

**TO:** Professor Cohen  
**FROM:** Caroline Goss and Perry Schiff  
**DATE:** May 9, 2013  
**SUBJECT:** Final Project Memo

### **Overview of our Project**

For our Senior Engineering Studies Capstone Project, our group has worked in coordination with Lafayette College's Study Abroad Office to help better integrate the abroad experience of the Bachelor of Science engineering students with the remainder of their education. While the two typical Lafayette programs in Madrid and Bremen already provide many benefits to the students' engineering education, including a workshop prior to the students' departure will further enhance their experience. As part of the Engineering Studies curriculum, A.B. students are exposed and trained to evaluate the various contexts that influence engineering problems. Therefore, many of the key concepts that EGRS students learn could be passed along to sophomore B.S. students looking to study abroad to open their minds to alternative ways of thinking.

There are several reasons why our group decided that there was a need to address this problem. Firstly, there has been an increasing importance placed on becoming a 'global engineer and citizen' that all students may not fully appreciate. Therefore, by studying abroad, engineering students can better understand the U.S.'s position in the international engineering community. Because the U.S. is not the leading country in the world for engineering, one option to improve our system is to look to others as examples. For Lafayette students, analyzing, practicing, and considering different methods used in other countries during their study abroad experience can directly benefit their personal growth as a global engineer. In order to put our theory into practice, our solution is to have current and future Engineering Studies students act as educators for both the B.S. engineering students and the Study Abroad Office to stress the importance of a globalized engineering education.

### **The Final Product: A Workshop**

In order to communicate our ideas, our group has provided the groundwork for a workshop that is to be presented to the B.S. engineers prior to their departure for abroad. This project will not only benefit these students, but will also provide a learning experience for EGRS Capstone seniors. As part of the current syllabus for the Capstone class, groups of four students each lead discussions about one of the class topics. Our group is suggesting that an additional discussion option be to lead the workshop for the future sophomore students. This topic is relevant to the Capstone material because it embodies the concept that contexts shape the engineering world.

To ensure the continuation of the program, the final product of our project has four parts. Packets of relevant information have been prepared for the Study Abroad Office, the future EGRS student leaders, and the B.S. sophomores. These packets include similar information with differing cover letters addressing the specific parties. The fourth part of our product is a sample lesson plan that the EGRS student educators can use as a template for their class discussion leading.

## **The Research Process**

The information provided during the workshop is a result of a twofold research process. The first of which pertains to factual information about engineering in Germany and Spain. We have researched the various contexts that shape the nature of the engineering cultures, including the political, economic, social, cultural, and technical ones. We have also looked for information about the education systems, the certification processes, and the engineering identities abroad. The second part of our research has been more theoretical, drawing from many of the skills we have learned from our Capstone class material. This analysis exemplifies the significance of understanding these background contexts.

In addition to our online sources, we have also conducted various interviews to better grasp these issues from primary sources. We have been in contact with Professor Kney who is currently with the Madrid program. He agreed that students do not make the most of their experiences and could better integrate their knowledge and skills into their Lafayette programs. We also spoke to a number of upper-class B.S. engineers who participated in the programs during their sophomore year. From those interviews, we were able to get a better sense of what exactly can be done to help the students have a more fulfilling abroad experience. We have included these recommendations in the cover letters addressed to the Study Abroad Office and to the EGRS discussion leaders.

## **The Format of the Workshop**

After having completed our research, speaking with the Study Abroad Office, and considering the concepts of our Capstone class, our group has finalized the outline of our workshop's lesson plan. It is a six step program which includes an informational presentation, a class discussion, and a case study analysis.

The first part of the workshop is an introduction to the importance of studying abroad as an engineer. In this section we discuss the benefits of having an international component to an engineering education, as this concept of being a 'global engineer' is becoming increasingly relevant and valuable. We have found from our sources that with the increase of globalization, American engineering companies often work alongside foreign entities. Therefore, being able to communicate and collaborate cross-culturally is imperative for engineers, skills that are not typically taught in a B.S. engineering curriculum. With the addition of a study abroad component to their education, engineers will be better prepared to solve potential real-world engineering problems.

The second part of the workshop is a presentation geared specifically toward the engineering cultures of Spain and Germany. We provide in the packets information about the political, economic, social, technological, historical, and cultural contexts that might affect engineering projects in the two countries. Once that information has been presented, we suggest a discussion about post-humanism, a concept which argues that ultimately all the contexts play a role in defining the goals and constraints of a particular project.

The third part of the workshop is a presentation about the education system, the certification processes, and the engineering identity in Spain and Germany. It is important for students to understand that differences in engineering problem solving methods exist for a reason. The differences lie more heavily in style over quality, and we would like to encourage Lafayette engineering students to appreciate and comprehend the different methods of these two countries so that ultimately they can consider projects from multiple perspectives.

In the fourth part of the workshop, it will be primarily be the responsibility of the EGRS educators to create discussion questions. This is the section that lends the opportunity for the seniors to draw from their class experiences. However, we have provided example questions in our packets as a guide. This component of the workshop will provide an alternative education method so that the B.S. students have the opportunity to participate in the workshop.

The fifth part of the presentation will give the B.S. students advice on how they can utilize the skills and knowledge they have acquired from their abroad experience upon their return to Lafayette. With globalization and the increase in foreign aid efforts, it is imperative that engineers contribute the useful information and skill sets that they get from going abroad to their education and lines of work back in the U.S. If students have an effective study abroad experience, they should be able to share what they learned to the rest of the Lafayette community to better enhance both their own education and that of their classmates.

The final part of our workshop will be another interactive segment. The presenters will go over the case study of the El Cajon Dam in Argentina to study to give the B.S. students an opportunity to apply what they have learned throughout the workshop. Similar to the second part of the presentation, the students will analyze the various contexts that affected the outcome of the case study. Case studies are an excellent learning resource as they provide a way to share knowledge and encourage people to learn from others' experiences. They also provide credibility as they are based on real-life rather than on theory.

### **Conclusions and Recommendations**

There is potential for future projects to stem from ours to be continued by Capstone seniors in years to come. One suggestion is that because our project acts as a preliminary prototype, future students may continue to enhance this program for B.S. students hoping to study abroad. Another is to expand our idea to all study abroad programs, not only those in Madrid and Bremen. A Capstone final project group in the future may also be interested in creating a syllabus for an engineering class that includes an international component.

Our project will be sustainable if the Capstone professor agrees to include this workshop as an option for a discussion leading opportunity. Therefore, it can be improved on over the years with experience. This workshop has enormous potential to benefit a number of students and seems necessary and feasible for the future.

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*Perry Schiff*

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*Caroline Goss*

## **Appendices**

Appendix 1: Annotated Bibliography

Appendix 2: Survey Questions

## APPENDIX 1

**ABET. (2011). *Accreditation Board for Engineering Technology*. 19 Mar 2013 from <http://www.abet.org/>**

ABET, the Accreditation Board for Engineering and Technology, is an organization that accredits post-secondary education programs in applied science, computing, engineering, and engineering technology. They strive to ensure quality and innovation in engineering and science education. This pertains to our research because we will be able to grasp a more comprehensive understanding of what it takes to become an engineer in the United States, and will then be able to compare this with our other sources describing what it takes to become an engineer abroad. While ABET accreditation is voluntary for institutions, it provides credibility for that program, and ensures a quality education. For that reason, we will be using this website's information for the first phase of our project; the differences and similarities in engineering education in the US and European countries.

**Angelino, H. (2003). *Engineering education and professional development in Germany, France and United Kingdom- examples for establishing continuing professional development of engineers in Japan*. *Natl Inst Inform*, 6, 84-104. Retrieved from <http://sciencelinks.jp/j-east/article/200313/000020031303A0424982.php>**

Certain countries are more acclaimed for the engineering capabilities than others, and thus other less developed ones tend to look to those for example. This article describes how due to recent technological failures in Japan, the country intends on redefining its educational system. The author, Henri Angelino, a French chemical engineer, states that the most efficient way for Japan to determine new methods is to look at the leading countries as models. He uses Germany, France, and the U.K. as case studies to analyze their educational systems. He does so by first describing the process of receiving a degree and certification, and then draws his own conclusions about the methods used based on the statistical and quantitative data that he provides. This source will be primarily useful for our project because it gives an in depth description and critique of the educational systems in three countries that we are studying. It also gives valuable advice for our final project, as it suggests that a combination of pre-existing methods might be the most effective way to redesign the American system. Ultimately for our final product we would like to instruct students studying abroad how to evaluate others in order to return to the U.S. and suggest changes to their current curriculums and programs. A problem with this article is that it was written about ten years ago, and with the educational systems being so dynamic, it may be outdated. We would need to verify the information by comparing it to other sources.

**Blumenthal, P., & Grothus, U. (2008). *Developing global competence in engineering***

**students: U.S. and German approaches. *Online Journal for Global Engineering Education*, 3(2), Retrieved from <http://digitalcommons.uri.edu/ojgee/vol3/iss2/1/>**

In recent years, countries around the world have realized that the education of their engineers is not complete without adding an international perspective as competition has become fierce between nations for job opportunities. The authors, who work for national level non-governmental organizations devoted to stimulating international exchange of academics, offer an outside view of engineering education. They highlight the growing importance and popularity of study abroad programs by analyzing the strategies of the U.S. and Germany use toward developing more globally competent engineers. They recognize the fact that studying abroad has historically not been as popular for engineering students as in other fields because professors are reluctant to grant credit for studies, students are not fluent in other languages, and their requirements are more restricted. In order to solve these problems, increasing funds from their government, industry, and academia so that their students can compete more vigorously for international talent is the proposed solution. Programs such as the Lincoln Scholarship Program that expand the number of Americans studying abroad show that our country is trying to make this issue a national priority. This source is valuable to the first stage in our project that describes the educational processes in the U.S. and Germany. It also highlights why studying abroad is so important for engineers, something that we intend to stress during our workshop. This source complements others by Lucena and Downey well because it gives a different view point, as neither of the authors are engineers.

**Crescenzi, R., Rodriguez-Pose, A., & Storper, M. (2007). The territorial dynamics of innovation: a Europe-United States comparative analysis. *Journal of Economic Geography*, 673-709. doi: 10.1093/jeg/lbm030**

This article speaks directly to the second phase of our capstone study; the post academia comparison of innovation and engineering prowess of the United States and Europe. Innovation is a relatively intangible quality, but the authors do a great job of generating an in-depth look into the innovative status of these two regions by providing quantitative analyses on various measurable concepts. These concepts include the amount and geographical spread of technology patents. The article mentions that the United States is at the forefront of innovation, being the most “competitive and dynamic knowledge based economy in the world”. They also explain the significance and role that geography plays, citing the differences between the United States and Europe. The authors explain why certain methods work better in each region, while others don’t. It is argued that innovation usually occurs in self contained geographical environments in the US, while specialization is negatively associated with innovation in Europe. The article includes a large amount of mathematical and graphical information that may not be useful for our study, but the majority of the concepts included provide excellent insight for our capstone project.

**Downey, G., & Lucena, J. (2004). Knowledge and professional identity in**

**engineering. *History and Technology*, 20(4), 393-420. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/0734151042000304358>**

When countries redefine their national priorities, engineers often become anxious over the accreditation of their knowledge. Lucena and Downey, professors at Colorado School of Mines, and Virginia Tech respectively, describe how the educational system is thus typically adjusted accordingly so that countries remain in parallel with national priorities. They use brief case studies from the U.S., the U.K., Germany, and France and argue that nations want to make their engineers appropriate for the time period and location in which they work, and should do so by considering the cultural and historical context. This source provides valuable information for our project because it addresses a fundamental question that we are trying to answer: how do transnational forms of industrial capitalism inflect patterns of engineers and engineering knowledge? The article answers the question by analyzing national patterns in the educational systems, the balance between influence and determinism, and how countries measure their own progress. The authors encourage readers to appreciate the differences that exist between countries rather than seeing it as a limitation. This contributes to the first stage of our project, as answers how the structures and content of the educational systems are dynamic in countries around the world. This source seems credible for our project primarily because Lucena is an author of the textbook from our Capstone class, it cites other scholarly articles, and it has too been cited in articles published in a variety of academic journals.

**Downey, G.L. and Lucena, J.C. (2005) ‘National identities in multinational worlds: engineers and ‘engineering cultures’, *Int. J. Cont. Engineering Education and Lifelong Learning*, Vol. 15, Nos. 3–6, pp.252–260.**

In this article, Downey and Lucena, experts in engineering education, focus on the ever increasing internationalization of engineering. They discuss how this has evolved significantly since the end of the Cold War, and that it has affected the engineer’s sense of identity. A great example is included; “if I am a Japanese engineer working for IBM Japan, am I working on behalf of Japan or of IBM’s host country, the USA? Or both? Or neither?”. This increasing lack of identity is the basis of the authors’ argument that engineers must demonstrate the ability and acknowledgment of need for lifelong education. They point out how various national organizations such as ABET and the British Engineering Council are mandating this mindset through their accreditation processes. While this article was written in 2005, the concepts are still in effect today, and are significant in studying how someone becomes an engineer not only in the U.S., but in foreign countries as well, which contributes to the first phase of our project.

**Downey, G. L., Lucena, J. C., Moskal, B. M., Parkhurst, R., Bigley, T., Hays, C., & Nichols-Belo, A. (2006). The globally competent engineer: working effectively with people who define problems differently. *Journal of Engineering Education*, pp. 1-16.**

This article is written by a number of highly educated experts in various engineering and education fields. They pool their knowledge and expertise to discuss the importance of the globally competent engineer. The article explains how engineers from various countries have differing values, and this may pose a problem for collaboration. For this reason, the authors argue the importance of teaching engineering students the knowledge, ability, and predisposition to effectively work with people who define problems differently. This coincides with the second phase of our project. We intend to prepare students to have an open mind when they participate in their study abroad programs and rather than discrediting the methods used in other countries, they should consider them in an American context. We will be able to use these arguments to supplement our goal of creating more globally minded engineering students at Lafayette College.

**Engineering Council. (2011). *Engineering Council*. 19 Mar 2013 from <http://www.engc.org.uk/>**

The Engineering Council is an organization in the UK that is responsible for accreditation of engineering schools and programs, doing so while maintaining “internationally recognized standards of professional competence and ethics”. They are the regulatory authority for registration of Chartered and Incorporated engineers and technicians, who are comparable to Professional Engineers in the United States. They provide assessments for licensing throughout the UK. Their website provides more detailed information regarding their testing as well as their role in engineering society in the UK, which will be greatly beneficial to our study of British engineering. We will be able to better understand the steps necessary to become an engineer in the UK, and compare them to those of students in the United States.

**European Federation of National Engineering Associations. (2013). *FEANI*. Retrieved March 19, 2013 from <http://www.feani.org/site/>.**

The European Federation of National Engineering Associations (FEANI) is a collaboration of professional engineers that unite the national associates from 32 European countries. This website maintains a database of qualifications that engineers must uphold in order to be professionally qualified in Europe. Each engineer is registered as long as they have undergone seven years of ‘formation’ which includes at least three years of engineering education and at least two years of professional experience. This source is useful to our project because the countries that we plan on studying (France, Germany and Spain) are all part of the FEANI. The UK however, because it is not part of the European Union, has its own board of accreditation. It also contains instruction on how to apply to become a member, something that every European engineer has to go through. There is also a section of the website for publications and agreements that contains a number of papers and agreements between nations on the qualifications of engineering. This source is a credible one because it is a secure agency that the European Commission has registered as a good example of a self-regulated entity.

**Felder, R. M., & Silverman, L. K. (1988). Learning and teaching styles in engineering. *Engineering Education*, Vol 78, Nos .7, pp. 674–681.**



This article provides excellent insight into the various methods of engineering education as well as engineering learning by modeling the differing learning styles of engineering students. Dr. Linda Silverman is an expert in educational psychology, and Richard Felder is an expert in engineering education. Felder and Silverman go into depth in explaining the different ways students effectively learn engineering material as well as the varying methods that professors employ to teach that material. Often times, there is a severe mismatch of teaching and learning types, causing a lack of transfer of knowledge. They suggest that engineering professors include a few different teaching types to ensure they various types of learners can grasp the presented knowledge. One area that this article falls short is in comparing this American teaching and learning study to those of foreign countries. The article is also relatively dated, yet the information seems to remain true even today. Aside from these shortcomings, my capstone group will gain valuable insight in learning these various methods of engineering education, their benefits and drawbacks, and we will then be able to draw our own connections to the systems in other countries.

**Grandin, J. (2006). Preparing engineers for the global workspace. *Online Journal for Global Engineering Education*, 1(1), Retrieved from <http://digitalcommons.uri.edu/ojgee/vol1/iss1/3/>**

With increases in globalization, companies must be prepared to go to the international market system to remain competitive and innovative by cultivating the best talent regardless of location. This article stresses the importance for American students not only to be well versed in the technical aspects of their engineering degrees, but also have perfected personal and communication skills for collaboration across nations. Grandin, the Director of IEP at URI, suggests his program as a model to provide the necessary skills for engineers to work effectively in today's global workplace. Although bias, the author does validate how the five year BA/BS program is effective, comprising of simultaneous majors in a language and engineering discipline as well as a semester abroad and a six-month internship with an engineering firm. Although he does not cite many outside sources, he does cite a number of his own additional sources that one can look up to read more about this program. This source is particularly helpful to our project because ultimately we are trying to create a study abroad program that is most effective in creating a globally competent engineer. We intend for the abroad program to become a more integrated part of an engineer's education, rather than just a supplementary entity. By giving it more context within the overall degree, the study abroad program could be much more useful than it is right now.

**Grandin, J. (2011). Global engineering education: What difference does it make? *Online Journal for Global Engineering Education*, 6(1), Retrieved from [http://ieeexplore.ieee.org/xpls/abs\\_all.jsp?arnumber=6259597&tag=1](http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=6259597&tag=1)**

From the other sources our group has studied thus far, it is obvious that a global education for engineering students is becoming increasingly crucial as engineers face

competition with international students. In this journal article, Grandin describes his study of a number of students and how their study abroad experiences contributed to their successes in the workplace. Through one study in particular of Eric Sargent, an IEP graduate who studied in Germany, the author was able to list the benefits of the exposure to another culture, learning another language, developing an appreciation for other cultures, and learning to be mobile. As quoted by Sargent, he could not have been such an effective cross-cultural communicator in his role at BMW without his fluency in two languages and an understanding of the differences between the way Germans and Americans behave and function in their daily lives. This source on one hand is questionable because it does not cite any sources other than the students that the author interviewed. However, this source serves a different purpose than the others; it addresses the personal side to the decision of going abroad. This story would be one that might inspire a student to participate in a program who may be hesitant. This source is another example of one that would only be credible when accompanied by quantitative data from another source. Also, this it would be interesting to compare it to a personal study of a student who had a negative experience abroad.

**Guttenplan, D. (2010, October 11). France wrestles with its 2 tiers of higher education. *NYTimes*. Retrieved from [http://www.nytimes.com/2010/10/11/education/11iht-educLede11.html?\\_r=0](http://www.nytimes.com/2010/10/11/education/11iht-educLede11.html?_r=0)**

Although one of the leading suppliers of engineering innovation, France continues to wrestle with the organizational system that dates back hundreds of years. As described in a NY Times article, the French system is rigidly divided between the *grandes écoles* and the public universities. The former is a series of schools that could be compared to the Ivy League schools in the US, while the latter are debatably comparable to community colleges as they do not have any restrictions in their admissions. This system stems from the long history of France being segregated dependent on class system. Therefore only the rich and powerful would be able to achieve an impressive education while the rest of the country falls behind. The problem that the author addresses is that France has come so far in their engineering innovations but their educational system impedes their development. This source is useful for our project because it gives information about the nature of the educational system in France, along with a critique of its current structure. Therefore it would help us in the first step of our project that defines the differences between the educational systems in the US and Europe. This source is credible because it comes from the NY Times which is a reliable source. It also provides direct quotations from accredited people such as the Deputy Mayor of Paris that adds to the reliability of the source.

**Heitmann, G. (2000). Quality assurance in German engineering education against the background of European developments. *International Journal of Engineering Education*, 16(2), 117-126.**

This article focuses on the various difficulties involved with striving for quality assurance in engineering education such as creating criteria for accreditation. Germany is the main focal point, though the article does a nice job of comparing it to other countries, such as

other European Union members, in terms of quality control of engineers and engineering education programs. The author talks about some methods different countries use to assure quality engineers, such as their accreditation agencies and criteria. Later in the article, the approaches to quality assurance in engineering education specific to Germany are discussed in further detail. We as readers gain insight into what it takes to become an engineer in the German society. My capstone team will be able to use this information in our comparisons between Germany and the United States. One deterrent may be that this article was published in 2000, though most of the information still seems to be completely relevant in today's world.

**Lohman, J., Rollins, H., & Hoey, J. (2006). Defining, developing and assessing global competence in engineers. *European Journal of Engineering Education*, 31(1), 119-131. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/03043790500429906>**

Agreement has been reached in the engineering field that developing globally competent engineers is important in the educational system. However, the authors argue that there has yet to be determined exactly what skills and abilities are considered useful toward global competence, how to achieve them, and how to evaluate them. The three professors from Georgia Institute of Technology suggest a number of solutions to each of these problems ultimately by using their university's program, the International Plan, a four-point plan that can each be expressed in measurable terms. It sets participation goals, assessment methods, and performance criteria so that the university can analyze the effects of international study for its students. Although this source does not provide that much new information, as similar and more in-depth information appears in the other sources, it does give our group a method to quantify the level of value a student's study abroad experience. From this, we will be able to communicate to the students during our workshop a way to self-evaluate their experience abroad during and after they travel. This source is particularly credible as it has an extensive list of references that come from reliable sources. The biographies are also included at the end of the article, giving the authors more credibility as the readers can understand that they have impressive and in-depth backgrounds in both the international and engineering realms.

**Lucena, J., Downey, G., & Mitcham, C. (2007). Engineering ethics and identity: Emerging initiatives in comparative perspective. *Science and Engineering Ethics*, 13(4), 463-487. Retrieved from <http://link.springer.com/article/10.1007/s11948-007-9040-7?LI=true>**

As we have addressed in our Capstone class, the responsibility that engineers have to society is becoming more prominent with such drastic increases in technological development. This article addresses how the ethics of engineers in the U.S., France, Germany and Japan help answer the question of "who is an engineer?" The authors from Virginia Tech and the Colorado School of Mines argue that any inquiry into the identity of engineers stems from the engineering education, as it serves as the key location for negotiating relationships between the person of the engineer and the definition and responsibilities of the work performed. They suggest that in order to understand the

issues that engineers face in their own countries, they should look at others. After an in-depth analysis of the mentioned countries' ethics in engineering, they conclude that ethics emerge from engineers wanting to stay in line with the changed images of advancement in society. This source is useful to the first part of our project as we analyze the educational and workspace systems of engineering in various countries. It provides a breadth of information about the European systems as well as addressing a key question that our project is to answer of who is considered an engineer. The source is definitely credible, as the authors are well renowned and have been cited by many other scholarly works. They also include an extensive list of sources that they cite in this particular source.

**NSPE. (2013). *National Society for Professional Engineers*. 19 Mar 2013 from <http://www.nspe.org/index.html>**

The National Society of Professional Engineers, NSPE, acts as the voice for all licensed American engineers. This organization advocates for engineers and related disciplines by promoting leadership and ethics. This website will allow our group to fully grasp this major organization behind engineering. The NSPE, "through education, licensure advocacy, leadership training, multi-disciplinary networking, and outreach, enhances the image of its members and their ability to ethically and professionally practice engineering". All of these qualities define engineering in an American sense, which we will then be able to compare to other countries on the global stage. While ABET is more focused on ensuring quality in America's engineering students, the NSPE ensures quality and leadership in America's professional engineers. This links well with our project, and will help in solidifying our second phase; post academic global engineering.

**Silverstein, B. (24, Nov 2008). *German engineering drives global brand success*. Retrieved from [http://www.brandchannel.com/features\\_effect.asp?pf\\_id=451](http://www.brandchannel.com/features_effect.asp?pf_id=451)**

This is an article discussing the importance of branding, and how Germany's engineering has helped it become one of the top producers of successful brands spanning numerous industries. The author, Barry Silverstein, has over thirty years of advertising and marketing experience and is currently a freelance writer and marketing consultant. He has written three marketing books, including one published by McGraw-Hill, co-authored with Arnold CEO Fran Kelly. Silverstein argues that German brands, and Germany itself, are so successful due to their discipline and attention to quality. The article compares this to America's mentality, which focuses on efficiency and mass production. These concepts will be beneficial to our study when comparing engineering on a global stage, specifically between the USA and Germany. Though written in 2008, the German companies mentioned (i.e. BMW and Adidas) continue to function similarly and with great success.

## **APPENDIX 2**

- 1) Why would you encourage a student to go abroad?
- 2) Do you think that students who have gone abroad have benefitted over those who did not?
- 3) How have those students integrated what they have learned abroad back into their classes, projects, and organizations/clubs at Lafayette?
- 4) Are there any changes you would make to the program? if so, what?
- 5) Do you think students make the most of their foreign education? Do they demonstrate that they are grasping the value of being exposed to foreign engineering?