

Development of a Faculty Led Education Abroad Program and the Lessons Learned

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Acharya joined RMU in Spring 2005 after serving 15 years in the Software Industry. With US Airways, Acharya was responsible for creating a conceptual design for a Data Warehouse which would integrate the different data servers the company used. With i2 Technologies he led the work on i2's Data Mining product "Knowledge Discover Framework" and at CEERD (Thailand) he was the product manager of three energy software products (MEDEE-S/ENV, EFOM/ENV and DBA-VOID) which were/are used in Asian and European countries by both governmental and non-governmental organizations. Acharya has a M.Eng. in Computer Technology and a D.Eng. in Computer Science and Information Management with a concentration in knowledge discovery, both from the Asian Institute of Technology in Thailand. His teaching involvement and research interest are in the area of Software Engineering education, Software Verification & Validation, Data Mining, Neural Networks, and Enterprise Resource Planning. He also has interest in Learning Objectives based Education Material Design and Development. Acharya is a co-author of "Discrete Mathematics Applications for Information Systems Professionals- 2nd Ed., Prentice Hall". He is a member of Nepal Engineering Association and is also a member of ASEE, and ACM. Acharya is a recipient of the "Mahendra Vidya Bhusak" a prestigious medal awarded by His Majesty the King of Nepal for academic excellence. He is a member of the Program Committee of WMSCI, MEI, and CCCT and is also a Member of the Editorial Advisory Board of the Journal of Systemics, Cybernetics and Informatics of the International Institute of Informatics and Systemics. Acharya was the Principal Investigator of the 2007 HP grant for Higher Education at RMU. In 2013 Acharya received a National Science Foundation Grant for developing course materials through an industry-academia partnership in the area of Software Verification and Validation.

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ABSTRACT

In recent years, there has been increasing demand and push for global experience through an academic setting. For would-be engineers this is even more important in this world of ever-increasing global collaboration and commerce. In an effort to provide students with global education opportunities, our university has developed and enhanced a Faculty Led Education Abroad Program (FLEAP) which allows interested faculty to work with their school to develop study abroad courses in their area of expertise. The program is approximately 9 years old and began with study abroad programs that were organized by the faculty members themselves, by third party vendors, or by the Center for Global Engagement (CGE, University's international office). Over the years, successful study abroad programs to Germany, France, Switzerland, Aruba, China, Ireland, Belize, and Nicaragua have been conducted. The FLEAP has proven to be an excellent example of engaged learning and provides students with a global perspective that is unparalleled in any classroom. The development of the FLEAP proved to be challenging; and, an advisory council was established to address the numerous challenges. The council was tasked with developing program guidelines, site assessment forms, proposal forms, and emergency/safety guidelines, to name a few. In the last two years, every FLEAP conducted has been instrumental in further enhancing the FLEAP process.

The development of a FLEAP study abroad to Germany led to a successful program in the Spring semester that was coupled with an environmental/engineering course on Renewable Resources. The students were able to visit multiple cities and many renewable energy sites throughout Germany while gaining experiential knowledge of the culture and language. To meet the education component of the course, the students were asked to keep a journal log of their learning and cultural experiences which was reviewed by the professor at the end of the study abroad. The students were also asked to present their experience in multiple platforms. This paper describes the evolution of the FLEAP in our university and uses the Germany study abroad to discuss what worked and what did not. It is expected that the experiences of the CGE, the lead faculty for the Germany study abroad, and the advisory council will assist other universities in establishing a similar program.

1. Introduction

In recent years there has been increasing demand and push for global experience through an academic setting, as seen in Figure 1. For would-be engineers this is even more important in this world of ever-increasing global collaboration and commerce. In 2011/12 over 283,000 US students (9% of undergraduate students) participated in study abroad programs ¹.

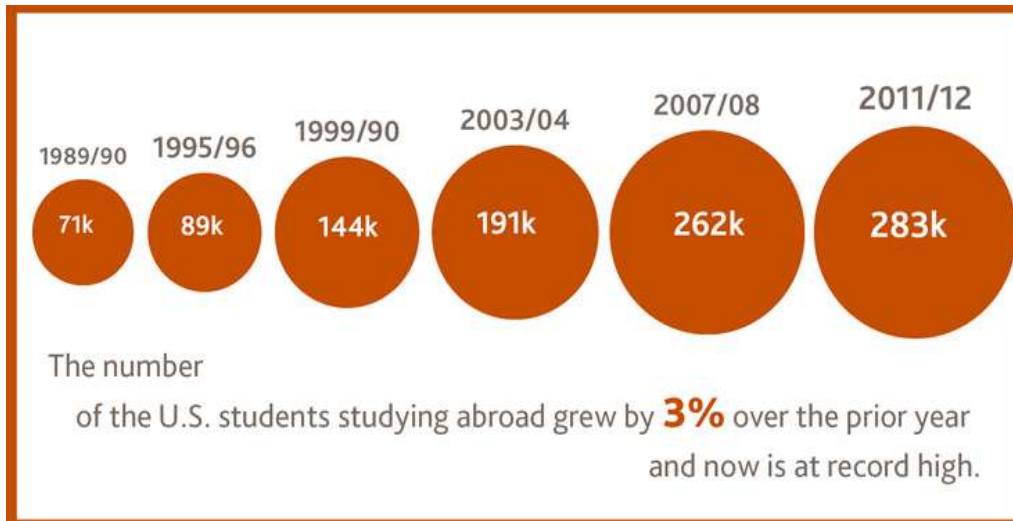


Figure 1: Growth of U.S. Students Studying Abroad

In an effort to provide students with global education opportunities, our university has developed and enhanced a Faculty Led Education Abroad Program (FLEAP) which allows interested faculty to work with their school to develop study abroad courses in their area of expertise. The program began 9 years ago with a study abroad to a Central American country. Eventually more programs were organized either by the faculty members themselves, by third party vendors, or by the University's international office. Over the years, successful study abroad programs to Germany, France, Switzerland, Aruba, China, Ireland, Belize, and Nicaragua have been conducted. The FLEAP has proven to be an excellent example of engaged learning and provides students with a global perspective that is unparalleled in any classroom. With the uncontrolled growth in the program, development of the FLEAP proved to be challenging; and, in 2012 an advisory council (RMU Abroad-AC) was established to address numerous issues. The council recognized that three entities namely the RMU Abroad-AC, the CGE (Center for Global Engagement) and the FLEAP lead faculty needed to collaborate, cooperate, and be on the same page for a successful FLEAP. The RMU Abroad-AC was tasked with developing program guidelines, site assessment forms, proposal forms, and emergency/safety guidelines, to name a few. In the last two years, every FLEAP conducted has been instrumental in further enhancing the FLEAP process.

The development of a FLEAP study abroad to Germany led to a successful program in the Spring semester in 2012 that was coupled with an environmental/engineering course on Renewable Resources. The students were able to visit multiple cities and many renewable energy sites throughout Germany while gaining experiential knowledge of the culture and language. To meet the education component of the course, the students were asked to keep a journal log of their learning and cultural experiences which was reviewed by the professor at the end of the study abroad. The students were also asked to present their experience in multiple platforms. This paper describes the evolution of the FLEAP in our university and uses the Germany study

abroad to discuss what worked and what did not. It is expected that the experiences of the CGE, the lead faculty for the Germany study abroad, and the RMU Abroad-AC will assist other universities in establishing a similar program.

2. FLEAP – AC

Faculty Led Education Abroad Programs (FLEAPs) are short-term study abroad opportunities developed by RMU faculty and supported by the Center for Global Engagement (CGE). Leading an education abroad trip furthers the global perspectives core value of our university. In Spring 2012, recognizing the need for an advisory committee, the FLEAP-AC was formed with 11 faculty members across the schools having either experience or interest in FLEAPs. The role of the FLEAP-AC is to advise the Vice Provost for Research & Graduate Study and the Director of CGE on matters related to FLEAP procedures and proposals.

Over the years the FLEAP-AC has been reconstituted and renamed to RMU Abroad-AC. At this time the council consists of a faculty member from each of the five schools and a representative from CGE; totaling 6 members. The RMU Abroad-AC has recognized the following:

- Because FLEAP is a faculty led program the lead faculty has the main role in taking the FLEAP from the inception to its conclusion.
- The CGE is the main center for FLEAP programs. Their expertise and assistance with a range of non-education details is required and necessary throughout the program.
- Lead faculty, CGE, and RMU Abroad-AC are the three pillars of a successful and sustainable FLEAP (Figure 2).

2.1. RMU Abroad-AC Tasks

Tasks related to FLEAP assigned to RMU Abroad-AC are:

- Revise/develop FLEAP policies, guidelines, and forms, including scholarship opportunities.
- Review FLEAP proposals and make appropriate recommendations.
- Advise/assist interested faculty members on FLEAP process.
- Publicize FLEAP and the work FLEAP-AC does at appropriate venues.
- Perform tasks brought to council's attention by Vice-Provost and/or CGE



Figure 2: The Three Pillars for a successful FLEAP

To ensure existing FLEAPs followed the same procedures and guidelines RMU Abroad-AC consolidated existing FLEAPs to two types: 1) Faculty Led and Organized (**FLAO**), and 2) Faculty Led and CGE Organized (**CGEO**). Each type has specific faculty responsibilities and application procedures are as explained below:

2.1.1. FLEAP – Faculty Led and Organized (FLAO)

The FLAO study abroad is fully dependent on the faculty member to propose, plan and conduct. The faculty member is responsible for the program proposal, itinerary and the logistics including travel arrangements, the educational program, and room and board/accommodations for the faculty member and students.

2.1.2. FLEAP – Faculty Led and CGE Organized (CGEO)

The CGEO study abroad is dependent upon the Center for Global Engagement for organizing and managing the logistics. The faculty member is responsible for the site assessment (if needed), the program proposal, chaperoning students, the itinerary and educational program. The faculty member works closely with the CGE to plan the study abroad, but the travel arrangements, room and board/accommodations, excursions, and other logistical details are the responsibility of the CGE.

2.2. RMU Abroad-AC Activities

In a short time period RMU Abroad-AC has either developed or enhanced the following documents:

- FLEAP Program Description and Requirements: This document explains the FLEAP at our university. It details the procedure that an interested faculty should follow, the forms that need to be submitted, and the deadlines for various submissions. Figure 3 depicts the flowcharts for FLAO and CGEO programs.

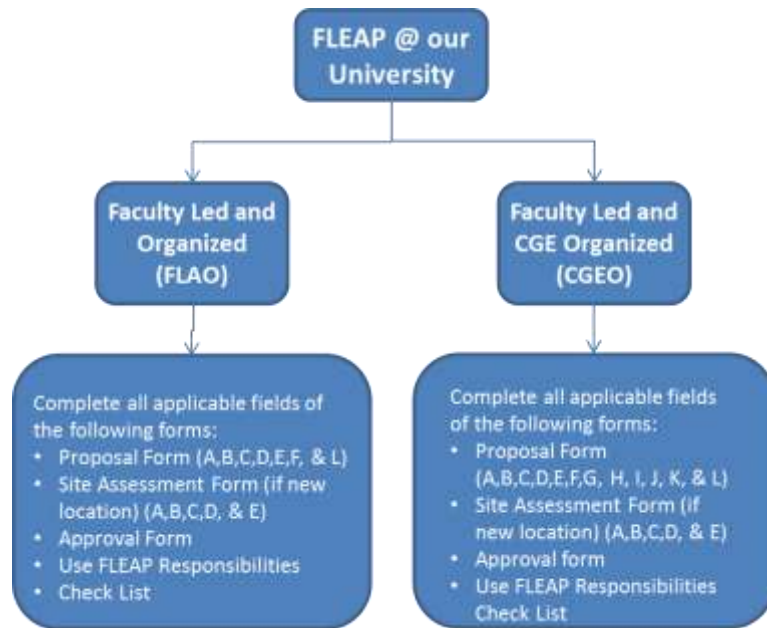


Figure 3: Faculty Led and Organized (FLAO) and Faculty Led and Center for Global Engagement Organized (CGEO) Programs

- FLEAP Timelines: A FLEAP at our University can be delivered in the Summer, Fall or in January. Figure 4 below depicts submission deadlines for the different forms and for different reviewing activities.
- FLEAP Site Assessment Form: If the FLEAP is a new program, lead faculty may need to visit the country where the program is to be delivered to ensure smooth delivery. Faculty

members interested in a FLEAP and who have an approved budget need to submit a Site Assessment Form prior to the site assessment. In the past, faculty members have made successful site assessment study abroad programs to Spain, Morocco, Turkey, and Greece.

- **Faculty FLEAP Intent Form:** All interested faculty members are required to submit this form to ensure the course is publicized in the University course catalog in a timely manner and support from CGE is available when required.
- **Faculty FLEAP Proposal Form:** Interested faculty must submit a completed proposal form. This form provides all the details like the program name, learning objectives, host contact information, day by day activities, budget, etc.
- **FLEAP Responsibilities Matrix:** This document details the roles and responsibilities of the lead faculty and the CGE. Some tasks may require both to collaborate. For example, the lead faculty can inform CGE where he/she would want to stay and CGE will make all efforts to book the requested accommodation.

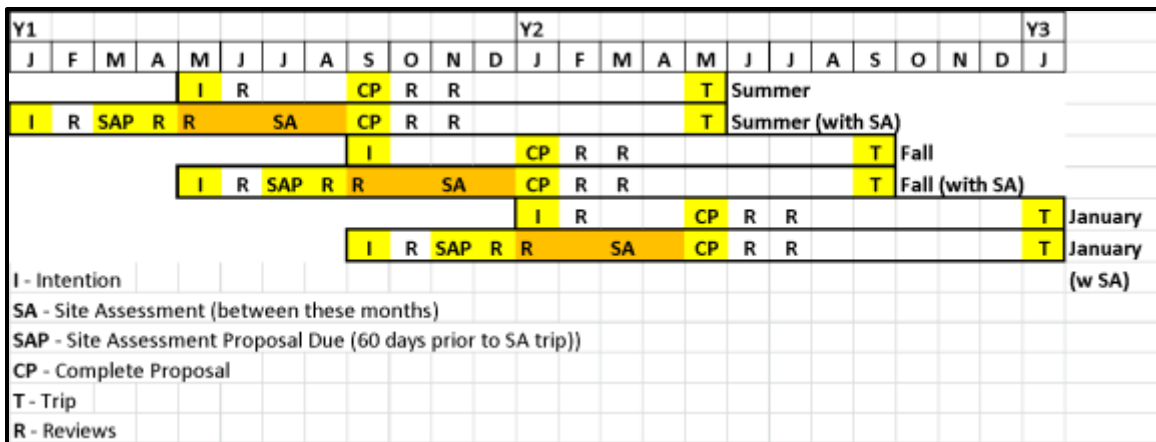


Figure 4: FLEAP Deadlines

- **Strategy and Guidelines for FLEAP scheduling across Schools:** This document details how FLEAP proposals should be approved.
- **Student FLEAP Application Form:** Students interested in attending a FLEAP must submit this form.
- **Criteria for FLEAP Scholarship Awards:** The University has set aside a specific budget for FLEAP scholarships. This document lists the criteria for scholarship and the procedure to use to award scholarships.

- FLEAP approval and feedback mechanism: The FLEAP approval process takes the proposal through multiple university administrators and RMU Abroad-AC. This form is used to provide approval information and timely feedback to the lead faculty.

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Figure 5: FLEAP Documents and Descriptions

2.3. Key Recommendations made by RMU Abroad-AC

To ensure successful FLEAPs, RMU Abroad-AC has so far made the following recommendations:

- A FLEAP program survey should be conducted during the freshman seminar. It is hoped that this will give an understanding of student interest in FLEAP study abroad programs and will prepare students and families both emotionally and financially on a possible FLEAP study abroad as part of their RMU experience.
- Lead Faculty should be compensated for a FLEAP study abroad. It is hoped that this will encourage future study abroad programs of successful and sustainable FLEAP programs as well as encourage new FLEAP programs.
- Credit overload fine should be waived for students enrolled in a FLEAP study abroad. It is hoped that this will encourage more student participation.
- All FLEAP should have the same credit cost irrespective of whether the study abroad is planned for the Fall/Spring or the Summer terms. It is hoped that this will encourage more student participation.
- A FLEAP study abroad should have an Assistant Faculty Lead (which can be a faculty member or an experienced staff member) once the number of enrolled students exceeds a multiple of ten. Depending on the FLEAP, the Assistant Faculty Lead may be of the opposite gender. It is hoped that this will ensure smooth execution of the FLEAP study abroad and assist when gender specific issues arise.
- A FLEAP study abroad should encourage other Faculty members from the RMU community to join the study abroad without being a hindrance. In fact, interested faculty members should be given limited roles to ensure their participation. It is hoped that this will ensure smooth execution of the FLEAP study abroad, encourage accompanying faculty members to come up with new FLEAP programs, and reduce the Site Assessment study abroad cost.
- All documents should be reviewed by the Legal Department. As the study abroad consists of multiple liability issues, it is hoped that the University clears all legal requirements.

2.4. RMU Abroad-AC Challenges

Enhancing an existing program is not an easy task. However, RMU Abroad-AC has been successful in taking up the challenges and establishing a procedure. Thanks go to everyone involved who wanted to see the program succeed.

- **Consolidating the different FLEAPs:** When RMU Abroad-AC was formed, broadly speaking, there were three types of FLEAPs at the University: organized by the faculty members themselves, organized by third party vendors, and organized by CGE. It seems all lead faculty were going about making their FLEAPs happen without adequate cooperation and collaboration. As a result, there were support issues from the CGE and financial repercussions to the university. RMU Abroad-AC deliberated the three categories of FLEAPs in multiple meetings and recommended that the university use only two methods: Faculty Led and Organized (FLAO) and Faculty Led & Center for Global Engagement Organized (CGEO). Faculty members using third party providers had a strong case, but the RMU Abroad-AC was not able to recommend this type.
- **Establishing deadlines:** 5 schools, 3 delivery periods, a new procedure, and course schedules made it difficult to establish deadlines. However, after multiple iterations a deadline based procedure has been established. At times deadlines have not followed but both the CGE and RMU Abroad-AC have been flexible in supporting FLEAPs and requesting all to follow the deadlines in their next offering. CGE has also taken responsibility to communicate all FLEAP deadlines and matters of importance to school administrators and faculty members so that deadlines are not missed.
- **Creating Forms:** Keeping in mind that a substantial amount of work goes into a FLEAP, RMU Abroad-AC decided to reduce overall work by removing redundancy. The council reviewed existing forms and developed new ones that better reflected the FLEAP procedure. Many meetings deliberated what was required and what was not. RMU Abroad-AC feels this is a “work in progress” and will continue to address issues that may be raised.
- **Identifying Roles and Responsibilities:** Lead faculty, CGE and RMU Abroad-AC all have to work together for a successful FLEAP. The planning of a FLEAP and the delivery of it involves work in multiple stages. Activities need to be carried out in time, carried out in full, and individuals need to be responsible and held accountable. Deciding who does what was a time consuming and negotiating process. Eventually, a responsibility matrix was created and everyone involved are expected to follow this.

3. Center for Global Engagement (CGE)

For 90 years, RMU has delivered academic excellence with a professional focus. Today, we emphasize engaged learning and promote a global perspective. As such, the Center for Global Engagement is charged with carrying out the various initiatives related to this core value, including servicing and supporting international and exchange students, managing the Rooney International Scholars Program, working with faculty to international the curriculum and developing and executing an assortment of education abroad opportunities.

3.1. Support for FLEAPs

Program Development and Recruitment:

- Meet with previous leaders to discuss successes and failures
- Provide program information sheet/flyer and update Website with new program offerings
- Meet with Lead Faculty to discuss issues, changes or areas of concern
- Organize CGE sponsored workshop/orientation/information sessions
- Participate in various campus resource and study abroad fairs and make classroom presentations

Admissions and Logistics:

- Review applications on a rolling admissions basis (and interview, if appropriate)
- Communicate any program-specific information to students
- Confirm study abroad course section(s) and descriptions
- Arrange group flight arrangements (per program)
- Finalize budget and complete all payments
- Organize mandatory orientation for all program participants

Pre-departure Preparation:

- Confirm all student documents are completed, signed and turned in
- Prepare for on-site financing (ATMs, corporate credit card, etc.)
- Distribute travel advance and international insurance cards

Post-program Activities:

- Reconcile all travel and program expenses and prepare financial reports
- Review report and/or program materials for publication and/or dissemination

3.2. Challenges

Generally speaking, all programs are conducted successfully. We continue to modify/update proposal forms in order to be efficient and effective communication tools and planning documents. Adherence to program proposal deadlines remains an area in need of improvement, as does the communication flow between Deans, Department Heads and Faculty members with regards to these deadlines.

4. Center for Global Engagement (CGE)

The faculty led course was designed and implemented for the first time in the Spring semester of 2012. The study abroad component was combined with an existing course, ENGR2012 Renewable Resources. The initial course and study abroad program were a success, although only three students decided to travel. This was the first implementation of the study abroad, so it was to be expected that the group of travelers was small. The following summer semester saw five students travel to Germany and the number of renewable sites that were visited increased significantly. Throughout the FLEAP travels, the students not only received a real-world understanding of renewable energy and sustainability, but received invaluable lessons related to international culture, politics, perspective, travel, and language. All of the students that have travelled to Germany have expressed how much this single trip has changed their lives and has opened their minds. The FLEAP study abroad programs go much deeper than just a learning exercise; they are an unforgettable and life-changing experience.

2.5. Course Design

The FLEAP course began as an extension of an existing course, ENGR2012 Renewable Resources. One of the positive aspects of combining the two was that Germany is a perfect place to visit when studying renewable energy and sustainability because there is a nationwide focus in these areas. Many of the technologies that we discussed in class could be seen throughout Germany and this offered a great opportunity for students to receive experiential learning related to the theoretical material that was taught in class. Studies suggest that engineering students learn better as active learners; and, therefore, being able to see, discuss, touch and evaluate the renewable energy technologies has helped the students fully grasp the course materials². The course material was taught as it had been in previous semesters, except for an additional focus on renewable resources in Germany. Because Germany is arguably the leading country in wide-scale renewable energy implementation, this transition came naturally. Throughout the semester there was ten minutes at the end of every lecture to discuss German culture, language and to discuss the preparations for the summer study abroad. There were even mini-lessons on the German language, where basic German words and phrases were taught by the instructor. In addition to the course materials and the mini-lessons, the students had to keep a travel log during the study abroad and complete a final report with a presentation upon the completion of the study abroad [The final report guidelines can be found in Appendix 1]. This course was used to assess ABET outcomes a, g and h.

2.6. Initial Study Abroad to Germany (2012)

On the initial FLEAP study abroad to Germany, three students and the instructor traveled to four cities in northern Germany while touring renewable energy and sustainability sites along the way. The study abroad lasted 14 days and the cost per student was



Figure 5: 2012 Germany Study Abroad Locations

\$3200. They flew into Hamburg and stayed for one evening. Then they travelled to Bremen and met with some faculty from the University of Bremen. While staying in Bremen they visited with University of Bremen professors that were working on ecological sustainability projects including a project called ReviTech where reused coffee bags were packed with organic material and seeds that would allow plant growth in almost any environment (as shown in Figure 7). These bags were designed to stop the spread of deserts and in some cases even reclaim portions of the desert. Bremen also served as a home base for the group, where they were able to travel to and from the nearby city of Bremerhaven. Bremerhaven is arguably the leading city in offshore wind turbine production throughout the world. The group was able to tour some of the massive manufacturing facilities that are used to fabricate the offshore wind turbines which gave them a real life perspective of the scale of these enormous projects. After spending the majority of the study abroad visiting sites in Bremen and Bremerhaven, the students traveled to Hanover where they continued to visit sites. The sites that were visited were approximately half renewable energy and half sightseeing and cultural experiences. The first study abroad was a successful initial FLEAP study abroad, but because of the unfamiliarity of the regions that were visited there was still room for improvement.



Figure 7: ReviTech Experiment

2.7. 2013 Study Abroad to Germany

The second FLEAP study abroad lasted 14 days with a cost per student of \$3500 and was a definite improvement over the previous year. Now that the instructor had made some contacts and was more familiar with Germany, the plans for site visits and travel, in general, were much smoother. In order to see a wider variety of renewable energy sites, as well as to get a better cultural perspective of areas other than just northern Germany, the group traveled to two different cities than in the previous year. Instead of traveling to Hamburg and Bremerhaven, the group traveled to Cologne (Koln) and Frankenberg. Cologne was the arrival city and is one of the largest cities in Germany. It is also a very important region in Germany's history. Cologne made for a convenient location that was close to three of the major renewable energy sites that the group had planned to tour: a solar power tower in Julich, a wind farm in Aachen and a coal mine in Indeland. The solar

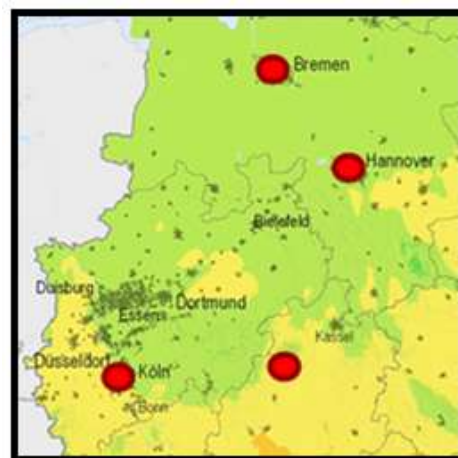


Figure 8: 2013 Germany Study Abroad Locations

power tower visit provided an excellent connection with the lectures that were taught during the semester. The students were able to see the massive size of the heliostat field and learned that the 2180 heliostats at 8 m^2 were able to produce a constant hot air temperature of $680 \text{ }^\circ\text{C}$. From this huge heat flux, a thermodynamic cycle where a gas turbine produced enough electrical power for 300 local homes. Because each heliostat can be focused anywhere on the absorber, the focal location is important in optimizing power output. The students were able to see how the German Engineers ran optimization experiments and how the heliostats were controlled. During this same visit, the students were exposed to solar thermal, solar pv and heat transfer research projects as well. The group traveled to Julich to visit a wind farm, where they learned a lot about wind turbine power output, maintenance, and economics. They also had the opportunity to travel to the top of a 60 meter tall wind turbine to investigate the inner workings of the turbine hub. In the hub the students had a firsthand view of the turbine rotor, stator, transmission, wiring, sensors, and cooling system. After the wind tour was over and on the return trip back to Cologne, the group was taken to an active coal mine where they were exposed to the gigantic size of a coal mining operation, the equipment involved in the processing of the coal and the environmental devastation associated with the mining process.

From Cologne, the group traveled to Frankenberg. Frankenberg is a small town in central Germany that is home to Viessmann which is a company that produces a large variety of traditional and renewable energy devices. During the Viessmann tour, the students gained a great deal of experiential knowledge about energy devices from high efficiency boilers to biogas reactors and solar panels. The group was taken through the manufacturing lines which were very efficient and offered the students a good look at the optimization that an Industrial Engineer would work with in a manufacturing plant. We were bused to a nearby dry biogas plant that used Poplar trees which were grown in nearby Viessmann-owned forests. The students learned about the growth rates of the trees, the harvesting process and the use of the trees in the biogas processing. Finally, the group was given a tour of the larger scale natural gas and oil boilers with an emphasis on energy efficiency and economics.

After the short stay in Frankenberg, the group traveled to Hanover where they toured a biogas plant (shown in Figure 10) and were able to spend time sightseeing throughout the city. The biogas plant visit offered a great deal of insight into the processing and inner workings of a biogas plant. The students learned about input streams, biogas limitations, gas and fertilizer production, energy production and the economics of the biogas plant. The group was able to tour the control room and the compressor station to get a firsthand look at how these plants operate and the extensive monitoring of the plant that must be done to produce the biogas quality necessary to feed into the existing natural gas infrastructure.

The final stop along way was in Bremen where the group was able to visit a soccer stadium that not only creates all of its own electricity on-site, but provides over 500 nearby homes with

energy. Throughout this study abroad, the students were fully engaged in the culture, history, renewable energy sites and in learning all that they could about each location. The FLEAP study abroad not only provided a trip of a lifetime for these students, but provided engaged learning at its fullest. The students were constantly asking questions and yearning for more knowledge. The study abroad was a total success and the students are still enthusiastically telling other students about their experiences. In fact, they have volunteered to present about their experiences in freshman courses and at other university functions.



Figure 6: Biogas Plant Visit in Hanover, Germany

3. Conclusions:

Any successful endeavor requires the commitment and collaboration of a number of stakeholders. Faculty Led Study Abroad Programs are no exception. Although the work has been years in the making, and continues to improve, the efforts result in invaluable and life-long learning experiences for our students.

The collaboration that occurred between faculty, staff, and administration at RMU University has laid a foundation for current and future study abroad programs that not only effectively streamlines the logistics of the programs, but also simplifies the process for faculty members that are interested in organizing new programs. The positive effects of the groundwork that has been put forth can be witnessed in the study abroad program that traveled to Germany in 2012 and 2013.

The life lessons that the students experience throughout their travels are invaluable and are impossible to replicate in the classroom. These lessons and experiences go beyond simply education and provide the students with a unique appreciation of how the world works. After their experiences, the students begin to see the positive effects in their everyday lives; in the way they view the world, the way they appreciate their home and in the way they structure their values. Students have said that study abroad programs are life changing experiences, but the interesting part about the program is that although there is a knowledgeable professor that travels with the students and tries to impart as much knowledge as possible along the way, it is experience itself that does the real teaching; that teaches the life changing lessons these students will never forget.

References:

[1] <http://iie.org/Research-and-Publications/Open-Doors/Data/US-Study-Abroad>

[2] Dunn, R., & Carbo, M. (1981). *Modalities: An Open Letter to Walter Barbem Michael Milone and Raymond Swassing*. Educational Leadership , 381-382.

Appendix 1: ENGR2012 Renewable Resources Final Report Guidelines

ENGR 2013 Renewable Resources Report

- Individual Project Reports are due (10 page minimum, not including References)
- Paper Format: 12 Times font, double spaced, 1 in. margins, include images
- 10 Minute Presentation will be given by each person
- **Introduction:** (1/2 page)
 - o Briefly describe the reason for the study abroad to Germany
 - o Describe the importance of renewable energy in our society and for the future
- **Background:** (1/2 pages)
 - o Describe the renewable resources that are compared in your paper
 - o Briefly explain how you will assess U.S. and German perspectives
- **U.S. Renewable Energy:** (2 pages)
 - o Give a detailed a breakdown of energy production and consumption
 - o Describe relevant renewable energy policies and relevant economics
 - o Explain the latest technologies and research in renewable energy
- **German Renewable Energy:** (2 pages)
 - o Give a detailed a breakdown of energy production and consumption
 - o Describe relevant renewable energy policies and relevant economics
 - o Explain the latest technologies and research in renewable energy
- **Energy Policy:** (1-2 pages)
 - o Explain differences in the way Germany and the U.S. have implemented renewable energy
 - o Give your opinion on which implementation is better and why
- **Cultural Learning:** (2 pages)
 - o Describe U.S. and German perspectives on renewable energy
 - o Describe general differences in German culture
- **Conclusion:** (1/2-1 page)
 - o Give an overview of what you learned throughout your study abroad
 - o Discuss the biggest differences in energy policy and culture
 - o Give your thoughts on how both the U.S. and Germany could improve their use of renewable energy