Abstract

It is becoming increasingly important for engineering graduates in the US to acquire cultural competency. It is more likely than ever that the twenty first century engineer will interact with people of other cultures many times within their career. One way to develop cultural awareness is through full immersion study abroad programs. These programs give a student full engagement in a culture. However, logistical and language differences in foreign engineering programs can make it difficult for undergraduate engineering students to study abroad and finish their degree within four years. To overcome these logistical issues Grove City College launched an International Study Center (ISC) in Nantes, France in 2006. The ISC acts as an extension campus to GCC which facilitates simulcast classes from the US campus (concurrent instruction). In addition, courses and immersion activities are carried out in partnership with a local French University (ONIRIS). All teaching instruction is carried out in English and allows GCC students to still graduate in the allotted four years. The program is available to mechanical engineering (and non-engineering) students in the fall of their junior year. The ISC has also been enhanced to include faculty lead two-week short courses (in May and June, called intersession courses) and summer internships.

The purpose of this paper is to present the current development of an Engineering Management in International Context Course (ENGR 390) offered at the ISC that plays as an essential role for the semester-long program. In addition, a short term faculty lead version of the course is also presented. The presentation mainly focuses on the aspect of the course that involves cultural and language partnering of Grove City students with students from ONIRIS. Current and past iterations of the course are discussed, as well as future changes.

Introduction

In fall 2006, Grove City College (GCC) launched an International Study Center (ISC) in Nantes, France. The program was opened as a study abroad opportunity for mechanical engineering
students in the fall of their junior year. The ISC acts as an extension campus. Under faculty supervision in France, students reside and take courses via simulcast from the main campus in the US. The year following its inception, the program was enhanced to include non-mechanical engineering majors. It was subsequently expanded to include short term courses and summer internships.

After the program was launched, it was necessary to include a way to enable local interaction. To facilitate this interaction a partnership was established in 2008 with a local French University, ONIRIS (http://www.oniris-nantes.fr). ONIRIS is a University classified in the French education system as a “Grand Ecole” (a high-prestige institution\(^3\)), and offers programs in Food Science Engineering and Veterinary Medicine. The interaction with ONIRIS students is facilitated through their English and Communication Department. Each student “graduating” from ONIRIS is required to obtain an upper-intermediate to advanced level of English proficiency. Therefore, since French proficiency is limited among GCC students, interactive activities are carried out mostly in English. This allows ONIRIS students to enhance their spoken English skills, and for GCC students to make local connections and develop intercultural communication skills without being limited by a deficiency in French. This interaction primarily took place through a course titled “Engineering Management in International Context.” Although interaction with ONIRIS has expanded beyond the context of this course, the purpose of this paper is to present the current development of both the semester long and short term version of the course with a focus on the partnership activities.

Course Development

Engineering Management in International Context (ENGR 390) is a special topics course used mainly in the Mechanical and Electrical Engineering program that was originally developed in 2004 for short-term courses to France. The goal of the course was to expose students to the foundations of intercultural management and intercultural communication. Course meetings took place once a week in the evenings during the semester prior to the international travel. The international travel component then took place as a means for students to visit industrial sites as well as interact with foreign universities. Since then, the course has been expanded to be included as curriculum in the fall ISC program, and is still offered during selected short-term course offerings to the ISC.

-International Study Center Fall Semester

Program Overview

This program involves courses transmitted, live, to France from GCC. Furthermore, courses are taught on site by GCC and ONIRIS faculty members. The program is currently open to mechanical engineering majors and other majors for which the current program course offerings are appropriate. Sixteen students participated in the fall 2010 program; 9 mechanical engineering students and 7 non-mechanical engineering majors. Students take 6 credits of classes that are simulcast from the GCC main campus. The simulcast courses offered for the mechanical engineering majors are MECE 325 (Fluid Mechanics) and MECE 311 (Mechanics of Materials).
This allows Mechanical Engineering students to stay on track with their peers who stay in the United States.

For the non-mechanical engineering majors, there are simulcast course offering for BUSA 305 (Global Business Issues) and HUMA 302 (Modern Civilization from an International Perspective). On location courses are taught either solely by resident GCC professors at the ISC or in partnership with professors from ONIRIS. The currently offered courses include FREN 101 (Elementary French I), GOBL 480 (French Culture), ENGR 390 (Engineering Management in International Context), and MECE 351 (Instrumentation Laboratory for Mechanical Engineers).

**Course Overview – Engineering Management in International Context**

Mechanical engineering students that take part in the fall ISC program are required to take ENGR 390 as part of their curriculum. It is counted as a technical elective in the GCC Mechanical Engineering program. In addition, students majoring in business can also be included. At the same time this course is offered as an elective to ONIRIS students. In fall 2010 18 ONIRIS and 12 GCC students took the course. Peer learning and group work activity generated a high degree of interaction between the French ONIRIS and the American GCC student. This course is taught in English and the material used for this course was taken from the sources indicated below and further referenced by number. (e.g. source [1] is used in reference to “Au Contraire! Figuring out the French.”)

8. Strategic Leadership in Sustainability, Robèrt, Karl-Henrik, Published at Blekinge Institute of Technology, Sweden, 2004

The course content consists of an introduction to managing technical projects in an international environment: history of management, cross-cultural communication, managing an international team; sustainability for manufacturing, including green design and life cycle analysis, Six Sigma concepts and tools. Classroom lectures and case studies are supplemented with cultural and industrial visits and exchange activities with French engineering students from ONIRIS facilitated by the GCC ISC.
The goal of the course is to give an overview of how technical managers work in an international environment. French cultural and industrial visits expose the students to both French day-to-day and business culture while the exchange activities facilitate cultural and language interaction. The course is carried out by weekly lectures, case studies, and technical/cultural field trips that include French engineering students from ONIRIS. Assessment procedures include quizzes and a final exam to test students on the French language, field trip content, and engineering management theory and practice.

Course Outline

Several components of this course are all carried out at various times during the course of the semester. Lectures are given to both GCC students and ONIRIS students and take place either at the ISC or on campus at ONIRIS. In order to launch the interaction between GCC and ONIRIS students, a “mixer” is hosted by the GCC ISC in order for students to get to know each other. Following the mixer interactive activities take place either as language partnering or in field trips. The following bullet points highlight each component of the course.

• **Introduction to French culture:** This portion of the course involves orientating the GCC students when they first arrive in France. This involves seminars on how to navigate the local public transport, navigate through the local neighborhood, and also intensive French language sessions. This segment can be compared, in part, to a cultural and language seminar that one might go through in industry prior to being sent on international travel. Source [1] and [2] are mainly used for this portion of the course with some contribution from source [3]. In addition, the French ONIRIS students are given an orientation to American culture and Grove City College.

• **Cultural Field Trips:** Cultural field trips are designed to give GCC students a sense of the history and culture of the surrounding Nantes area and some major sites outside of Nantes. Sites visited outside of the Nantes area include a four-day visit to Paris as well as a two-day tour of Normandy (including the World War II D-Day beaches). Sites within the Nantes area are carried out with ONIRIS students. Trip transportation is by chartered bus in which an American student is required to sit with a French student. In addition, ice breaker activities are handed out in order to stimulate conversation.

• **Technical Field Trips:** Technical field trips consist of visits to factories and French Universities within the Nantes area. Site visits are generally only for GCC students. The factory visits enable GCC students to learn the basics of how a French company operates. In addition, the University visits allow GCC students to discover how French higher education differs from the US, especially in Engineering.

• **Language Partnering:** The tendency for students participating in the program is to congregate among themselves. The goal of language partnering is to enable GCC students to have one-to-one contact with French students. This is accomplished by interaction with French students in English thereby eliminating the language barrier. However, the use of French is also encouraged to develop basic communication skills. This model allows the French students to practice speaking English, which as mentioned earlier, is a requirement in the Engineering program at ONIRIS. Language partnering activities take place at various venues such as during cultural field trips, meals at the ISC or on campus at ONIRIS, as well as time students spend together outside of class.
• **Lectures**: Lectures are used to teach the “core” material covered in the course. As mentioned earlier lectures take place with both ONIRIS and GCC students present. Sources [4] through [7] are used to cover material in the subjects indicated below.
  - Sustainability – An introduction to sustainability engineering and the differences in the definition of sustainability within different cultures.
  - Management – The topics that are covered include; the evolution of management thought, Values and culture of the manager as a person, ethics, managing in a multicultural environment, and managing in a global environment.
  - Cultural case studies – Case studies involving cross-cultural communication.
  - Six Sigma – An introduction to Six Sigma vocabulary, DeMAIC, and statistics.

**Student Feedback**

At the end of the semester the course is assessed by the students through an internally developed questionnaire. The overall rating of the course is based out of a scale of 7. In addition students are allowed to give anonymous written responses. The overall rating for the course in the fall 2010 program was 6.24. Students also made several comments that the interaction with ONIRIS students was the most beneficial part of the course. It was commented that taking the course in tandem with French students allowed them to explore cultural differences (e.g. such as the perception management, and sustainability).

-**International Study Center Short Term Course Program**

**Program Overview**

Starting in January 2009, intersession courses were offered at the ISC. Intersession courses are short-term courses that take place during the two weeks in January leading up to the spring semester (J-term) and during the two weeks in May after the spring semester (M-term). Intersession courses can take place both at the main GCC campus or abroad. The intersession course model used for the ISC is structured to be front loaded with class meetings that take place at the GCC main campus during the semester prior to the international travel component. To date, there have been a total of five intersession courses offered at the ISC that have followed this model. These courses take place primarily at the ISC and in partnership with ONIRIS. Intersession courses are team taught by a teaching professor and a field director. In addition, since the college already leases the property to support the fall program, costs for intersession trips to the ISC are lower than comparable trips to other areas of Western Europe, making these trips attractive to students.

**Course Overview – Engineering Management in International Context**

Engineering Management in International Context (ENGR 390) is offered during select January and May intersessions. This version of the course was developed to maximize student exposure to cultural differences in management styles during a short term visit to France. The course is taught exclusively to GCC students. Semester class meetings are scheduled at a time that is convenient for all students registered for the course. After the semester ends students partake in the international component and assignments are given during the travel component to process...
their experiences. Interaction activities are carried out with ONIRIS to give our students opportunities to make local connections. In addition company visits are scheduled when possible. Assessment for the course is done through quizzes and exams. In addition, a journal is required during the international travel component that requires the students to document what they have done each day.

The teaching material chosen for this course mainly consists of management theory and case studies. Class lectures take place one time a week for about half the semester. Case studies expose students to actual documents, procedures and scenarios faced by managers. Guest speakers from local companies are often employed. Specific topics covered are similar to the management topics covered in the semester version of the course. In addition video case studies depicting managers handling a variety of situations, including cultural differences, are used to illustrate scenarios managers face in the work place. The weeks leading up the international travel component students are briefed on French cultural behavior as well as some basic use of the French language.

International Travel Component
The international travel portion of the course typically takes place for twelve days counting from the day of departure to the day of return to the US. The first week is spent at the ISC in Nantes followed by two to three days in Paris. Select offerings of this course have also included a trip to Normandy (World War II D-Day beaches). During the time in Nantes time is spent in visiting local tourist sites and surrounding area towns as well as factory site visits and interactive activities with ONIRIS. Following Nantes, time in Paris is spent visiting local tourist attractions and visiting with GCC alumni that live and work in France. The following points highlight the different activities undertaken.

• **Cultural Site Visits**: Cultural site visits would be classified as anything that would seem like a tourist site. For a lot of students that come on these trips it is their first time in Europe. Therefore, visiting sites such as castles, cathedrals, restaurants, and museums gives them perspective of the French culture.

• **Company Visits**: One benefit of a management class vs. a technical engineering topic is that all companies employ managers. This allows great latitude in identifying and contacting companies to sponsor a plant tour or discussion session with their managers.

• **Daily Journal**: Each student is required to keep a daily journal. Topics for writing include comments on; French architecture, impression of overheard conversations, gestures, and customs observed in interacting with shopkeepers, police, service personnel, etc. These daily topics are used to focus students' attention on specific cultural similarities and differences.

• **Interactive Activities with ONIRIS**: A strong component of the international travel aspect is interacting with local French engineering students. Activities are organized with ONIRIS that enable students on both sides to develop an understanding of the cultural differences between the US and France. Activities are carried out in English which enables ONIRIS students to practice English and allows our students to be free of any language barrier. This is a tremendous opportunity for GCC students to develop intercultural communication skills. For example, GCC students quickly learn they need to slow down how quickly they speak and be selective on the vocabulary they use if they are to be understood. These activities have been a very popular portion of the trip and have been a great means for our students to meet people to spend their free time with.
• **Connecting with Alumni Abroad:** There are currently three alumni that live and work outside of Paris. A component of the trip to Paris has included inviting these alumni to give a talk on their time in France and lessons they have learned. Students have communicated that this really opened their eyes to the challenges that ex-patriots face in trying to adapt and live in a foreign cultural and well as a foreign language environment.

**Student Feedback**

Each year the professor follows-up informally with students at the end of the trip and in the subsequent semester. Student feedback is always positive. Students frequently express a great desire to return to France or just to go abroad anywhere again.

The best feedback given by students was those that could be extracted from the journal entries which were a requirement for the course. Student comments have been generalized below.

- "It was an experience I will remember forever!"
- "This trip was great in both length and places visited. I wish I could have seen other sites and experienced more cultures. The trip has only fueled my desire to see other European countries."
- "There is so much to see and so little time!"
- "I am going to be sad to leave. I will definitely miss this place, but hope to return someday."

The directed journal entries generally displayed good insight into the cultural topics. Students were able to recognize both similarities and differences in culture. Making daily entry a requirement means the entries are fresh with the emotion and excitement of the day.

**Other Partnership Activities**

Due to the success of the course partnership activities between GCC and ONIRIS other partnership activities have also been undertaken as indicated below.

- **Summer Internships in France:** Currently, internships at the ISC are offered during the fall semester program and the summer. The internship program allows students an opportunity to work with ONIRIS on projects centered on teaching English as a second language, international relations, and business. An expected goal for the future is to include research.
- **Internships for ONIRIS Students:** In addition to internships in France for GCC students, French Engineering students from ONIRIS find internships in the US through our program. Housing, board, and attending some Mechanical Engineering courses in English also are provided as part of the internship program for French students.
- **Short Term Course Program:** New intersession courses are continually offered every year at the ISC. Currently, an Introduction to Chemistry course is set to take place May 2011. This course will involve partnering activities with ONIRIS in pairing American students with French students to carry out chemistry laboratory experiments. The experiments will be centered on food science chemistry. In addition outings and meals will be organized to facilitate intercultural communication exercises.
- **International Student Forum on Sustainability:** An international student forum on Sustainability took place at the University of Nantes/ONIRIS in February 2011. Mechanical Engineering Students from GCC participated via live webcast because of the partnership with
ONIRIS. This forum was a follow up activity to sessions that were conducted on the topic of sustainability during the fall and intersession courses in which French and American Students are engaged in group work activity. These simulcast forum discussions are also useful in fostering contact with ONIRIS and other French University students once the GCC students have returned to the United States from their study abroad experience.

Conclusions

This course has proven to be very beneficial to both GCC and ONIRIS students. The main advantage of the course has undoubtedly been the interaction with a partner university. The interaction gives opportunity for students to learn aspects of culture that need to be experienced and not learned in a classroom. As this course, and the ISC program continues, more attention on how to further use these interactions will be sought in addition to exploring ways to assess these interactions.

Bibliography

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Biographical Information

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