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Cross-Cultural “Soft Skills” and the Global Engineer: Corporate “Best Practices” and Trainer Methodologies

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ABSTRACT

At the 9th Annual Colloquium on International Engineering in November of 2006, the consensus between corporate and academic presenters/attendees was that global engineering students need not only to develop foreign language proficiency, but must just as importantly develop cross-cultural, adaptive “soft skills” which will assist them in working collaboratively in their co-ops, internships and expatriate assignments. While university engineering programs often focus on “hard” technical skills, it is becoming increasingly evident that in order to compete in a global environment, international engineering students must become competent in both foreign language and culture. By examining the best practices of international companies and the programs developed by cross-cultural trainers, university programs can begin to better develop criteria and standards for their programs, thereby insuring their students have the best possible training as global engineers.

Introduction

We need to bring the issue of cross-cultural competence to the top of the competitive agenda. Cultural competence is no longer a nice skill to have; it is an economic necessity. We have been successful in developing the hardware of increased globalization; for example, computer and communications technologies, transportation methods, and flexible manufacturing systems. Our weakness has been in developing individuals with the flexibility and knowledge needed to maximize the value of the cultural capital available to the organization

Brake, Walker and Walker 32.

At the 9th Annual Colloquium on International Engineering in November of 2006, the consensus between the corporate and academic presenters/attendees was that global engineering students need *not only* to develop foreign language proficiency, but must *just as importantly* develop cross-cultural, adaptive “soft skills” which will assist them in working collaboratively in their co-ops, internships and expatriate assignments. While this message has been reverberating for the last ten years in academia, particularly in international business schools, many international engineering programs have neglected to develop this very important, competitive aspect of their programs. Instead, they have chosen to continue to focus only on “hard” technical skills. If Americans want to be globally competitive they *must* place an emphasis on being able to work and adapt overseas, or for that matter, to work for foreign companies who are located in the United States. In contrast to Americans, Europeans and Asians have taken the need for global competition very seriously. According to the European Council of Europe (2001), language competence is no longer adequate for their students, but rather a focus must now be made on “intercultural competence” (Sercu 115). Consequently, it would be prudent for university programs to look at human resource best practices and the strategies which are commonly utilized by the corporate trainers who have been preparing managers and employees for expatriate assignments for years. These “best practices” and strategies would thereby provide a better educational foundation for those instructing the new generation of global engineers regarding what future employers expect. In other words, the best way to prepare the “Global Engineer” is to know what Human Resource professionals need and then further develop these qualities, characteristics and skills.

In her article “Corporate Recruiter demand for Foreign Language and Cultural Knowledge” in *Global Business Languages* (1998), Christine Über-Grosse examines the demand for foreign language and cultural knowledge by corporate recruiters at Thunderbird’s Master of International Management program and the University

of South Carolina's Master of International Business Studies. An analysis of the job listings at both of these institutions shows that "more than half" of the job listings, "56% of the total South Carolina postings in 1996-7 and 57% at Thunderbird in 1995-96, preferred applicants with foreign language skills and cultural knowledge" (14). The need for cultural and linguistic knowledge is no longer only necessary at international business schools, but is equally important in international engineering programs where "Global Engineers" are being educated and developed.

Robert Kohls describes both potential outcomes and benefits of cross-cultural training in his chapter on "Intercultural Training for Overseas Posting" in *Training Know-How for Cross-Cultural and Diversity Trainers*. Cross-cultural training may "not only prevent calamities" but also can boost productivity, help an American manager motivate foreign national employees, and generally make such a person more effective in a foreign environment" (15). Unfortunately, there continues to be an alarming number of "failed" corporate expatriate assignments, with "failure" being defined as the inability of the expatriates to complete the work they were sent to do. Kohls warns that "without intercultural training.... as many as 40 to 60 percent will fail-either necessitating early removal," or will stay on but function "far below their U.S. productivity level" (15). Fortunately, according to Kohls, "with effective intercultural training, the failure rate can be reduced to 5 percent or less" (15). These numbers alone should be impetus enough to take the development of cross-cultural "soft" skills seriously. It becomes further evident that university programs *must* address and develop "soft" cross-cultural skills before students are "sent off" to their internships and co-ops. Realizing the need to emphasize and develop skills considered "soft," in addition to their "hard" technical skills, will only help to increase the success of internships and co-op programs for both the students and universities.

One of the negative outcomes of failed assignments by expatriates is the enormous expense incurred by corporations. It costs an "average of \$150,000 to \$250,000 in direct costs for an American company to bring a mid-level employee home from a foreign assignment" (Kohls 15). Other estimates place the cost of overseas assignments anywhere from \$250,000 to 1 million dollars, "not to mention lost contracts, dissatisfied customers, and other collateral damage" (Wakao 24). In addition to the financial costs there are also personal costs. Kohls relates, "Families have literally broken up and careers have been ruined from such potentially traumatic experiences. It is sheer suicide not to select the best possible candidates for

overseas service and then not to give them the best possible pre-departure training and the best home office and field support available" (15). After looking at the costs incurred by corporations due to failed assignments, would it not make sense for universities to take the preparation of their students as future global engineers in the area of language and "soft" cross-cultural skills seriously? How can universities better prepare the global engineer? What specific cross-cultural "soft skills" must be taught and what are the desirable, definable goals and objectives which are needed in order to better prepare the global engineering student? Identifying the qualities human resource professionals seek in their candidates will not only better prepare students for their co-ops and internships, but also for any potential positions they apply for after graduation as expatriates.

As a former expat who is the product of a cross-cultural and language training program, I believe the advantages of training should not be underestimated. Working as a consultant/trainer for the last eight years with Siemens Power Generation in Orlando, Florida, has only strengthened my resolve and belief that cross-cultural training should never be undervalued or neglected. The American engineers who had been working for Westinghouse before the "merger" with Siemens quickly realized that they could potentially be placed in positions in Germany. Similarly, German engineers were quite often offered positions in the United States. A sense of urgency swept through the organization as they began to develop both the language and cross-cultural/"soft" skills, in order to help them better collaborate with their new partners. While on the whole the German engineers tend to be better prepared than American engineers from a language perspective, as they have typically had many years of English at the university, they often need to develop the "soft skills" which will help them to better understand the business style of their American counterparts. Ambitious Americans began fast and furiously to learn German in order to either facilitate a potential expatriate assignment, or perhaps merely to survive a global merger with the Germans taking the helm. The number of times engineers whom I have trained have lamented, "I wish I would have learned a language and cross-cultural skills while I was still in school" are too many to be recounted. The merger of Westinghouse and Siemens is just one example of the plethora of potential scenarios today's engineers face in a global environment.

Paul A. Camuti, President and CEO of Corporate Research Siemens Corporation, in an article appearing in 2006 in the *Online Journal for Global Engineering Education (OJGEE)*, describes that in order "to succeed

in this new environment, new skills will be needed, skills that go beyond the traditional technical capabilities. Being technically proficient will still be important, of course, but in an environment that emphasizes cross-border collaboration, one needs to augment, analytical left-brain abilities with creative right-brain skills." He provides a list of the qualities and skills an engineer of the 21st century will need to succeed. These qualities and skills include: "Good communication skills, including multiple languages; the ability to work in teams; cross-cultural sensitivity and knowledge; social awareness; capacity to handle complex systems; business acumen and sense of entrepreneurship." Camuti's observations only serve to underscore the necessity of giving future engineers the training necessary to succeed in an international environment-while they are still at the university.

Thomas Tischhauser, Vice President of the Powertrain & Chassis division of Continental Automotive Systems similarly valued these skills and qualities in his colloquium presentation on "The Global Engineer," emphasizing that the engineer of the future "must be prepared to 'champion cultural diversity'" by understanding that "cultures are diverse" and that "diversity drives the best ideas." Engineering students will not only need "a good understanding of cultural differences," but also be able to "function smoothly in a complex social setting." While some international engineering programs have been placing a most-needed emphasis on the importance of foreign language skills, it is becoming increasingly evident that "soft" cultural skills are equally important for students, as corporations are both seeking and/or requiring candidates with both skill sets.

The Global Engineering Excellence Study, supported by Continental AG, describes additional areas of competence which are integral for the success of global engineering students. For example, students must have training which is beyond "add-on" programs, and instead be prepared to conduct "research" and take part in "educational projects" (2). The study emphasizes that while English is "becoming a common language for cross-cultural communication," the "dominance of English in global communication in engineering, science, and business does not lessen the need for native English speakers to learn other languages. Linguistic ability is a crucial element of cross-cultural competence" (5). Of course, the support and commitment of both industry leaders and university engineering programs must be in place order for a new generation of engineers to thrive and compete globally.

Currently there are several notable programs which stand out as placing engineering students in international internships and co-ops. Because these

placements very often develop into permanent assignments for the students, a key element of their success has been proper cross-cultural, "soft" skill training. This is evident in the success rates of students graduating from these institutions who are then offered foreign assignments. Internship programs such as the MIT International Science and Technology Initiative (MISTI) typically lead to long-term assignments and translate into better pay for their engineering students. An advantage for students who are able to take part in internships is that they inevitably stand out to prospective employers because they exhibit both "language and culture skills," explains Widdig. The MISTI program requires students to participate in cross-cultural training, in addition to one to two years of university German. Courses which are part of the MISTI program include "Speaking and Writing: German in Technology and Business," "Communicating across Cultures," and "Germany Today: Intensive German Language and Culture."

Similarly, the International Engineering Program (IEP) at the University of Rhode Island has been one of the forerunners in developing a BA program which requires the students study language and engineering simultaneously, while also incorporating cross-cultural training into the instruction. In fact, "currently the University of Rhode Island is educating more bilingual and cross-culturally competent engineers than any other university in the country," according to their Website. An integral part of their program is having the engineers complete a six-month internship. John Grandin, the "father" of the IEP, describes the skill base which is necessary for future engineers who are training for international assignments in his article "Preparing Engineers for the Global Workplace: The University of Rhode Island" (Vol. 1, Issue 1, 2006) in the *Online Journal for Global Engineering Education*. Engineering students educated and trained in America are quite often confronted with global competition, with many lacking the necessary "soft" cross-cultural and linguistic skills. These students, unfortunately, often "fail" and their work is "handed off to peers from other parts of the world where such global preparation" is taken seriously.

Georgia Tech has developed a model program for educating and developing the global engineer. Jack R. Lohmann, Vice Provost of the Georgia Institute of Technology, began by asking at the *Colloquium*, "Can we define a 'global engineer'?" He continued with his belief that the global engineer must be "...culturally sensitive, socially aware, politically astute....speak foreign language." He went on to address the urgent need for research on engineering in a global context and explained: "the phenomenon of global engineering is still emerging. There is a need for a theoretical

foundation on learning behaviors and models, as well as on organization processes and management methods." Universities must remain focused on "instilling global competence in engineers." This will require that the university engineering programs, such as those offered by MIT, University of Rhode Island and Georgia Tech, continue developing cross-cultural programs in order to insure success for engineering students in foreign assignments. Debbie Gulick and Debbie Pearson also of Georgia Tech, in their presentation "Preparing Interns and Co-ops for the Work Abroad Experience" emphasized the fact that "effective preparation increases students' chances of 1) thriving in a new culture 2) making significant contributions on the job and 3) gaining new skills in their chosen fields." The cross-cultural preparation Georgia Tech students receive, in addition to their learning a foreign language includes:

...knowing etiquette/local customs; knowing appropriate dress for the culture and work environment, understanding relevant gender, historical religious and political issues; knowing about the food of the country; encouraging an open mind, patience, flexibility, and sense of humor; knowing that punctuality may be interpreted differently in different cultures.

The positive results of their efforts are evident in the large number of engineering students from Georgia Tech who go on to be hired by top international corporations.

Another program which prepares engineers for working abroad is the Global Engineering Alliance for Research and Engineering (GEARE) program at Purdue University. In a presentation by Eckhard Groll, Professor of Mechanical Engineering and Director of Global Initiatives in the School of Mechanical Engineering, entitled "Introduction to and Experiences with the Undergraduate GEARE Program," he conceded that despite their efforts "some barriers still exist in the development of both language and 'soft' cross-cultural skills." Because students are often faced with additional costs and tight graduation requirements, "soft" skill training becomes difficult. Dr. Groll stressed the need to develop both language and "soft" cross-cultural skills by means of an "orientation in foreign culture- *before going* abroad." This pre-departure training helps to optimize second-language and cross-cultural competencies necessary for international internships. As a consequence of Georgia Tech's efforts to train students before they leave on assignment, student feedback has been more positive after international internships. Students believe that

their awareness of cultural differences had significant impact on their interactions and that they were more readily able to accommodate to changes in a foreign environment. Furthermore, "they became more confident in new environment" and as a consequence "productivity increased." While some academic programs have integrated elements of cross-cultural training into their programs, the systematic training and assessment of methodologies utilized by cross-cultural consultants could provide specific, targeted goals which could be integrated into university engineering programs.

What are the foundations of intercultural training and which methods or strategies are utilized by intercultural trainers? How should theoretical foundations and learning models be implemented? According to Kohls, intercultural training can be described as "training that gives people the necessary information, skills, and attitudes to enable them to adjust to and function productively in a country other than their own" (16). There are typically three different types of intercultural programs utilized by professional trainers. These programs include pre-departure training, in-country assistance and re-entry training. University programs, some of which are now realizing the benefits of both language and cross-cultural training, could benefit from the expertise and "best practices" of human resource professions at large corporations, as well as independent cross-cultural trainers who have worked for the last twenty years to meet the needs of business people. The academic disciplines of intercultural communication, cross-cultural psychology, international management, communication, social and behavioral sciences, as well as cultural anthropology have, along with area studies, provided the necessary theory and content knowledge for intercultural training.

The theoretical foundations of cross-cultural training have evolved over time, as delivery of cross-cultural concepts have been tailored to fit the business world. Whereas business professionals typically participate in training programs that can last anywhere from three days to six months, university programs are able to either integrate training into their language courses or develop independent courses to enhance the international curriculum. While academicians who teach foreign language are highly qualified to teach about culture, few are specialists in cross-cultural training. Much can be learned by looking to cross-cultural trainers for specific direction and objectives in order to systematically develop university cross-cultural programs. Trainers systematize and standardize their programs in order to *insure* they include the important cultural elements which must not be neglected when

developing a cross-cultural program. Universities could follow accordingly by implementing systemized and standardized programs for students who may potentially work in international assignments.

The *Global Relocation Trends Survey Report* provides a wealth of information regarding industry standards for human resource professionals. The 2005 Survey Report is enlightening in the area of cross-cultural research, as it constitutes one of the most reliable sources of key findings for the human resource industry. GMAC describes the fundamental purpose of cross-cultural training: "to reduce the burden of expatriate culture shock and facilitate adjustment to new surroundings" (2). The number of expatriate assignments is increasing, with 47% of the respondents reporting an increase in 2005 of ex-pat assignments over the previous year's (32%). The number of companies who have locations outside the U.S. has also increased- from 8% to 46% between 1999 and 2005. One of the most notable trends is that the expatriate profile is changing, with the number of women and younger expatriates increasing. Women now constitute 23% of the total number of expatriates, and 54% of the expatriates assigned in 2005 were between the ages of 20 and 39. These trends serve to highlight the need for university students to be ready to hit the ground running when they graduate.

The reasons for expatriate "failure," according to the GMAC report, can be attributed primarily to several issues: security and safety (in a post 9-11 world), remuneration dissatisfaction, poor quality of life, poor candidate selection, poor job performance, a job which doesn't meet expectations, an inability to adapt, and spouse/partner dissatisfaction (10). Due to the great expense involved in expatriate assignments, the survey reports that 62% of all companies are looking for alternatives to long-term assignments. This does not mean, however, that "soft skills" are no longer important, but rather the opposite. These skills are just as needed in order to better collaborate with foreign nationals on short term assignments due to the limited amount of time given to build relationships. Nevertheless, while 81% of companies provided some form of cross-cultural training, formal cross-cultural training was only *required* by 20% of the companies (14). While the return on investment (ROI) for corporations typically increases after cross-cultural training, many companies continue to neglect this crucial part of pre-departure planning, leading to an alarming number of failed expatriate assignments. Human resource professionals are increasingly familiar with the theory of "cultural intelligence." They are also highly interested in being able to gauge this quality in their employees. "Cultural intelligence" as a fundamental theory in the development of "soft skills"

is described by David C. Thomas and Kerr Inkson in their book *People Skills for Global Business: Cultural Intelligence*. They define a culturally intelligent person as "being skilled and flexible about understanding a culture, learning more about it from interactions with it, and gradually reshaping their thinking to be more sympathetic to the culture" (Thomas and Inkson 15). Just as psychologists have developed ways to measure IQ, it has become equally important to recognize how people handle emotions, resulting in an Emotional intelligence, or EQ quotient. A high EQ quotient means that a person is able to "to recognize cultural differences through knowledge and mindfulness" and has a propensity and ability "to act appropriately across cultures. The culturally intelligent individual draws on a breadth of experience and can make fine discriminations among subtly different behaviors that perfectly fit the situation" (62). The importance of developing of cultural skills is described by Thomas and Inkson: "Even when people come from the same culture, interpersonal skills are often poor, and this weakness is costly in business" (8). When interaction is taking place across cultural boundaries, "the potential for misunderstanding and failure is only compounded" (8). They stress the need for international business people to actively develop their cultural intelligence in order to survive a global business environment.

According to Thomas and Inkson, cultural intelligence develops over time in several stages:

Stage 1: Reactivity to external stimuli: If one is "mindless" of one's own culture, one is unappreciative of the differences which exist between their own and another's culture.

Stage 2: Recognition of other cultural norms and motivations: Through experiences and mindfulness an awareness of the multicultural variables which may affect relationships develops.

Stage 3: Accommodation of other cultural norms and rules in one's own mind: Instead of relying on absolutes, a person in this stage of development will realize that variation exists and begins to comprehend why certain behaviors occur.

Stage 4: Assimilation of diverse cultural norms into alternative behaviors: Once the individual reaches this stage there is considerably less effort analyzing and specific cultural situation, but rather they interact with different culture almost "effortlessly."

Stage 5: Pro activity in cultural behavior based on recognition of changing cues:

Individuals who have reached this stage are able to automatically adjust to situations and persons of another culture, sometimes before the members of the culture do themselves. Intuitively they are aware of how to execute and demonstrate behaviors which are indicative of a culturally intellectual individual (67-68).

Thomas and Inkson further describe a “highly developed culturally intelligent person as having cognitively complex perception of their environment. They are able to make connections between seemingly disparate pieces of information. They describe people and events in terms of many different characteristics and are able to see a coherent pattern in a cultural situation without knowing what the final picture might look like” (68). A person in the final stage of development is analogous to what Thomas Friedman describes in his book *The World is Flat: A Brief History of the Twenty-First Century* as a “great adaptor.” “Great adaptors,” or “versatilists,” according to Friedman, are “not only capable of constantly adapting, but also of constantly learning and growing” (289). Friedman relates an analogy given by the director of training in Business Services at Siemens Westinghouse: “people in business need to become less like specialty tools and more like Swiss Army knives. Those ‘Swiss Army knives’ are the versatilists” (290). Whether individuals are described as highly culturally intelligent, as “versatilists,” or as “Swiss Army Knives,” it is important that international engineering students develop skills which serve to prepare them to work in the new “Flat World,” where due to the lightning swift advancement in technology and communication they are put in contact with people from all over the world. These global engineers will need the necessary skills to adapt to other cultures, whether they are working from their corporate headquarters, working in co-op programs, taking part in internships, or given expatriate assignments. If the development of these skills is ignored or undervalued, companies will discover that they will continue to “inhibit competitiveness by alienating customers,” destroy “workforce cohesiveness,” and degrade “efficiency and effectiveness” (Brake, Walker and Walker 31).

In the *Ashridge Journal*, Arno Haslberger and Sharman Esarey examine in their article “Snakes and Ladders: the Expatriate’s Path to Successful Cross-Cultural Adjustment” how managers can better “secure the best chances of successful expatriation” (40). Examining the “micro-environment,” which includes the expat and his family and the driving forces behind

it, can be helpful in supporting adjustment. An understanding of these variables are something university programs can begin addressing by increasing the students’ awareness of these issues as they consider co-ops, internships and/or future expatriate assignments. Job variables are, of course, also important when deciding whether to take an expat assignment and include: clear objectives, clear reporting lines, realistic expectations from the corporation, company support from either a mentor or coach, and “micro-environment” expectations. The broader “macro-environment” contains variables and conditions which can either support or hinder adjustment. These variables include, for example, whether “the new culture feels somewhat familiar,” whether “expatriates are fluent in the local language,” and whether the “expatriates feel physically secure.” (Haslberger and Esarey 42). Finally, the individual variables to be considered include the personal characteristics and skills of the employee. Individuals who possess optimism, have “tolerance for ambiguity, open-mindedness, a willingness to cede control, exhibit flexibility, are extroverts, a greater tolerance for own mistakes, are risk takers, have a high tolerance for discomfort and seek out feedback and listen” have a much greater chance of succeeding than those candidates who do not exhibit these qualities (Haslberger and Esarey 45). When assessing the success of engineering students it is of utmost importance to evaluate whether they possess these characteristics, and/or whether they have the potential to develop them. Human resource specialists look for individuals who exhibit certain qualities, and that is why it is so important from a competition standpoint that students are prepared to represent themselves as “global engineers,” who are receptive to other cultures.

Stan Lomax in his book *Best Practices for Managers and Expatriates: A Guide on Selection, Hiring and Compensation*, provides a wealth of information from a corporate human resource perspective on the selection and training of expatriates. He describes the tendency for corporations to insufficiently plan for expatriate assignments, leading to “huge losses for companies in terms of people and opportunities wasted, and needless and excessive financial expenditures” (84). He describes that “managers appear to be more concerned with finding the best technically qualified candidates at the outset, without adequate recognition of their underlying problems that could undermine the assignment” (87). Lomax asks, “What do companies look for in identifying who would be the best fit for an expatriate opening? The selection criteria is: 96% technical requirements of job, 94% business needs, 88% candidate availability/willingness, 60% personal traits/ability to adjust, 54% language knowledge/

fluency, 25% academic degree" (88). He attributes failure in expatriate assignments to poor practices, such as not utilizing any true assessment tools and unanticipated problems with the assignee's cultural adaptation (89). When "best practices" procedure is followed, Lomax continues, it is both advantageous for the individual and the company.

Human Resource professionals typically utilize an assessment tool such as the Prudential Relocation Services "Overseas Assignment Inventory." This inventory contains a listing of 14 attributes, which include the candidate's expectations, open-mindedness, respect for other beliefs, trust in people, tolerance of others, personal control, flexibility, patience, social adaptability, initiative, ability to take risks, sense of humor, interpersonal interest, communication level with spouse (140). A self-assessment tool such as this inventory, in tandem with behavioral interviews, enables the human resource professional to examine the candidate's fit with a particular assignment. At this point a candidate's personal circumstances can also be evaluated in order to probe whether the individual and family are appropriate for the assignment. Other tests are available, such as the Global Assignment Preparedness Survey (G-A-P-S), which assesses the candidate for 1) cultural flexibility 2) willingness to communicate 3) ability to develop social relationships 4) perceptual abilities 5) conflict resolution style and 6) leadership style (143-4).

Corporate cross-cultural training is typically either given individually or in groups. One effective way of delivering training cost-effectively is for companies to work in tandem with universities. Consortia, which host companies on campus and provide cross-cultural seminars, dramatically lower the cost of training. Thunderbird organizes several such programs throughout the year, hosting such companies as AT&T, Goodyear, GE, and Dow Chemical, just to name a few. It would behoove engineering schools to expand on this idea, developing similar consortia. Naturally, the most costly programs available to companies are the individually-tailored programs. The programs are typically only provided to higher management due to the higher cost. Distance learning programs are another means for companies and universities to reduce costs, although few exist in the area of cross-cultural training do date.

The training manual *Doing Business Internationally: The Cross-Cultural Challenges, Seminar Course book* features a copyrighted program developed by the Training Management Corporation (TMC) after many years of cross-cultural training research to evaluate and develop cultural competence. Building on the foundational work of Kluckhohn, Stodtbeck, Hall,

Hofstede, Hampden-Turner, Tompenaars, Stewart, Bennett and Rhinesmith, the authors identify a "cultural orientations framework" to establish the variables included in most cultural orientation programs:

- 1) **Environment:** Control/Harmony/Constraint;
- 2) **Time:** Multi-Focus vs. Single-Focus/Fixed vs. Fluid/Past vs. Present vs. Future;
- 3) **Action:** Being vs. Doing;
- 4) **Communication:** High/Low Context, Direct or Indirect/ Expressive or Instrumental/Formal or Informal;
- 5) **Space:** Private or Public;
- 6) **Power:** Hierarchy or Equality;
- 7) **Individualism:** Individualistic or Collectivist/Universalist or Particularist;
- 8) **Competitiveness:** Competitive or Cooperative;
- 9) **Structure:** Order or Flexibility;
- 10) **Thinking:** Deductive or Inductive/Linear or Systematic."

Within a cultural profile the factors shaping and influencing an individual's cultural profile typically include: family, religion, education, corporate culture, profession, social class, gender, race, generation, neighborhood, friends, and region. All are equally important, often overlapping with one another. It can't be stressed enough that a person's cultural core changes very slowly and is constantly in a state of flux. While a part of one's culture may be stable, other elements are in flux, adapting or resisting new conditions. This course book provides a wealth of material for cross-cultural training and could easily be utilized as a supplemental training text in international engineering programs.

There is typically very little standardization and procedural protocol with regard to cross-cultural training at the university. Renate A. Schulz describes in her article, "The Challenge of Assessing Cultural Understanding in the Context of Foreign Language Instruction," the importance of establishing criteria and standards in developing intercultural competence. After providing a thorough outline of the historical development of theories and practices of foreign language educators, she establishes the fundamental objectives of cultural learning, which include the attitudes, knowledge...and critical cultural awareness (15-16). Schulz suggests the need for appropriate assessment procedures as she describes the work of Bartz and Vermette which outlines "16 prototypes for the assessment of cultural competence," which differ from those utilized by corporate trainers (17). A sampling of these 16 prototypes includes "portfolio assessment, cross-cultural 'conflict situation' resolution; analyzing visual examples of authentic

cultural situations; examining the cultural significance of underlined words or phrases; the identification of significant features in a literary passage and observing an audio or video document for sociolinguistic behavior. (Bartz & Vermette, 1996, 76-83). Schulz describes how the creation of portfolios, for example, can facilitate both “formative and summative assessment.” (18). Portfolios, as well as the other suggestions for assessment provided, help to give meaningful, experiential learning opportunities as the students develop cross-cultural skills and qualities.

Conclusion

Many universities and a large number of companies continue, unfortunately, to underestimate the value of cross-cultural “soft skill” training. The global engineering programs at MIT, University of Rhode Island, Georgia Tech and Purdue should serve as valuable models to other engineering schools which are in the process of building their programs. These programs not only emphasize language learning in tandem with engineering courses, but also provide cross-cultural training as well. By examining the “best practices” and training programs utilized by companies, criteria and standards can be better developed by university programs, whether they are just developing their global engineering programs and cross-cultural courses, or are expanding their programs.

CROSS-CULTURAL TRAINING MATERIALS: The organization which represents cross-cultural training is “The Society of Intercultural Education, Training and Research.” For those interested in reading the foundational theories behind cross-cultural training not directly mentioned in this article the following may be helpful: Geert Hofstede’s *Culture’s Consequences: International Differences in Work Related Values and Masculinity and Femininity: The Taboo Dimension of National Cultures, Culture and Organizations: Software of the Mind* (1997), Edward T. Hall’s *The Silent Language*, (1959) *The Hidden Dimension*, (1966) and *Beyond Culture* (1990). Patrick L. Schmidt’s *Understanding American and German Business Cultures: A Manager’s Guide to the Cultural Context in which American and German Companies Operate* (available in English and German). Schmidt’s book works well as a companion text to either Business German or German for Engineering courses, as it outlines the various theoretical frameworks of social researchers such as Hofstede and Hall, while further providing specific cultural examples and case-studies.

Fortunately there is a plethora of cross-cultural training materials on the market, which was not the case just ten years ago. Cross-Cultural inventories and testing

programs, books, videos and games are available through Intercultural Press www.interculturalpress.com. Two inventories which are utilized by to cross-cultural trainers include the *CCAI* or *Cross-Cultural Adaptability Inventory* and the *Global Awareness Profile* or (*GAP*) test. The *CCAI* was developed in response to the need of cross-cultural trainers for a well-constructed and easily obtainable self-assessment training instrument. Developed by Drs. Colleen Kelley and Judith Meyers, the *CCAI* assesses the factors or qualities which can enhance cross-cultural effectiveness. It then helps to identify qualities which are strong and those which are in need of improvement. The *GAP* test was developed by Dr. Nathan Corbitt and is an instrument which was designed to measure one’s awareness of global issues and geography. Dr. Corbitt recognized the need to help people become more aware of the geographic and subject areas needed to be successful in international business. The test consists of 120 questions concerning geography, environment, politics, geography, religion, socioeconomics and culture. After taking the inventory, students are able to identify the specific areas they are weak in.

Another publisher of cross-cultural materials is Brigham Young University’s David M. Kennedy Center for International Studies. They create *Infograms*, which are helpful for specific country information. Other titles include “Coming Home Again,” and “The International Family.” There are several books which have come from the intercultural field which are particularly useful. They give in-depth detail of how to development of Cross-Cultural Training Programs. These include: Darlene Eleanor York’s *Cross-Cultural Training Programs*, Sandra Fowler and Monica G. Mumford’s *Intercultural Sourcebook: Cross-Cultural Training Methods*, Robert Kohls and Herbert L. Brussow’s *Training Know-How for Cross-Cultural and Diversity Trainers*, Richard R. Gesteland’s *Cross-Cultural Business Behavior: Marketing, Negotiating and Managing Across Cultures*, and *Experiential Activities for Intercultural Learning* by editor H. Ned Seelye.

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