Establishing Global Programs Across a College of Engineering and Technology: A Dean’s Perspective

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1.0 Abstract
For the past ten years the college leadership in the Ira A. Fulton College of Engineering and Technology at Brigham Young University has placed an emphasis on developing global programs. We started with almost nothing in place. Through steady effort on the part of dedicated faculty, staff, and donors, we have gradually implemented a suite of programs around the world that now involves more than 150 students per year. In this paper we look back and discuss the road we have traveled and what we have learned. We discuss some of the assumptions made ten years ago and how well those assumptions hold up today. We conclude with some observations about the relevance of global education for engineers.

2.0 Introduction
In this paper we wish to discuss the development of global programs in the Fulton College of Engineering and Technology over the last ten years. Although specific to our institution, we believe our experience has application to other universities as well. We begin with some background regarding the university and college, including strategic directions for the college. We discuss the rationale for developing global competence as seen from the perspective of ten years ago, and update that discussion with new data. We review formats for study abroad programs. We present the programs we have put in place and then summarize some of what we have learned.

3.0 Background
3.1 Brigham Young University
Brigham Young University (BYU) is one of the largest private universities in the United States, with approximately 32,000 students. Students come from all 50 states and more than 100 countries. It is selective in admissions. About 70% of the students speak a second language as a result of voluntary service that often occurs abroad. Because of the international experience of the student body, more than 50 languages are taught on campus, and the university operates a large number of study abroad programs, with permanent facilities in London and Jerusalem.

3.2 Ira A. Fulton College of Engineering and Technology
The Ira A. Fulton College of Engineering and Technology at BYU currently has an enrollment of 4000 students in five engineering and five technology programs. The college awards approximately 600 B.S., 100 M.S. and 20 Ph.D. degrees in a year. These degree totals reflect the direction of the Board of Trustees that BYU remain predominantly an undergraduate institution. About half of the graduates go on to graduate school.

The current college administration began to serve in May of 2005. It was natural that we took some time to identify strategic directions we felt would help prepare our students for success in the 21st century and increase the visibility of the college.

Concurrent with our deliberations, a report was released from the National Academy of Engineering entitled, “The Engineer of 2020,” which discussed the forces acting on engineering
in the United States and what preparation engineers needed to be competitive in the global economy.\textsuperscript{1} This report was accompanied by a number of credible voices and other studies which supported its conclusions.\textsuperscript{2,3,4} The report indicated that the skill set for engineers needed to expand beyond analysis and technical skills to include, among others, global competence, leadership skills, creativity, ethical responsibility and a commitment to lifelong learning.

As we considered this broadened skill set and the changes acting on engineering, the college strategic directions gradually coalesced into initiatives we referred to by the acronym “LIGHT,” as given in Figure 1. As shown in the figure, the letters stand for Leadership, Innovation, Global agility (or competence), High character, and Technical excellence. Thus developing global competence among our students became one of the priorities of the college. At the time the college had no college-sponsored study abroad programs.

4.0 The Rationale for Developing Global Competence
4.1 Identifying the Driving Forces Behind Globalization
As we considered a college-wide effort to implement global programs, we felt it would be worthwhile to look at the situation more closely—what were the forces that were driving the globalization of engineering? Why is global competence needed and what, specifically, does it mean? Accordingly the authors wrote the paper, “The Rationale for Developing Global Competence,” which identified several driving forces behind globalization.\textsuperscript{5} These forces include,

- Advances in technology, including the development of the Internet, a worldwide digital network based on optical fiber, wireless communications, and advanced CAD systems.
- Geopolitical events, including the dissolution of the Soviet Union, the formation of the European Union, and the development of market economies by China, India, and other developing countries.
- Economic institutions, including the World Trade Organization, the International Monetary Fund, and the World Bank.
These forces have led to dramatic increases in global trade and the rise in scale and influence of multi-national companies. According to the World Trade Organization, the growth of world trade was more than double the growth of world GDP from 1995 until the recession in 2008. Since that time the ratio has been less than 2.0 but greater than 1.5. In 2015, 35 of the world’s largest one hundred economies were not countries but companies. A recent article in the popular press indicates that for the S&P 500 companies, 48% of their 2014 revenues came from abroad. Technology-based companies were even higher. Examples of prominent engineering-based companies which receive a majority of their revenues from abroad include Intel (82%), ExxonMobil (67%) Dow Chemical (67%), Apple (62%), Boeing (58%), and General Electric (53%). Many product development companies now have global markets and global competitors; many use geographically distributed teams to design products, and many manufacture around the globe.

However, there are other compelling reasons for engineers to be globally competent besides economic competition. The rationale for developing global competence can also be based on the need for engineers to be able to effectively address global problems. For example, the National Academy of Engineering developed its “Grand Challenges of Engineering,” which represent some of the most significant challenges facing humankind. The 14 challenges can be grouped into several categories such as protecting the environment (develop carbon sequestration methods, manage the nitrogen cycle), developing abundant clean energy (make solar energy economical, provide energy from fusion), providing for security (secure cyberspace, prevent nuclear terror) and supplying the necessities of life for a projected nine billion people (provide access to clean water, renew urban infrastructure).

Solutions to these challenges involve technology, but they involve a lot more than technology. Many cut across ethnic, cultural and national boundaries, and they will require cooperation and understanding among peoples and nations if they are to be solved. As members of society who help develop the technology required to address these problems, engineers will need to work with others from around the world to identify and implement solutions.

4.2 The Newport Declaration
In 2008 a group of engineering educators issued “The Newport Declaration” as a call for the globalization of U.S. engineering education. The preamble to this declaration provides a good summary of the reasons for developing global competence among engineers:

WHEREAS
• the world is experiencing dramatic geopolitical and technological changes which are continually revolutionizing transportation, communication, commerce, education, and life experience; and
• these transformations are intertwined with rapidly increasing human population and resource consumption, and therefore bring about increased worldwide challenges and tensions; and
• engineering is crucial to addressing these grand challenges facing the planet, and to thereby enhancing global peace and prosperity, and
• collaboration on grand challenges builds a stronger sense of global community, and U.S. engineering students engaged in global outreach are uniquely positioned to be ambassadors for the nation; and
• the national economy, competitiveness, security, and well-being depend upon successful participation in a global, technology-driven marketplace; and
• the U.S. engineering culture brings ingenuity, boldness, and a results-oriented mentality that are crucial to global collaborative progress, and
• U.S. citizens tend to be poorly informed about nations and cultures and therefore underequipped to work effectively with international partners; and
• all of the above have vital implications for the education of U.S. engineers;

THEREFORE…(it then continues on with some conclusions which are mentioned in Section 6.0).

4.3 Looking Back Ten Years
Ten years ago, as we looked at the reasons behind globalization, all of them seemed to represent forces that were not transient, but would continue or grow in the future. Globalization did not appear to be a fad. As we look back, this conclusion seems to be justified. In particular, the worldwide digital network infrastructure, both in hardware and software, has continued to grow and become more capable. The geopolitical events and institutions that have supported world trade have continued. All of the driving forces for globalization which were identified then are still in force now.

However, there are some caveats. First is the possible impact of terrorism and, more generally, instability among nations. The threat of terrorism could result in a restriction of the free flow of people, capital or technology across borders, and thus dampen global economic forces. Actual acts of terrorism, such as happened on 9/11, could have a huge, unpredictable effect on world trade.

A second development of note, still small but perhaps significant, is the “re-shoring” of American manufacturing. In 2014, for the first time in twenty years, there was a net gain of at least 10,000 jobs in the manufacturing sector in the U.S. This was due to a number of causes, including rising labor costs abroad, particularly in China, and a decline in energy costs in the U.S. Further, “to meet consumer demand, companies increasingly want to make products closer to where their customers are and react to trends and ship faster.” It should be noted that this shift of jobs is the result both of re-shoring by U.S. companies and foreign direct investment (FDI) by abroad companies, such as Daimler, Hyundai or Airbus. FDI represents the “flip side” of globalization: instead of U.S. companies going into foreign markets, foreign companies are coming here. This flip side, however, also requires U.S. engineers to develop some measure of global competence.

5.0 Getting Started With Our Own Study Abroad Programs
5.1 Understanding the Spectrum of Program Types
With a resolve to get started in 2006, the question was, how should we do this? We felt it would be prudent to learn from what others had done. Accordingly, we did a survey of 25 of the most
noteworthy programs and tried to categorize them by format. We also tried to infer some best practices and common challenges. We summarize the formats we observed in Table 1.

Table 1 Summary of Program Types

<table>
<thead>
<tr>
<th>Program Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual Degree</td>
<td>Students obtain two degrees—one from the home university and one from the abroad university. Usually includes substantial study at the abroad university in the abroad language.</td>
</tr>
<tr>
<td>Exchange</td>
<td>Students from the home and abroad university are exchanged and take regular courses in the abroad language. A parity of exchange is maintained so there is no net expense to either institution.</td>
</tr>
<tr>
<td>Extended Field Trip</td>
<td>This format involves a 1-3 week tour involving visits to numerous countries, companies, and/or universities. The idea is to obtain a “snapshot” of the world via a broad exposure to numerous places.</td>
</tr>
<tr>
<td>Extension</td>
<td>The home university operates a pseudo-extension campus in the abroad country at some sort of permanent facility. Courses are usually taught in English by faculty from the home university.</td>
</tr>
<tr>
<td>Internship or Co-op</td>
<td>Students work abroad at a foreign company or at an international branch of a U.S. company. An internship is often less structured than coursework yet can include a lot of informal learning, regarding issues such as teamwork, communication, design, manufacturing, etc.</td>
</tr>
<tr>
<td>Mentored Travel</td>
<td>Under the guidance of an advisor, students travel to the abroad country and study and/or tour for four or more weeks.</td>
</tr>
<tr>
<td>Partner Sub-contract</td>
<td>The home university partners with an abroad university and contracts for courses to be taught to students of the home university (usually in English). Students may live on-campus. Unlike an exchange program, parity of exchange does not have to be maintained.</td>
</tr>
<tr>
<td>Project-based Learning/Service Learning</td>
<td>Students travel abroad and are immersed in another culture via a project that connects technology with the abroad society. Engineers Without Borders is an example of this type of format.</td>
</tr>
<tr>
<td>Research Abroad</td>
<td>Students conduct research in an abroad laboratory under the guidance of a faculty member or post doc, etc.</td>
</tr>
</tbody>
</table>

5.2 Programs in 2006
A summary of our first programs is given in Table 2. Prior to 2006 we had one study abroad program in the college run essentially by a single faculty member working on his own. He was contemplating shutting the program down because it was not clear that the huge effort involved was valued by his department or the college.

Table 2. Study Abroad Programs in 2006

<table>
<thead>
<tr>
<th>Country</th>
<th>Focus</th>
<th>Format</th>
<th>Time Abroad</th>
<th>No.</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>BYU students working with Mexican students on water resource</td>
<td>Extended field trip</td>
<td>2 weeks</td>
<td>17</td>
<td>This was a very successful program that continues to this day. The key, however, was having this be part of a semester-long course in numerical</td>
</tr>
</tbody>
</table>
5.3 Looking Back Ten Years
As we look back on these first efforts ten years ago, there are several observations which come to mind:

- First, the formats given in Table 1 still seem to represent relatively well the spectrum of study abroad programs offered today, although there are certainly permutations of these formats. We were surprised when we first began this study at the wide variety of formats being used to provide international experiences.
- In the college office, we were concerned how we would provide resources to fund these programs. Fortunately we were able to identify some short-term funds that could be used for this purpose. Annual costs were approximately $125k per year for the first few years. The majority of these funds were used to provide subsidies to defray the cost of student travel. In the long-term we were able to establish an endowment to fund these programs, as discussed in Section 7.2.
- We resolved to take full advantage of existing infrastructure. The university already had an international programs office that provided tremendous assistance—from detailed safety briefings to student medical insurance to booking flights and making hotel reservations. Indeed, this office assigned a person half time to our college to help coordinate the logistics of our programs. Things would have been much more difficult without this help.
- When it comes to study abroad, you learn by doing. We learned a lot that first year. Although getting students abroad was good, it was not enough. We began to see that some programs were stronger than others in terms of blending engineering with international experiences. The strongest programs had the strongest preparation: students took a course where the engineering subject was studied in depth and also made extensive preparations for the abroad experience. In some cases, where abroad universities were
involved, students made contact with their abroad counterparts and got acquainted before they left.

- These programs emphasized the importance of faculty directors. Passionate directors are key to overall success and certainly to initiating and designing programs. Keeping directors engaged and feeling valued was a key goal of the administration. We resolved to provide strong support as a college to the faculty directors in a number of ways, some of which are discussed later in the paper.
- Since these programs are relatively expensive in terms of actual cost and faculty time, we wanted to have some means to assess them. We haven’t been as successful here as we would like (see Section 8). But we knew we needed to start with each program having a set of specific objectives.
- These programs were synergistic with another college goal of increasing women enrolled in engineering and technology. Women participated in disproportionate numbers.
- We were impressed with the potential of humanitarian (service learning) projects to provide excellent learning opportunities for our students and to contribute to improving the living conditions of mankind. We resolved that service learning type programs would continue to be part of the study abroad program mix.

6.0 Growth of Programs Nationally
6.1 The Newport Declaration’s Call for Action
After laying out the reasons for developing global competence, the Newport Declaration goes on to rather bold conclusions and a call for action with the statements:

“It is imperative that U.S. engineering educators and education adapt to the contemporary global environment;” and “It is imperative that all engineering students develop the skills and attitudes necessary to interact successfully with people from other cultural and national environments.”

“To this end, we call on engineering educators, engineering administrators, and engineering policy leaders to take deliberate and immediate steps to integrate global education into the engineering curriculum to impact all students, recognizing global competency as one of the highest priorities for their graduates.”

6.2 Looking Back Ten Years
Although the Newport Declaration received some publicity (it was published, for example, in the ASEE Prism magazine), the impression of the authors is that it did not get a lot of attention. Nevertheless, by at least some measures, the response of engineering programs has been significant. According to the Institute of International Education, study abroad participation by engineering students has more than doubled over the past ten years from 5,550 students (2.9% of all study abroad participants) in 2003/2004 to 14,000 students (4.6% of all participants) in 2013/2014. As a percent of bachelor’s degrees awarded in engineering, annual participation has grown from the equivalent of 7.5% of the graduating class to 14% of the graduating class (considering only undergraduates). This represents good progress.
7.0 Growth of Programs at BYU

7.1 Summary
The five programs of 2006 gradually expanded to about ten programs a year. Some of these are only offered every other year. The growth of programs is illustrated in Table 3, which shows the number of programs and participants for the past ten years. We can see from the table that activity ramped up for about five years and then leveled off to include about 150 students per year. This represents about 25% of the graduating class at the bachelor’s level.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Programs</th>
<th>Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>5</td>
<td>73</td>
</tr>
<tr>
<td>2007</td>
<td>7</td>
<td>90</td>
</tr>
<tr>
<td>2008</td>
<td>7</td>
<td>112</td>
</tr>
<tr>
<td>2009</td>
<td>6*</td>
<td>115*</td>
</tr>
<tr>
<td>2010</td>
<td>6</td>
<td>116</td>
</tr>
<tr>
<td>2011</td>
<td>8</td>
<td>150</td>
</tr>
<tr>
<td>2012</td>
<td>10</td>
<td>154</td>
</tr>
<tr>
<td>2013</td>
<td>10</td>
<td>115</td>
</tr>
<tr>
<td>2014</td>
<td>10</td>
<td>142</td>
</tr>
<tr>
<td>2015</td>
<td>9</td>
<td>162</td>
</tr>
</tbody>
</table>

*estimated

The types of programs offered in 2015 (since some are taught every other year, not all programs are represented) are shown in Table 4. The table shows that the programs spanned Asia, Europe and South America.

<table>
<thead>
<tr>
<th>Location</th>
<th>Focus</th>
<th>Format</th>
<th>Time Abroad</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>Global Leadership</td>
<td>Mentored travel</td>
<td>8 weeks</td>
<td>21</td>
</tr>
<tr>
<td>China</td>
<td>Mega-structures/Mega-cities</td>
<td>Extended Field Trip</td>
<td>2 weeks</td>
<td>22</td>
</tr>
<tr>
<td>Latin America</td>
<td>Water resources</td>
<td>Extended Field Trip</td>
<td>2 weeks</td>
<td>21</td>
</tr>
<tr>
<td>Europe</td>
<td>Global Leadership</td>
<td>Mentored Travel</td>
<td>6.5 weeks</td>
<td>30</td>
</tr>
<tr>
<td>Europe</td>
<td>Water resources</td>
<td>Extended Field Trip</td>
<td>2 weeks</td>
<td>9</td>
</tr>
<tr>
<td>Europe</td>
<td>Industrial Design</td>
<td>Extended Field Trip</td>
<td>2.5 weeks</td>
<td>10</td>
</tr>
<tr>
<td>Singapore</td>
<td>Design Immersion</td>
<td>Partner</td>
<td>2.5 weeks</td>
<td>16</td>
</tr>
<tr>
<td>Peru</td>
<td>Global Engineering Outreach (humanitarian engineering)</td>
<td>Service Learning</td>
<td>2 weeks</td>
<td>16</td>
</tr>
<tr>
<td>International Internships</td>
<td>Work at company in foreign country</td>
<td>Internship</td>
<td>Variable</td>
<td>17</td>
</tr>
</tbody>
</table>
7.2 Establishing the Weidman Center
A major milestone for the college was the establishment of the Weidman Center for Global Leadership in 2011. The center was established with a $10 million grant from David and Rachel Weidman. David was the CEO of Celanese, a multi-national chemical company with operations around the world. He and Rachel believe strongly in the need for engineers to develop leadership skills and global competence. The Center allowed us to hire a full-time director and to provide a 15-25% subsidy to every student going abroad from the college. The Center has provided a stable base of funding and a focal point for the leadership and study abroad programs in the college.

7.3 Looking Back Ten Years
Over the past ten years more than 1200 students in the college have participated in some sort of technical study abroad program. We are pleased that we have been able to provide this type of learning experience for our students. A few observations:

- One surprise for us was the strength of programs which developed in Civil and Environmental Engineering (CEE). Since CEE deals with large structures which have to be built in place such as dams, roads, bridges, and buildings, and cannot therefore be “out-sourced,” one might think there is less reason for civil engineers to be involved in study abroad programs. However, many of the largest and most innovative designs for such structures are now in the Middle East and Asia. Our programs in CEE first started with a unique program whereby students took a class in the design of skyscrapers and analyzed the design of a building they would visit. They then toured the actual structure and in some cases met the designers. This program expanded to include traffic issues in major cities such as Beijing. These programs were supplemented with water resource programs offered in Latin America. As a result, about 70% our graduating CEE students have a study abroad experience.

- We have implemented a relatively small subset of the program types given in Table 1. One challenge for us was to find programs we could begin without a lot of additional resources and which could be expanded relatively easily. Some formats scale better than others. For example, it is our observation that Exchange programs are difficult to grow because of the need to maintain reciprocity between institutions in student numbers. We also have found international internships to be very resource intensive, although we do have them, and somewhat difficult to scale. The main formats we have employed have been the Extended Field Trip and Mentored Travel, with some Project-Based Learning and Internships.

- Our programs typically do not involve long periods (less than 8 weeks, with most 2-3 weeks) abroad. This is mostly a reflection of the time constraints of both our students and our program directors.

- As mentioned earlier, programs largely rise and fall on the strength of the program directors. We have provided both moral and physical support for directors. Perhaps most importantly, they have received credit for doing this in the rank and status process. In many instances we have paid for family members to accompany them. We also realized we could not usually run programs long-term with only one faculty director and have
therefore supported efforts for each program to have multiple directors, who then alternate years.

- We have been pleased we have been able to provide some financial assistance for students, since these programs are expensive. We have found that donors like to support these programs. Many of them have “lived this experience” in their professional careers and are anxious to provide support for what they feel is “the real world.”

- We have also faced some challenges. One challenge was unexpected and more physical in nature—three faculty developed blood clots (two while abroad) directly related, we think, to sitting down for long periods of time while flying. One faculty member suffered a heart attack while in China. Fortunately we had two faculty directors on that program—one of several times we were grateful to have two directors present for a program. We have also had several students need to be hospitalized.

- One means for gaining international experience—without travel—which we thought would become popular but has been more limited and difficult than anticipated, is through virtual global teams, whereby geographically distributed teams interact via the Internet on a design project. We have run a number of these teams at BYU, and feel they are a valuable experience, but have limitations. Our feeling is that these virtual programs really do not replicate the experience of traveling to another country.

8.0 Assessment

8.1 Assessment Issues

Assessment of these programs continues to be a challenge. We view assessment as having a pyramid of different levels, as given in Fig. 2 below. As the bottom level are university specific objectives or competencies which are desired for all study abroad programs across the university. Then we have college level objectives, department level objectives and finally program level objectives.

So far, we really only have subjective measures of assessment, where we ask students to indicate how well a particular competency was achieved. For example, questions for university-wide competencies are given in Table 5, along with average response, and questions for college-wide competencies are given in Table 6. These response averages are based on a Likert scale of (1 = strongly disagree, 4 = neither disagree nor agree, 7 = strongly agree). We recognize that this type of self-evaluation is not a very strong form of assessment. As part of this assessment, we also asked students to provide a written example of each competency. This should enable us to better assess more objectively if their self-responses are valid. We started doing this just last year for each question and so far have not analyzed the results.

We appreciate the efforts of researchers to provide more objective assessment and feel this is an on-going need in study abroad programs.17,18
Fig 2. A pyramid of study abroad outcomes.

Table 5. Questions asked of all participants (1-5). Based on a Likert scale of 1-7.

<table>
<thead>
<tr>
<th>Questions asked of all study abroad participants at BYU in 2015</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. My confidence and ability to live abroad or interact with people from other cultures has been strengthened</td>
<td>6.41</td>
</tr>
<tr>
<td>2. I have a greater appreciation for other nations or cultures.</td>
<td>6.42</td>
</tr>
<tr>
<td>3. I have a deeper understanding of my own culture.</td>
<td>5.88</td>
</tr>
<tr>
<td>4. I have a deeper understanding of my own discipline.</td>
<td>6.00</td>
</tr>
<tr>
<td>5. My respect and love for people different from me have grown.</td>
<td>6.31</td>
</tr>
</tbody>
</table>

Table 6. Questions asked of students in the college. Based on a Likert scale of 1-7.

<table>
<thead>
<tr>
<th>Questions asked of students in Engineering and Technology only</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6. My view of what I might do in my career has expanded</td>
<td>5.93</td>
</tr>
<tr>
<td>7. I have a better understanding of globalization.</td>
<td>6.06</td>
</tr>
<tr>
<td>8. I know better how to communicate across cultures.</td>
<td>6.00</td>
</tr>
<tr>
<td>9. My leadership abilities have been increased</td>
<td>6.13</td>
</tr>
</tbody>
</table>

The responses show that students’ perception is that they are achieving the program outcomes and find study abroad programs to be valuable.

8.2 Looking Back Ten Years
Probably the most useful form of assessment we have had to date results from asking students to respond to following statement: “Please write a paragraph explaining the impact that your study abroad program has had on your overall educational experience at BYU.”
These responses are quite illuminating. Often students indicate the experience has been transformative (in numerous ways) and a highlight of their education at BYU.
For example, in 2009 the following two responses to this question were selected as representative of the group who went on the China Mega-structures program:

“For me this experience has been life changing and unbelievable. I came on this study abroad with many preconceived notions about China and my role in this new emerging and interconnected world; after a few short weeks all those preconceived notions have changed.”

“I’ve learned that the world needs dynamic, innovative engineers. Being a top engineer is not going to be easy and it won’t take just some good math and problem-solving skills. As a result of this study abroad I am able to set new goals and rededicate myself to becoming the person and world citizen I want to be.”

In visiting with a director of numerous study abroad programs in the college, the question was asked, “What do you feel is the main benefit of these programs for students?” and he responded, “confidence.” Not only the confidence students develop that they could live and work abroad (in Table 5 this question scored 6.4 out of 7), but also confidence regarding their lives in general—confidence for example, that they can do more in their careers than they imagined.

What has been the response of employers? Typically we find that hiring students with international experience is not a high priority for recruiters who come to campus. Yet they are interested to see this experience on a resume and often ask about it in interviews. We think this interest stems not so much from the experience per se, but because it shows students are willing to get outside their comfort zone and try something new and challenging. It shows a certain independence of thought and initiative, great qualities regardless of the job environment.

9.0 Summary
In 2006 the college administration adopted as one of its goals the development of global competence among its students. This was in response to forces driving the globalization of engineering. Those forces have continued unabated. During this time the college has instituted about ten programs per year involving 150 students, or about 25% of the graduating class. The Weidman Center for Global Leadership was established to provide a permanent source of funding and a focal point for these programs.

We continue to feel that an experience developing global competence should be part of a broad, liberal engineering education.

The current college administration is now finishing its work. A measure of what we have done that is worthwhile is how much is retained by the succeeding administration. It will be interesting to see what the next ten years holds.
3 *In Search of Global Engineering Excellence*, study commissioned by Continental AG, 2006
8 Company data is from, http://fortune.com/fortune500 The number of companies in the top 100 is down, however, from year 2000, when 51 of the largest economies were companies.
15 Profiles of Engineering and Engineering Technology Colleges, 2004 and 2014 Editions, American Society of Engineering Education