

## **Higher Education: A Global View of Construction through Study Abroad**

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### **Abstract**

The department of Building Science at Auburn University offers students the chance to expand their horizons by participating in a construction-specific study abroad course during summer semesters. Successful study abroad thesis trips have been conducted in summer 2000, 2002, and 2004. Growing interest over past trips prompted faculty to propose a yearly study abroad alternative thesis experience beginning in summer 2005. This yearly process engages instructors in a two year cycle; first year instructor apprenticing with second year instructor, with one instructor rolling off and one coming on each year. This provides opportunity for many faculty members to participate without exhausting a few. Over time this should generate broader support within the department and a more collective sense of ownership of the program. In addition it creates excitement among students regarding the value added to their degree from unique learning experiences offered by construction study abroad. This paper describes the course background, structure, rationale, and lessons learned from previous courses.

### **Key Words**

Construction Education, Undergraduate Thesis, Study Abroad, International Construction

### **Introduction**

Many academic disciplines outside of construction education have successfully used international study abroad programs as an effective means of broadening college students' academic, personal, and professional views of the world (NASFA, 2003). The department of Building Science at Auburn University offers students the chance to expand their horizons by participating in a construction-specific study abroad course during summer semesters.

Studying abroad is an invaluable experience – for many students, a once-in-a-lifetime opportunity to live in a foreign country, to experience its customs and culture, and to adapt to new surroundings (Study Abroad, 2003). Traveling through Europe introduces students to new environments and knowledge that can best be gained from *experiential learning*. Knowledge gained through these experiences prepares students to thrive in a global construction marketplace. This paper describes an *undergraduate thesis course* designed to

expose students to international construction and also use qualitative research methods to study a specific construction-related topic. Course history, rationale, structure, and lessons learned will be discussed.

## **1. Background and Context**

Auburn University Building Science students typically enroll in a capstone course during last semester of their senior year as part of required coursework. This traditional thesis course involves using an actual set of construction documents (plans and specifications) to create a complete estimate, bid proposal, schedule, and project management reports. An alternative senior thesis project is now offered, which involves analyzing, synthesizing, and reporting on information collected during a 5-week European study abroad course. The traveling study abroad course is offered to senior level undergraduate students. Students are required to write an original research paper, using the ASC Journal style guidelines (ASC, 2003), in the range of 40 to 60 pages excluding copies of original source documents, appendices, and references. In addition, students are required to create a 30-minute oral presentation, which is presented and defended to a jury of Building Science faculty. Final evaluation of student accomplishment is based 60% on written thesis, 20% on oral presentation, and 20% on performance in a two-credit preparation class (prep class) during the semester before the trip.

The overall goal of the study abroad experience is to expose students to *construction-specific* companies, projects, practices, and professionals beyond US borders. There are typically three construction-related visits per city (e.g. construction projects, material suppliers, construction firms, equipment manufacturers, etc.). Students interview construction professionals and collect data from top 25 international construction firms (ENR, 2002). Some previous visits include: marble quarries in Carrara, GPS mapping in Venice, concrete pump manufacturers in southern Germany, renovation of the U.S. embassy in Rome, renovation of the War Cabinet Rooms in London, and the construction of a major urban development in Copenhagen. Also, there are cultural events in each city (e.g. ballet, opera, concert, musical, etc.).

## **3. Structure of the Alternative Thesis Course**

In addition to the 5-week summer study abroad experience, all students are required to participate in a study abroad prep class offered during previous spring semester. The prep class is designed to be interactive on many levels. Students participate in developing itinerary for summer travel, scheduling events in each of the cities visited to complement their research topics. During course itinerary phase, students are responsible for contacting construction firms, material suppliers, and equipment manufacturers. Through this process, the itinerary is continuously revised to include construction visits that students arrange. Past *student leaders* have been directly responsible for visits to offices, and construction sites in each of the many cities visited. Other scheduled construction-related visits are arranged by lead instructor, who also arranges cultural events for each city.

A high priority is placed on relating students' research topics with study abroad construction visits. This enables students to collect data for their research topics (e.g. concrete placement methods & equipment, project delivery methods, immigrant labor, historic preservation techniques, adaptive reuse of buildings) as part of the activity. Students collect original source documents (e.g. transcribed interviews with key

executives, photos, company brochures, company training material, videos of visits, etc.) during the 5-week traveling half of the 10-week summer semester. After returning from Europe, the second 5 weeks of the semester is dedicated to completing a written thesis.

In addition to attending all events, students are required to participate in class by asking questions and soliciting information specific to their thesis topics and documenting information gathered. For visits, students e-mail their questions to companies prior to the visit, which allows companies to respond with more appropriate and detailed information. Documentation process includes audio taping and transcribing interviews with construction professionals, videotaping or photographing specific equipment, methods or materials and collecting, compiling and assimilating technical data.

## **4. Lessons Learned**

### **4.1 Transition to Yearly Program**

Previous trips were in summer 2000, 2002, and 2004. For the 2004 trip, lead instructor made presentations to student convocations; ten students applied and were accepted for the trip. Growing interest over three past trips indicated a yearly trip might be desirable. The decision was made to plan for a yearly study abroad special thesis offering. Process would engage instructors in a two year cycle; first year instructor apprenticing with second year instructor, with one instructor rolling off and one coming on each year. Some of the benefits of a yearly program are:

- experienced instructors train new instructors, providing opportunity for many faculty members to participate without exhausting a few,
- faculty responsibilities and supervision are shared while on the trip,
- broader support within the department grows through a collective sense of ownership,
- continuous improvement is encouraged by passing along lessons learned among faculty,
- interest and enthusiasm is sustained as prospective participants interact with previous ones.

### **4.2 Planning for 2005 Trip**

After much discussion during and following completion of the 2004 program, instructors met to review past trips and plan for the next one. Instructors felt that future success of the program required some fine tuning. In particular instructors were disappointed with behavior of a small number of students and with quality of their thesis projects. One of the problems identified was a lack of motivation and preparation among two or three of the ten students. This presented many distractions during the trip for motivated students. After reviewing final thesis documents instructors also identified some writing deficiencies. To address these problems, instructors proposed to recruit more dedicated and capable students, and to institute better measures to prepare them to succeed. This involved encouraging excellent students to participate in the program. Instructors believed that they must compete for students with traditional thesis course, as well as earn approval from fellow faculty members who are skeptical about the learning value of a study abroad thesis experience. For the program's continued growth and success, instructors believed it is important to actively recruit motivated faculty and students to participate in the study abroad thesis experience.

### **4.3 Recruiting for 2005 Trip**

For the 2005 class, instructors sought to create a climate of excitement and promote the special nature of the study abroad thesis program. They felt that they could best accomplish this by recruiting heavily from a large number of eligible students, from which a few highly motivated and capable students would be

selected. Based on previous experiences with a traveling group, instructors decided they could comfortably manage 10 students with two faculty members.

The primary recruiting instrument for both faculty and students was a 30-minute PowerPoint presentation featuring images of faculty and students traveling to exciting places abroad on previous trips. Following the presentation at a fall faculty retreat, several instructors expressed immediate interest in participating in future trips. The 2005 lead instructor visited each class of seniors eligible for special thesis with the PowerPoint presentation. At this presentation, instructor answered questions about the trip and encouraged good students to apply for an interview. Throughout the presentation the special status and unique learning experiences of the study abroad thesis was emphasized. Within two weeks of the classroom presentations, 15 students had applied to be considered for selection. By interview time, two students had withdrawn, leaving 13 for interviews.

#### **4.4 Screening of Applicants**

To reduce the applicant pool from 13 to 10 a screening process was developed consisting of three elements: a student application essay, one-on-one interview with instructors, and review of preliminary applicants by entire Building Science faculty.

##### **4.4.1 Application essay**

This essay provided a test of student writing ability as well as an indication of their motivation level. Students were gathered in a classroom and asked to compose a 45-minute spontaneous essay in response to the following questions:

- Why would you like to participate in the study abroad thesis experience?
- Discuss one specific construction issue you might like to investigate while traveling abroad.
- What skills and insights would you bring to the study abroad group that will make the trip a better experience for all with you in attendance?

##### **4.4.2 Student interview**

Each student was interviewed by instructors going on next year's trip. These were private interviews conducted with each of the 13 applicants. Questions asked were these:

- What brought you to study Building Science at Auburn University? [Here we were looking for motivation to study construction. Answers ranged from *"I have been building all of my life..."* to *"I started in Architecture and didn't succeed there so I thought I would try Building Science."*]
- What are your interests in construction? [We were looking for potential topics for the student.]
- What are your career goals after graduation?
- How could the study abroad experience contribute to these goals?
- Would you describe yourself as self-motivated or as a team player? [Another fishing question designed to be answered as *"Ability to do either depending on what circumstances dictate."*]
- What do you think you will be missing from traditional thesis by participating in special thesis? [This was a question designed to catch students who might be interested in attending special thesis to avoid traditional thesis. Answers ranged from *"I don't think I'll be missing anything, since I already know that entire material well..."* to *"Do you think I will be missing anything?"*]
- What topic are you most interested in studying while traveling in Europe? [Knowing that it is very early we wanted to see if students already had a specific idea or if they were open to formulating one based on more thorough research. Answers ranged from *"I have always wanted to study the construction of bridges"* to *"I don't feel prepared enough to say, however I am confident that with some time for research I can come up with a great topic"*. to *"I have already been discussing with my finance professor a topic that will probe the financing of construction in Europe vs. US"*.]

- Have you traveled abroad before? [Answers ranged from “*I grew up in Germany to I’ve never traveled outside of the Southeast US.*”]
- What can you bring to this team travel that will make the trip a better experience for all? [Answers ranged from “*My sense of teamwork and fair play.*” To “*My sense of humor and ability to lead in difficult circumstances.*”]
- How will you finance the trip? [We wanted to make sure students understood all associated trip costs and were financially able to incur them. We also are considering having a scholarship in the future dedicated to supporting a qualified student financially unable to participate.]
- What do you think would be the greatest benefit to you by participating in SA 2005?

#### **4.4.3 Faculty Input**

Preliminary selection was made and before announcing to students, faculty members were asked if they had any experience with these students that they felt should prevent them from participating in the study abroad thesis. No major objections were voiced, with most responses being cautionary concerns about social skills of one or two of the students.

#### **4.5 Selection Criteria**

Criteria for selection were based on quality of the written sample using a point system for evaluating the writing, and a very subjective impression from the one-on-one interviews with students. Among the subjective interview criteria were:

- Attitude and enthusiasm for the traveling thesis experience.
- Balance of independent learning/leadership ability vs. team play/follower ability.
- Performance in key indicator courses for success in BSCI program, particularly Project Controls courses. All students selected had earned at least a B in all of their project controls courses. Students denied had earned a C or lower. It was felt that these students had more to gain by staying with traditional thesis than with study abroad thesis.

As verification that the selection process contributed to elevating the perceived value of study abroad thesis, students were very excited and appreciative to have been selected. This was communicated frequently to their classmates, family members and friends. Several employers interviewing these seniors noted high degree of student enthusiasm and pride regarding their study abroad opportunity.

### **5. Study Abroad Preparation Class**

Unlike other university sponsored study abroad classes that have pre-selected itineraries, the Building Science students *develop their own itinerary* during a preparation class under the guidance of the instructor leading the trip. Students participate in selecting specific countries and cities that will be visited during summer travel. The instructors in charge of the course help students arrange other construction-related visits in addition to arranging cultural events for each city.

Compromise and teamwork are an important part of this planning phase, during which students become very familiar with each other’s thesis topics, and look out for one another as they search for sites. Site visits are selected that offer the greatest benefit to the greatest number of students. Europe is relatively small and public transportation is fast and reliable in most places. This makes it possible for the class to split into smaller groups if necessary to cover more site visits.

Another part of the prep class was preparation for cultural and historical context through selected readings. Books assigned during spring semesters have been Irving Stone's *The Agony and the Ecstasy*, Ross King's *Brunelleschi's Dome*, and David Billington's *The Tower and the Bridge*. Students are tested on this material before spring semester's end. In summary, the prep class has been an extremely valuable exercise in preparing both students and faculty to gain maximum benefit from the five week tour of Europe. It also engages students and faculty early in the travel process and builds important relationships that prove invaluable during the many adventures of a long journey.

Specific goals of study abroad prep class are:

- To prepare students to be successful in study abroad experience as measured by their final document. Example documents are provided for students to use as a model.
- Maximize the benefit gained from travel abroad – getting students properly prepared with contacts, scheduled visits, etc.
- Develop research and writing skills as well as travel skills.

Specific prep class components are:

- Biweekly meetings
- Discussion of readings and testing
- Ongoing refinement in developing a research hypothesis, thesis statement and abstract
- Library Research skills - AU CADC librarian – two sessions and 1on 1 assistance
- Research paper writing skills – Writing exercises led by writing composition instructor
- Developing contacts abroad via email and telephone
- Practice with WebCT online course components
- Scheduling trip itinerary – student input is significant
- Guest lecturers from faculty experienced in travel abroad on specific places and themes

## 6. Course Outcomes and Conclusions

The overall goal of the course is to expose students to *construction-specific* companies, projects, practices, and professionals that they would never be exposed to otherwise. Another major goal is to *expand* the students' academic, professional, and personal views from *regional to global*. Additional course learning objectives include:

- exposure to different construction methods, materials and equipment
- professional project management practices in international construction
- the unique aspects of historic preservation and restoration projects
- understanding project delivery methods used in global projects
- view world-class performing arts and fine arts
- issues relating to construction craft labor and immigrant labor
- view monumental and historical works of architecture, engineering, and construction
- experience different cultures, currencies, transportation systems and languages

The Building Science faculty is firmly convinced that the study abroad thesis course added tremendous value to the educational experience of not only the students who participated, but to our construction program as well. The department of Building Science intends to continue the study abroad course on an annual basis. By continuing to refine the selection process and raise thesis performance expectations,

the department hopes to build and sustain a thesis alternative that adds long term value to the education of its graduates and improvement of its faculty.

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