Developing Intercultural Sensitivity through Directed Global Education Programming

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Abstract – In view of the impact globalization has on engineering, many colleges and universities have made global experiences part of their undergraduate programs. When developing a global engineering program, educators should start by assessing where students are on the spectrum of intercultural sensitivity when they enter and thereby determine how the program can best succeed in increasing their sensitivity. If engineers have not been exposed to worldviews that differ from their own, they will assume that everyone holds to similar views. Thus, the first step in attaining intercultural sensitivity is to understand the dimensions of culture. From a different angle, educators should also present students with the stages of intercultural sensitivity, which range from experiences of ethnocentralism to ethnorelativism. Directed programming that brings students into discussions about these points prior to and following global experiences adds significant value to those experiences and can easily be implemented alongside overseas opportunities.

Keywords: Study Abroad, International, Culture, Understanding

INTRODUCTION

There is no question that colleges and universities must prepare engineering students for a global economy. On one hand, engineers will be entering a multicultural domestic workplace. According to the American Society for Engineering Education, 6.2% of bachelor degrees, 46.1% of masters degrees, and 61.7% of doctoral degrees in engineering were earned by foreign nationals in 2011 [1]. The Institute of International Education reports that the number of foreign nationals in US engineering programs in 2011 increased by 6% increase from 2010 [2]. In addition, the rate at which universities in countries like China and India are educating engineers is on the rise [3], supplying more foreign-born engineers to the global workplace. While some foreign nationals return to their country of citizenship, many are entering the American workforce. On the other hand, more engineering jobs are being relocated overseas. While this has been a trend in manufacturing for decades, the US workforce is losing its grip on research and development (R&D). Between 1994 and 1999 worldwide R&D expenditures by US multinational companies grew at an average annual rate of 6.9 percent [4]. And while domestic R&D employment grew at an average annual rate of 0.7 percent, overseas R&D employment grew at a rate of 3.9% in these companies. A study by Booz Allen Hamilton estimates that while only $10 to $15 billion of the $750 billion spent globally on engineering services were offshored in 2007, that share should increase to between $150 and $225 billion by 2020 [5]. Whether working together with or training foreign nationals, working domestically or overseas for a multinational company, or designing a product for overseas consumers, American engineers will come in contact with foreign cultures.

In view of the high impact globalization is having on engineering, many engineering schools have integrated global experiences into their undergraduate programs. Purdue University's *Global Engineering Program* aims to give each engineering student at least one meaningful international experience during their years at the university [6]. The variety of opportunities provided to students include work and study abroad, service learning projects, research opportunities, and on-campus programs. The *Projects for Under-served Communities* academic program at The University of Texas at Austin [7] and the *Global Village Project* at Massachusetts Institute of Technology [8] offer students the opportunity to work with global communities on multidisciplinary engineering design projects. Through these design projects, students develop their engineering and leadership skills while providing services and

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sustainable design solutions to communities in developing countries. *Every Workplace, Every Nation* is the current strategic plan of LeTourneau University, the name of the plan itself embodying the university's goal to have global influence [9]. Means to accomplish this goal not only include implementing exchange relationships with other universities and implementing global perspective learning outcomes in the general curriculum but also modifying the university calendar to create a field experience term.

Whether just beginning or continuing to develop a global education program, educators should not lose sight of what they want students to get out of the experience. The goal of global education may be termed by some as "a global perspective" [9], "cultural sensitivity" [6], or "inter-cultural communications and understanding" [8]. Milton J. Bennett terms it "intercultural sensitivity" [10]. In a reader for multicultural education, Bennett outlines six stages of sensitivity from denial of cultural differences to cultural integration. To effectively determine program goals and evaluate outcomes, educators should start by assessing where engineering students are on the spectrum of intercultural sensitivity when they enter the program and direct the educational programming to best enable them to advance and mature in their intercultural sensitivity. At the close of the program, a follow-up sensitivity assessment can provide feedback to the educators as to the effectiveness of the global experience.

DIMENSIONS OF CULTURE

While global education programs can expose engineering students to a foreign culture, each student will confront and deal with the cultural differences in a distinct way. Their reactions will vary based on their current worldview and understanding of culture. What will make the each student's experience more meaningful is a clear realization of the cultural differences confronting them, enabling them to learn from these differences. Culture itself is complex in nature. Kluckholn and Strodtbeck break down culture into five dimensions, described as human nature, man-nature, time, activity, and relational value orientations [11]. If an engineer has not been exposed to beliefs that differ from his or her own, he or she will assume that everyone holds to similar beliefs. Thus, the first step in attaining intercultural sensitivity is to understand these five dimensions of culture.

Human Nature Dimension
The belief about human nature composes what members of the given society assume about people they come in contact with. Are people naturally good, bad, a mixture of the two? Are they changeable or unchangeable? Engineers working in another nation will find that that nation's history will have formed much different assumptions about people. For example, the value orientation Puritans held regarding human nature are still evident in American culture, an orientation that humans are basically evil with the ability to perfect themselves through self-control and discipline. Contrast this view with the Confucius roots of the Chinese culture that accepts humans as having both good and evil, strengths and shortcomings, and offers a goal of achieving understanding and harmony with these passions and with nature itself.

The value orientation regarding human nature may extend in a more shallow way to different classes or subsets of members in a community. Consider stereotypes applied by White Americans to Asian, Latin, and African Americans in the United States, and vice versa. These stereotypes stem from US history and are completely different than stereotypes found in foreign countries. The expectations a person places on the nature of others stems from the human nature orientation of their culture, which is steeped in that culture's rich history. When traveling, one often asks, *What do the local people think about Americans?* When working with foreign nationals, engineers should also ask the questions, *What do they think of their own countrymen?* or *What do they think of other foreigners?* The answers to these questions will affect the assumptions made by the foreign nationals about people they are dealing with. Americans working for multinational companies will often need to make these assessments in order to effectively navigate relationships with clients, management, and colleagues.

Man-Nature Dimension
When designing infrastructure within a foreign nation, it is important to understand the reigning beliefs about nature. Are humans considered masters over nature, or is the relationship between persons and nature one of harmony? The history of the United States has vacillated between these two extremes. In early American history, communities living in harmony with nature were pushed aside by builders laying down train tracks and rising up cities using natural resources without concern. The rise of the United States as an economic world power during the Industrial Revolution came at the expense of the health of the natural environment. In recent American history, concern for nature has reemerged, manifested in government regulation and consumer demand. This reemergence of the

importance of nature in community building remains largely on the physical realm and lacks the spiritual aspect of the relationship indigenous American communities have with nature.

What differences in belief will confront an American engineer who is working within a community that reveres the natural environment on both the physical and spiritual levels? Or within a community that holds economic welfare in high esteem, with no or little concern as to how it effects the natural environment? These cultural differences will become of high importance to Civil Engineers extracting and transporting energy resources overseas or even those attempting to serve communities by providing clear water sources or laying better roads. Engineers may also work within communities that see nature as having power over humanity through weather patterns and natural events. Rather than using technology to put nature into submission, these communities may simply accept the will of nature over them. Being aware of these beliefs is an important step in carry out project design in a given community.

Time Dimension
Another dimension of culture is beliefs of time orientation. Through what lens do persons see time? Coming from a country with a relatively short history and with forward-thinking founders, Americans value the future much more than the past and present. Conversely, Europeans value the aristocracy and traditions of their rich history. Both societies view time as linear, stretching from the past into the future. The Catholic and Christian traditions value a person's life based on a single history from birth to death, building upon the lessons of their fathers. Hinduism and Buddhism, prevalent religions of Asia, have a more circular view of time. These beliefs about time orientation will affect how the community members value the present and how they expect current decisions will impact the future.

The time dimension also involves the orientation towards time management. Latin American cultures are largely polychromic in nature. A polychromic view sees time as a never-ending river, flowing continually with no particular structure. North Americans generally have a monochromic view of time. They see time as discrete, and prefer to divide it into temporal blocks. Engineers will find these differing views of time affecting the workplace. Working with a monochromic view, most American engineers will find it frustrating to work with coworkers and clients who will not readily structure time, meeting deadlines in their own way rather than by a set structure. Understanding why a person manages time the way he or she does is important in a working relationship.

Activity Dimension
Beliefs that fall within this dimension include the preferred activities of people, which is key to understanding the actions of ones coworkers and the means for professional advancement within a workplace. Is a person's way of acting valued more or less than their intellectual thoughts? Is it valued more or less than their accomplishments? Engineers tend to be doers and may not understand why their professional accomplishments for the company are not valued as much as their coworker's personality or innovative ideas.

Perhaps more important than understanding preferred human activity in the workplace, an engineer needs to understand expectations when approaching either a superior or a client with a report or design proposal. Whereas some cultures expect a business meeting to only entail business, others may expect that the participants take time to establish a relationship on a personal level. In some cases, a few comments about a local sports team or questions about the family can suffice, whereas in other cases, a half hour sipping tea and conversing is expected. If unaware of these differences in expectations for a particular clientele, an engineer can make a disastrous first impression.

Relational Dimension
The relationship between people within a community also has a number of dimensions. An engineer coming into a new workplace must quickly determine his or her position within that community and the expectations placed upon him or her. *Should I act individually or collectively? How is the hierarchy organized and where do I fall within it? Is my individual identity valued more or less than the identity of the community?* Engineers often work in a group on a project, yet the roles the members play in the group will depend on the workplace culture. There may be an unspoken hierarchy, or one that is very obvious. Individual members may define their own roles in the group dynamic or their role may be imposed on them. Whereas the American culture prepares engineers to work on equal footing with their superiors or older members of the group, foreign-raised engineers may be uncomfortable presenting ideas that may conflict with those held by team members who they perceive as having authority. It is important that an engineer in a managerial position guides new team members into productive roles in the group, with sensitivity to their view of professional relationships.

It is also important that engineers understand expected behavior toward clients and suppliers. Cultural expectations will determine whether the engineer should approach the third party in a manner of submission, equality, or authority. Behaviors that define these approaches are also driven by culture. Americans from New England are often considered cold and distant by those from the South because of cultural expectations regarding human interaction. When a person is in disagreement about an issue, culture will also drive the expected ways of portraying the disagreement. Whereas Americans are accustomed to directly addressing their disagreements with others, this method may be considered disrespectful in cultures that value a more indirect means. Engineers need to be aware of these expectations when dealing with people of different backgrounds.

INTERCULTURAL SENSITIVITY

When designing and implementing engineering programs, it is important to keep the following questions continually in mind: *Where are the students at in their cultural understanding?* and *Where do we want them to be?* Milton Bennett divides the six stages of intercultural sensitivity into two categories: ethnocentrism and ethnorelativism [10]. He describes the term ethnocentrism as the experience of one's own culture being central to reality, "the way things are." The three stages within this category are Denial, Defense, and Minimization of difference. Ethnorelativism is then "the experience of one's own culture as just one organization of reality among many viable possibilities." The three stages within this category are Acceptance, Adaptation, and Integration of difference.

Ethnocentricism

At the most narrow experience of ethnocentrism, a person expresses *denial* of cultural difference. He or she is either entirely unaware that other persons may hold to different beliefs and behaviors or is disinterested in recognizing the differences. Students participating in global engineering programs are more likely to be unaware of cultural differences than disinterested. While personal experience might bring awareness, the role culture plays in beliefs and behavior will not always be obvious to the students. Therefore, education about the five dimensions of culture can help students identify the cultural differences that they are coming in contact with. On the other side, education without personal experience may not be enough for a student to fully understand the cultural differences that are explained or their impact on personal and work relationships. This is where the global experiences play a vital role.

Once a person is aware of differences in culture, the next stage is *defense* of one culture over the other. In this stage a student will consider one set of beliefs and behaviors as "correct" or "better than the other." While it is more common that a student will consider his or her own cultural norms in a better light, students may defend the foreign culture instead. Either form of defense embodies an inadequate understanding of culture. Students should be educated about the natural tendency to rank cultural beliefs and behaviors. Once educated, they will more readily recognize this response when they confront cultural differences in their global experience. Classroom discussion as to the why cultures differ on specific behavioral expectations will prepare a student to move on from the defense stage once they recognize their response in the field. Again, whereas directed education can prepare a student to recognize what is occurring in their experience and move forward in intercultural sensitivity, classroom education cannot replace the actual personal lessons the student will learn in their global experience.

One way that students move on from defense is through *minimization* of the differences between cultures. It is not difficult to view a cultural behavior as equally valid as one's own when the similarities between the two cultural behaviors are elucidated. A student may attempt to understand a foreign cultural behavior while making faulty assumptions that other beliefs or behaviors are similar to their own culture. In this stage, educating students about their own culture can be particularly helpful. When students see that their own culture does not universally apply to humans in general, they will have less confidence in assuming that people in other cultures will fit their expectations. Moving from ethnocentrism to ethnorelativism requires that students recognize both the differences between other cultures and their own, as well as the place of their personal cultural beliefs and behaviors in the context of universal reality.

Ethnorelativism

The most basic stage of ethnorelativism is *acceptance* of cultural difference. In this stage, students are not only able to mentally agree that other cultures are equally valid, but they are able to experience the other culture to some depth. Students who manifest acceptance are able to view their peers in the context of their respective cultures. They judge the person's behaviors and beliefs relative to those that are held to by their community of origin.

In the stage of *adaptation*, a student's behavior will be changed to be more appropriate to the cultural beliefs and behaviors. Rather than assimilating into the new culture, the student will take on the new beliefs and behavior in addition to their own culture, broadening the elements that define himself or herself. Students in a domestic relationship with someone from another culture will find that both parties can mutually adjust their behavior to create a single, bicultural environment. Some universities have offered "international dorms" to students who want to be placed in a situation that can bring them this level of intercultural experience.

Integration is different than adaptation in that the student will compartmentalize their different cultural worldviews. Rather than taking on new beliefs and behaviors, the students will move in and out of a cultural worldview as warranted by the situation. This is an experience familiar to many students who grew up in a household whose culture differed from that of the country in which they resided. At home the students will experience one culture, whereas they will hold to another culture at school or work. Although placing integration as the last stage of ethnorelativism, Bennett does not suggest that cultural integration is preferable to adaptation on the spectrum of intercultural sensitivity.

Because the stages of ethnorelativism require a deeper experience of foreign cultures, they are not stages that can easily be facilitated by general education about culture. Rather, students need to personally experience varied dimensions of the new culture and process their reactions to the differences between their culture and the new. Once they have been exposed to the culture, discussions with peers about the place of culture in universal reality can facilitate movement of the students into deeper experiences of ethnorelativism. These discussions need to take place after the students have had some exposure to the new culture and as they continue to have more experiences.

Cultural Education
Education about different cultures has its place in liberal arts and business programs, but is largely absent from the engineering education. In fact, whereas 20.8% of business students participated in overseas programs in 2010, only 3.9% of engineering students did the same [2]. Gordon College, a Christian liberal arts college with a 3-2 Engineering program, requires all students to participate in an approved Global Understanding course. Students who wish to get their global experiences through one of the numerous overseas programs rather than through on-campus courses must complete *New Perspectives* to fulfill this requirement. *New Perspectives* is a program directed at helping students make connections between intercultural understanding and their global experiences so that they can get the most out of those experiences.

The pre-trip sessions "equip students to reflect purposefully upon the theory and praxis of what it means to be citizen-sojourners rather than passive onlookers or blithe consumers of culture." Integrating both lecture and discussion, the sessions invite students to explore the varying dimensions of culture presented by Kluckholn and Strodtbeck and reflect on the stages of intercultural sensitivity described by Bennett. The students are strongly encouraged to take these ideas into consideration as they participate in global programs, actively seeking to learn from their cultural experiences.

The global programs offered to students look much like those offered through other universities. They include study abroad, semester-long immersion programs offered through the college (Gordon IN Programs) and its affiliates (International Best Semester Programs), and single courses taught by college professors overseas during school breaks (International Seminars). A weekend retreat for returning students is scheduled early the following semester. The goal of the retreat is to aid students navigate the journey between homeland and their foreign home, equipping them to ask the deeper questions of their global experience and take up the challenge of being a citizen-sojourner. Students spend the weekend in discussion with peers who were involved in different programs around the globe, processing their own experiences in the context of others'. *New Perspectives* leaders have found that after one semester's study, the majority of students stop at minimization. The deeper understanding of the other cultures that is required by acceptance eludes them. This deeper understanding may well simply require more time, and more maturity than an undergraduate can get on a short-term program. This is hard to facilitate within a class, as much of it depends upon the student's emotional maturity, self-awareness and humility. The goal of the weekend retreat is to set the students on a life-long journey of multiculturalism.

I recently led an International Seminar in Honduras designed for students interested in the biomedical fields, entitled *Living with a Disability in the Developing World*. One of my students gave the following feedback about *New Perspectives*:

> The class before was good at starting to scrape the surface of some of the cultural differences we might experience and how our own background and culture would affect our perception of and reception to the new culture. I think the weekend retreat after returning is definitely the strong point of the programming because after the experience is when students need the most help processing, understanding and applying what they have learned.

CONCLUSION

In developing global education programs for engineering students, educators are preparing the students for the global workforce. The goal of these programs is to not only expose the students to foreign cultures, but also to increase their world view and intercultural sensitivity. Due to the complex nature of culture and the varying responses one may have to cultural differences, it is important to provide proper classroom education to students involved in global education programs. The *New Perspectives* model does not require many extra resources and can be implemented at the bookends of global education programs already offered at an institution. By being explicit about the goals of the students' global experiences, this directed education program increases the students' chances of making significant progress along the spectrum of intercultural sensitivity. In view of global education program development, the return on investment of this program, when offered in addition to overseas experiences, can be huge.

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