

# Expanding Global Learning Opportunities for Mandatory Co-op Engineering Programs

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## Abstract

This paper will discuss the processes and design strategies necessary in creating a short study abroad course for co-op students, including engineering majors, enrolled in a mandatory co-op program. The University of Cincinnati is considered the father of co-op with Dean Herman Schneider introducing the co-op model in 1906 and has a strong history of success in providing a nationally ranked co-op program. Due to the mandatory nature of the co-op program and the rigor of the academic program there is little time for a concise study abroad experience. The Division of Professional Practice and Experiential Learning (ProPEL), the academic unit housing the co-op program, has offered the International Co-op Program (ICP) for several years. The ICP program has been a highly successful offering students the opportunity to co-op abroad for two consecutive semesters. However, some students are not willing to commit to a two semester long international co-op experience that requires approximately an eight month commitment. Students would like to experience a shorter international study abroad course and this paper will discuss the funding, discovery, design, implementation and assessment of our short study abroad course which lasted 13 days. This course, *European Experiential Learning Italy/Spain* (EEL), was designed specifically to fit between the end of the Spring Semester term and the beginning of the Summer Semester allowing students to maintain their academic and co-op commitments. A core component of the EEL course includes onsite visits with international companies where students have the opportunity to interface with executives and key managers on a personal level. This paper will examine the core components necessary for designing a successful short study abroad course for engineering and other students enrolled in a mandatory co-op program and identify areas of further research.

## Introduction

The University of Cincinnati set forth global initiatives in the UC2019 plan that aimed to expand international opportunities available for UC students. The plan states... “To become a truly global university, we will achieve greater success in world-wide education and outreach. If students come to UC and never have the chance to venture outside the United States, we are failing them miserably. Similarly, if we want our students to thrive in a global environment, we must be open and committed to attracting students from around the world. To educate tomorrow’s citizens, we must expand opportunities for global engagement in our curriculum.”<sup>1</sup> This plan has been refined and modified under the university’s current president as the “Creating our Third Century” initiative. As a student-centered institution this initiative will be realized in part by being a national leader in experiential learning while elevating the impact of diversity, inclusion and global engagement.<sup>2</sup> In an effort the help meet the third century’s goal for

providing more international opportunities for students, Professor Schomaker applied for a grant to subsidize a discovery trip to Italy and Spain with the intent of offering a short study abroad course for engineering and other students enrolled in mandatory co-op programs with little space for curriculum deviation. The course was specifically designed to fit in between the end of the Spring Semester and the beginning of Summer Semester, maximizing what little time was available to students participating in the co-op program.

## **Methodology**

Careful analysis was taken in designing this study abroad course. The benefits of studying abroad include developing global awareness and cross-cultural competence, more effective language learning, resume building, and better preparation for graduate school.<sup>3</sup> In order to maximize the benefits of an international experience and still comply with demands of the co-op schedule the course was designed to be hosted in between the end of the spring semester and the beginning of the summer semester term. For the calendar year 2013-14 this provided a two week window to offer the study abroad component of the course. Employers who would be willing to host a group of students were a critical first step in course design.

As a student participates in a study abroad course they are engaged in an entirely new culture and are eager to experience it. Students can read and even view videos of cultural sites but experiencing the culture in a new country opens up a whole new way of learning as they are involved in strategic mentoring with faculty as well as peer learning. This course was designed based on social constructivism where the learner constructs their learning in a social environment and careful facilitation of learning is provided. Vygotsky's theory of social constructivism encompasses both culture and social context as necessary for learning. This theory advocates that knowledge is constructed in a social environment and that learners reach a "...zone of proximal development (ZPD). (This) is the distance between the actual development level as determined by independent problem solving and the level of potential development as is determined through problem solving under adult guidance or in collaboration with more capable peers."<sup>4</sup>

Study abroad learning is classified as experiential learning or "learning through doing" and this is distinctly different than learning from rote or didactic learning where the learner plays a more passive role. Kolb's learning cycle outlines the process of experiential learning.

# Professional Practice and Experiential Learning

## Kolb's Learning Cycle

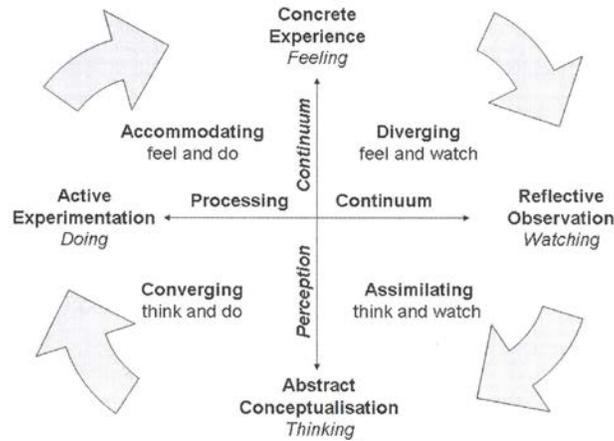


Figure 1

Experiential Learning Theory defines learning as “the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping and transforming experience.”<sup>5</sup> Kolb’s learning cycle assumes learners will be engaged in an actual concrete experience, utilize reflective observation to examine learning, implement abstract conceptualization about how to gain more learning, and active experimentation based upon the reflection. Students must engage in the actual experience in order to grow and learn from it. As students engage in a culture that is different from their own, reflective observation is a key component. Student dialogue is encouraged in the study abroad course through small groups, group dinners, and personal discussions. Students build upon experience (business site visits), asking more intentional questions on subsequent site visits versus the initial site visit. Students are encouraged to think about what information they absorbed and are asked to incorporate those reflective observations into their next business site visit, building upon the learning that has already occurred.

The intentional and reflective learning occurring during the faculty-led study abroad course is complimented by the unintentional learning that transpires in subtle yet meaningful ways. The recognition and appreciation of cultural differences during a faculty-led study abroad can be a life-changing experience. “Cultural differences and cultural diversity present critical challenges to people all over the world. Technology and popular culture may be forces for convergence, yet deep-level cultural difference are not converging and the world is not ‘flat.’ Instead, globalization increases intercultural interactions and the probability that intercultural misunderstandings, tensions, and conflicts will occur. Cultural intelligence (CQ) is defined as an individual’s capability to function effectively in situations characterized by cultural diversity.”<sup>6</sup>

As Keese and O'Brien emphasize, it is when we leave our own country and culture, and we learn first-hand about critical global issues and foreign policy, that in the process we likely become more objective in our views.<sup>3</sup>

Both qualitative and quantitative data was utilized in the evaluation of this course. Students were required to compare and contrast business practices of the United States with business practices in Italy and Spain. Students were also asked to define their learning through reflection and by completing a Likert scale evaluation measuring their learning.

## **Funding**

While program fees should cover faculty fees for a faculty-led study abroad course, it is important for faculty to have access to discovery tour funding to help them gain firsthand knowledge of specific cultural sites and to develop relationships with industry leaders who would be willing to host a student study abroad class for discussion of international business practices. Funding may be secured through the college or university's International Services office, Faculty Development grants or non-university affiliated grants. In order to fund the discovery phase for the initial short study abroad course Professor Schomaker solicited funding from the Center for Cooperative Education Research and Innovation at the University of Cincinnati. Matching funds were secured from the Associate Provost of the Division of Professional Practice and Experiential Learning.

Professor Schomaker submitted a grant proposal to the Center for Cooperative Education Research and Innovation. She was awarded the grant and went on a discovery trip to Turin, Milan, Nice and Barcelona in late April and early May 2013. The main purpose of this course would focus on furthering students' interest in an international experience and further their potential commitment to either a study abroad or co-op abroad for an entire semester. In today's global economy, it is essential for young professionals to understand the impact of cultural differences on business and industry. The faculty-led course would take place over a 12-day period. In preparing for this discovery trip Professor Schomaker researched companies and created specific relationships with four employers who would be willing to meet with her to discuss letting students visit their facilities in a study abroad trip. Professor Schomaker visited BasicNet in Turin, Italy, UPS-International and Honeywell in Milan, Italy and Nestle in Barcelona, Spain. Additionally she visited many cultural sites and markets, explored new foods, and experienced travel in a foreign country. This total immersion expanded her vision of how students could learn and benefit from a study abroad experience.

## **Design**

As faculty contemplate leading a short faculty-led study abroad course, there are many components that need to be taken into account. A course such as this is demanding, challenging, rewarding, all encompassing, and unique by comparison to traditional classroom teaching. According to Keese and O'Brien "While abroad, faculty take on many roles, including teacher, manager, tour guide, mentor, friend, and others... Faculty participation in study abroad can help in the tenure and promotion process. It supports teaching and research, and creating and administering a faculty-led program involves service to a department or university."<sup>3</sup>

Professor Schomaker developed the course PD4025 *European Experiential Learning – Italy and Spain*. She submitted the course to the Curriculum Committee for approval, and was approved by the faculty at large. Professor Schomaker was responsible for entering the course in the university's e-Curriculum system in order to register the course with the university and make it available for student registration. Consideration was given to scaffolding the course by creating cultural and industry site visits with little free time for students and providing structure when students were travelling. As the course unfolded, additional free time was allotted at the end of the course in Barcelona. One of the assignments for the course was for students to plan their own cultural site visit. Students were encouraged to choose something they personally wanted to see and decide how they would obtain transportation to and from the site. Students were required to research, select and implement their own cultural site visit. This assignment was intentionally designed to enable the students to integrate what they had learned and utilize that learning through exploration with their personal site visit. Students were required to create an e-portfolio for the course. Students were instructed on open-source platforms available and were free to choose whichever platform they preferred. Students were asked to write a two page summary article as well as submit their portfolios. The majority of the students' grades were evaluated through on-site active participation. Students were highly involved on a daily level (see itinerary).<sup>7</sup>

Much thought was given by Professor Schomaker as to who would co-teach the course. She consulted with the Chair of the Curriculum Committee regarding this decision as well. Professor Damschroder, faculty co-op advisor for Interior Design students and who was an Adjunct Associate Professor in the College of Design, Architecture, Art, and Planning (DAAP) before accepting her position with ProPEL was invited to co-teach the course. The knowledge and energy she brought to the course was considerable. In addition, the thought process was to have motivated faculty from the two largest mandatory co-op programs at the University of Cincinnati – the College of Engineering and Applied Science (CEAS) and the College of Design, Architecture, Art, and Planning (DAAP) in an effort to reach the greatest number of students. The faculty worked jointly to continue course development, basic marketing materials, and an online jot-form application.

## **Implementation**

It is imperative that faculty have the support of an international services group from their home institution. There are multiple administrative responsibilities including: tracking of students registered, passports, payments, additional insurance required, vetting third party vendors, approval of university contracts with third party vendors, and payments to these third party vendors. A designated administrative coordinator is also essential for a successful program. Collaboration between the faculty leaders, International Services and the administrative coordinator was essential. Additionally, faculty attended workshops, discussion groups and meetings with UC International and consulted with the Director of the ProPEL International Co-op Program (ICP) to further prepare them for ensuring a successful inaugural offering of the *European Experiential Learning – Italy and Spain* course.

“It is important to distinguish a faculty-led program from a field trip, a travel trip, or a vacation. Students are taking courses for academic credit while abroad. Faculty and staff need to emphasize to students from the beginning that they are participating in a serious academic program. Academic rigor is, and should be, central to the mission of study abroad...Students learn more in a structured program that has coursework than they do when just traveling or backpacking. They are more immersed, engaged, and aware; do more procession; and experience more personal growth.”<sup>3</sup>

The student reaction to our initial email-campaign and marketing flyer was astounding for the 2014 faculty-led course! Two large information sessions were held in order to give students additional information in order to help them decide if the course was appropriate for them and at the application deadline over 70 student applications were received! Due to the overwhelming and positive response a selection process was devised. An online survey was created to help students articulate why they were interested in the course and to gauge which student might benefit most from this opportunity.

The pool of candidates was narrowed down by the responses received, graduation year, and personal interviews between the instructors and students. Eighteen students were selected for the Spring 2014 course. Pre-departure meetings took place with the students in both February and March. Professor Schomaker sent out requests for third party proposals and a vendor was selected to provide travel services.

## **Evaluation**

Both qualitative and quantitative data was used to evaluate student learning. Informal student feedback indicated the study abroad course was extremely successful. Several students voluntarily agreed to help at the International Fair to talk with other students about their experience.

Assessment is a critical component for future course improvement. The chart below shows course objectives with students evaluation's ranking (Likert scale was utilized 5 being high and 1 being low) course objectives. Responses yielded an “n” of 10/16 that was collected and the mean score for the *Overall evaluation of course* was 4.70. *This study abroad course provide opportunity to take initiative in unfamiliar environments* scored a 4.70 and *My ability to develop solutions/overcome barriers in navigating foreign cities* mean was 4.6.

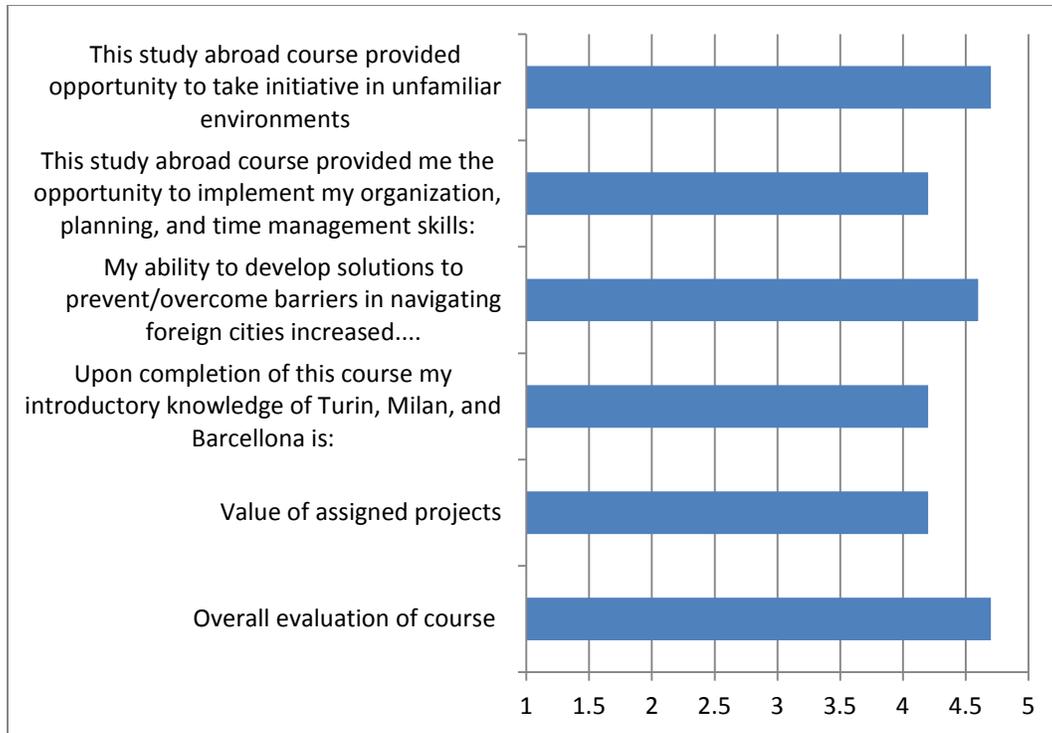


Figure 2

Students were required to create an e-portfolio utilizing reflective practice to synthesize what they had gained from the experience. These portfolios were extraordinarily well done. Students were also required to present to either a class or student group upon their return. Qualitative data included the following comments:

“Amazing experience in Europe. We all got to see some amazing sights, learned a ton about international business, and learned a lot about other cultures.”

“Traveling abroad introduces you to so much more than any regular class ever could, so the class itself is a huge strength.”

“Being exposed to different subjects like art, history, fashion, and business. It kept the course interesting and all the different museums (cinema, Egyptian, auto, etc) were subjects that all the students were interested in and could relate to in some way. The company visits were definitely a highlight of the trip for me and probably the most important parts of the trip. It was very relevant to all of us and very interesting. The information presented at the company visits gave a better perspective to the inside workings of the companies. Lastly the city tours were really great. Getting to see the highlights of architecture and historical parts was amazing. I think everyone wanted to get as many pictures of the places we went as they could and the tours helped us all accomplish that.”<sup>8</sup>

The creation and preparation necessary for a faculty-led study abroad course was labor intensive and Professors Schomaker and Damschroder worked diligently to make this course a success.

The student learning outcomes achieved broadened student's perception and helped them gain a better understanding of the culture and business practices associated with global organizations. Students were highly appreciative of the business on site visits and described them in detail in their portfolios. One of the initiatives of ProPEL was to double the number of students participating in international experiences. The *European Experiential Learning* study abroad course aligns with this initiative and the outcome could create additional sections of the course, adding to the number of international experiences for students. Increased relationships with employers in Italy and Spain could potentially increase the number of full-time co-op opportunities in those countries as well.

## **Conclusion**

In aligning with the initiatives of the Third Century plan to focus on expanding global opportunities in experiential learning for students within the University of Cincinnati sustainability and expansion of the programs in ProPEL are underway. Currently the PD4025 *European Experiential Learning – Italy and Spain* course is being offered for the second consecutive year. Student interest was even greater in 2014-2015 than in the previous year with almost 90 students in the initial pool of applicants. The final roster of students enrolled in the course and the study abroad is 19 and we are enjoying the current spring semester with the students and very much look forward to the travel component in May – once all of the many details are in place!

Additionally, Professor Schomaker and Damschroder have been working on the sustainability of the PD4025 *European Experiential Learning* course through discovery to additional European cities as a way to grow the program to these additional destinations. At the beginning of fall semester, 2014 a joint grant proposal to the Center for Cooperative Education Research and Innovation was submitted and award for \$5,000. The objective of this grant proposal was to accomplish the “discovery” phase needed for a faculty-led study abroad in spring 2016 to the cities of Copenhagen, Denmark; Hamburg, Germany; and Amsterdam, Netherlands. By visiting these cities, selected employers, cultural sites, and traveling through these countries we developed the expertise needed to lead a new faculty-led study abroad experience for undergraduate students.

After completion of this trip we plan to create a study abroad course for students giving them the opportunity to obtain exposure to different cultures and industries giving them a broader global context thereby strengthening the diversity of their student experience at the University of Cincinnati. Creation of this course would result in an additional section of PD 4025 that was initially created as a result of the 2012 CERI grant. This in turn may lead an even greater number of students to engage in further international experiences.

As industry, parents, and students themselves demand universities that produce students with more versatile workplace skills in addition to discipline specific skills, faculty-led study abroad courses aid in creating students who are workplace ready and culturally aware.<sup>9</sup> While faculty view their faculty-led courses from the perspective of teaching, and this is their primary role, one cannot discount the many other roles that faculty also need to fulfill: counselor, mentor, friend, disciplinarian, promoter, tour guide, and university liaison. “Faculty who think they are going

abroad for a vacation or research trip need to understand that leading a faculty-led program is a full-time job that demands a high level of commitment. Faculty must have the skills and the motivation to fill all the roles that will be expected of them.”<sup>3</sup>

This faculty-led short study abroad course was highly successful. By providing engineering and other co-op students the opportunity to engage in an international learning experience, we added to the goals of the University’s initiative to increase international learning opportunities as well as the Division of Professional Practices’ goal of providing additional international experiential learning. Developing and delivering short study abroad courses can also be an integral component for faculty in reappointment, promotion and tenure.

### **Additional areas of research**

There are multiple areas of research that could be explored in leading a faculty-led study abroad course. We have identified the following areas:

- Monitoring students upon return from a study abroad trip to evaluate how their experience may have or have not improved self-efficacy.
- A pre/post culture intelligence (CQ) test which could be administered to students to assess growth in cultural quotients of students’ who participated in a short study abroad course.
- Are employers more likely to hire a student with a short study abroad experience versus a student with no international experience?
- Do students who participate in faculty-led short study abroad courses participate in longer term study abroad semester terms, international internships or international co-ops as they progress through their collegiate career?

Faculty led short study abroad courses designed for mandatory co-op programs allow co-ops to engage in an international experience and remain on track in their curriculum. This powerful opportunity allows students to gain a better understanding of culture and diversity making them a globally aware graduate.

### **Bibliography**

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European Exp Learning Italy and Spain

Saturday, April 26, 2014		
2.50 p.m.	Arrival Turin airport	Meeting with our tourleader and charter bus to hotel
8.00 p.m.	Hotel lobby	Dinner in restaurant

Sunday, April 27		
8.00 a.m.	Breakfast in hotel	
9.00 a.m.	Meeting in lobby and walk to Piazza Castello	
9.30 a.m.	Meeting with the guide	Visito of Mole Antonelliana Museo del Cinema-Museo Egizio-Palazzo Reale and Duomo
7 p.m.	return in hotel on foot	
	Dinner on your own	

Monday, April 28		
8.00 a.m.	Breakfast in hotel	
9.00 a.m.	Hotel lobby	Transportation with the bus to Museo dell'Auto and Eataly
3.00 p.m.	return to htl by bus	
5.00 p.m.	Walk and visit of the Valentino Garden	
7.30 p.m.	return in htl on foot	
	Dinner on your own	

Tuesday, April 29		
8 a.m.	Breakfast in htl	
8.30 a.m.	Hotel lobby	Transportation by our bus to Basic-Net
1.00 p.m.	Lunch on your own	
2.30 p.m.	Departure from htl to train station	
3.50 p.m.	Train to Milan	
4.50 p.m.	Arrival in Milan	Transportation by our bus to hotel
	Dinner on your own	

Wednesday, April 30		
8.00 a.m.	Breakfast in hotel	
8.45 a.m.	Departure by taxi to Luxottica	
2.30 p.m.	Meeting with the guide	Visit of Duomo-Galleria-Scala and city center.
5.30 p.m.	Return in htl by taxi	
7.30 p.m.	Visit of Navigli	Transportation by taxi
	Dinner on your own	
	Return in htl by taxi	

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<b>Thursday, May 1</b>		
8.30 a.m.	Breakfast in htl	
9.30 a.m.	Hotel lobby	
10.00 a.m.	Departure by bus and luggages	Visit of Castello Sforzesco.Shopping.
1.30 p.m.	Transfer by bus to Malpensa airport	
5.45 p.m.	Flight to Barcellona	
7.05 p.m.	Arrival at Barcellona	Transportation by our bus to hotel
	Dinner on your own	

<b>Friday, May 2</b>		
8.00 a.m.	Breakfast in hotel	
9.00 a.m.	Hotel lobby	
9.30 a.m.	Tour guided by our bus	Ramblas-Sagrada Familia-Barrio Gotico-Paseo de Gracia
5.30 p.m.	Return in htl by bus	
	Dinner on your own	

<b>Saturday, May 3</b>		
8.00 a.m.	Breakfast in htl	
	Shopping	
2.30 p.m.	Transfer to Camp Nou by bus	FC BARCELONA-GETAFE FOOTBALL MATCH
6 p.m.	Return in htl by bus	

<b>Sunday, May 4</b>		
8.00 a.m.	Breakfast in hotel	
	Free day	
	Dinner on your own	
9 p.m.	Illuminated Fountains	

<b>Monday, May 5</b>		
8.00 a.m.	Breakfast in htl	
9.00 a.m.	Departure to Abrera for visit to General Cable	By General Cable's Bus
2.30 p.m.	Return to Hotel	
6 p.m.	Walk to Pueblo Espanol	Visit and Typical Dinner in the internal area of Pueblo.

<b>Tuesday, May 6</b>		
8.00 a.m.	Breakfast	
9.30 a.m.	Transfer by bus to Barcellona airport for the return flight	