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From Reverse Culture Shock to Global Competency: Helping Education Abroad Students Learn from the Shock of the Return Home

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Abstract

The "wrap- around" model of education abroad programming posits that students will learn more and have a lasting, transformative experience if they receive cultural orientation and mentoring before, during, and after their sojourn. Preparation, support and post-processing help students navigate both the culture shock of the trip and the reverse culture shock of the return home. The pre-trip preparation, in some form, is nearly universal, and during the trip educators often have multiple opportunities to help students think through their experience. It is post-trip, or reentry phase, of study abroad that has proved most difficult to implement, due to the practical limitations of student careers and engineering curricula. Yet reentry programming greatly enhances the global competence that engineers can acquire by helping them adjust emotionally and behaviorally and by giving them the opportunity for transformative learning. This emotional, behavioral, and cognitive development enhances their global competence not only by improving their ability interact across cultural lines, but also by helping them synthesize their experience into a new understanding of how engineers define and solve problems differently across cultures. Educators have come up with a variety of strategies for solving this problem and understanding these different strategies might help overcome those practical barriers.

There has been a shift in education abroad in recent decades. As part of the growing awareness of Globalization, both students and employers have become more interested in education abroad as a means to develop intercultural skills, instead of simply going abroad to "soak up" the culture or embarking upon a "Grand Tour" of Europe to become cosmopolitan. Within engineering, this shift to an intercultural emphasis has been translated into the pursuit of "global competency." The specific term for, and the component elements of, this set of knowledge and skills can vary, but Downey et al.'s definition of what it means provides a useful umbrella: global competence for engineers involves the "knowledge, ability, and predisposition to work effectively with people who define problems differently than they do."[2]

Despite this growing discussion of global competency, assessments of the state of it in engineering education have generally found that schools are not doing enough to cultivate it.[8,24] These assessments, among other factors, have led schools to increase both the quantity and the quality of education abroad experiences available to students, guided by the commonsense understanding that global competence requires a global experience. Increasing quantity, or participation in education abroad, is clearly an important first step toward providing an enriching global experience, and international studies offices, in collaboration with engineering schools, have had tremendous success. The number of all students studying abroad nearly doubled between 2000 and 2013, and the number of engineers studying abroad nearly tripled.[12] This growth is good news, but simply increasing the number of students going abroad will not, on its own, boost global competency. The quality of the international experience also critically matters. Students can easily go abroad, have a negative reaction to that experience, and come back more ethnocentric and closed than they were before they left. The experience must therefore lend itself

to acquiring the orientation and the skills needed to be open to and to work with others. Hence, it needs to be a high-quality learning experience.

Drawing again on the umbrella definition for global competency, students need to learn *that* others define and solve problems differently and *how* they define and solve problems differently, as well as how to adjust their style of problem solving to mesh with that different approach. This kind of learning does not happen without careful cultivation. To cultivate it, engineering educators and education abroad professionals must think of education abroad (including research, work, or service) holistically, and not as an isolated event separate from their on-campus education. It must be more than a short-term (or medium-term) experience that a student leaves campus to have and completes before returning to campus, never to address it again. The experience cannot simply be placed in a "shoebox".[18] Rather, education abroad must be seen as a longer learning process that becomes a key component of an engineering education. Students must be prepared for the experience, guided through the experience, and then assisted in the processing of the experience upon their return, so that they can integrate it into their understanding of the world and of engineering. Such a "wrap-around" approach to education abroad has long been recognized among intercultural communications scholars and scholars of education abroad as an excellent means to cultivate learning from that experience.[18,22]

Despite the benefits of a “wrap-around” approach for maximizing learning from education abroad, few institutions offer such an approach. Many institutions offer some part of an approach, especially before and during travel abroad, but only a few offer a “reentry” course upon the students’ return, thus completing the full cycle. The dearth of formalized, post-trip processing of the experience is an obstacle for increasing global competency because this period, the “reentry” period, is critical for learning from an education abroad experience and therefore for cultivating the skills needed for global competence. A variety of difficulties, some practical and others conceptual, prevent institutions from offering reentry programs and individuals from participating in them. Engineering educators, therefore, need to work to find ways to create such programs at their institutions.

This overview continues an ongoing conversation of how to put theory of intercultural learning into practice in already packed engineering curricula, with the goal of helping engineering educators to adapt the theory about intercultural learning into reentry programs for their own institutions. In order to provide the basis for developing and expanding such programs, I will first outline the theoretical basis for reentry training, how it improves learning from education abroad, and how that learning relates to the goal of engineers’ global competence. With that foundation, I turn to the practical reasons why such programs are difficult to implement and then conclude on a hopeful note by exploring how a few institutions are tackling the problem and how these approaches might foster global competence.

Culture Shock and Reverse Culture Shock

The wrap-around approach to education abroad, and thus the emphasis on reentry training, grew out of the desire to reduce the “culture shock" of travel. Culture shock is that dislocating experience that comes with immersion in an environment in which one's common sense no longer applies. The first scholarly discussions of culture shock that sojourners experience abroad appeared in 1955.[21] They noted that sojourners confront a different, perhaps radically different,

way of thinking and acting in the "host" culture, and the difference from their "home" culture is cognitively dislocating and emotionally alienating. This experience is usually quite unpleasant and can cause a negative reaction that lasts the duration of the sojourn and beyond. Adequate preparation, however, can "inoculate" sojourners from the worst of the culture shock, allowing them to see it as normal experience and even something they can learn from.[22]

Culture shock is well understood to be a natural part of education abroad—indeed, it has a commonsensical aspect to it, because the sojourner is leaving "home" to go to a different "host" country. Almost every education abroad program involves some kind of orientation that aims to prepare sojourners for it and cope with it. Thus, the first stage of a "wrap-around" approach to education abroad is well established. Similarly, education abroad programs normally include discussions or activities during the sojourn itself that help sojourners adjust to and learn from the cultural differences they experience. While on the course, the students' adjustment to and coping with the host culture is a major concern of course directors. This period is when the students are first experiencing culture shock, and course faculty and program directors have to provide for the students' well being, at the very least by engaging them in discussion about their experience. Often programs will include group discussions about this disconnect. Thus, aspects of the middle stage of a "wrap-around" approach can be found in many programs.

The third and last stage of the wrap-around, the return to the home culture, however, is often an unexpected, "reverse culture shock" for the sojourner. Reverse culture shock derives from the fact that sojourners return to home with new eyes and, in a sense, new bodies. While abroad, sojourners learn to see the world in a different way and to move through it in a different fashion. When they return "home," they are often surprised by how everything that had been natural and normal to them before leaving now seems different and even strange. The severity of this shock depends on a variety of factors, including duration of time abroad, the degree of cultural difference, and the extent to which the sojourner adapted to the host culture abroad. At the very least, the sojourner's family, friends, and colleagues will not have had the same intense experience, making the sojourner feel isolated from others, or else leading them to contain that experience, as in a shoebox. This phenomenon, too, has been well studied by interculturalists, beginning not long after the first work on culture shock,[9] and continuing up to the present.[5,18,22,27]

Martin and Harrell argue that the reentry involves processes in three different domains: affective, cognitive, and behavioral.[22] The affective, or emotional, domain involves the psychological stress that comes with the disorienting experience of returning home. This stress can range from discomfort or malaise all the way to clinical depression. The behavioral domain involves the ability to comport oneself in a culturally appropriate manner, what Goffman called the presentation of self in everyday life.[6] In talking with students, I tend to talk about this domain as the basic knowledge of "knowing how to stand and what to do with your hands," to give an immediate referent. Once people adapt to a different way of presenting themselves, it can take some time to adjust back to what previously was natural and normal. The cognitive domain involves the conceptual or categorical mismatch between the sojourners' perception of the home environment and that of those around them. They do not make sense of the world in the same way as those around them. Scholars have examined this misfit as one of cultural identity (their identity has changed from what it was and is different from their peers' identity in salient ways)

and as one of expectations (their expectations for their experience do not fit with reality).[22,27] Further, the cognitive mismatch can occur at different levels of abstraction, from fundamental ideas about the relationship of the individual to the society to more accessible notions of what constitutes a beautiful design. For our purposes, all of these domains are relevant to cultivating engineers' global competence, though the cognitive domain may be the most difficult to explore and learn from.

A Cultural Shock Doctrine: How Reentry Uses "Shock" as an Opportunity to Learn

All parts of a wrap-around approach to student learning involve the attempt to mitigate the emotional disruption of culture shock and reverse culture shock. Pre-departure exercises aim to inoculate the students against its disruption by taking them through exercises that give them a small taste of the differences they may encounter. Within-trip discussions and counseling help students adjust to that difference as they experience it. Similarly, the goals of reentry activities and programming are to help students navigate and even learn from reverse culture shock. To explore how this happens, we can draw on the three domains explored above. The initial concern is with navigating the difficult personal experience of reverse culture shock, allowing the student to cope emotionally and to adjust behaviorally so that they function well once more in the home environment. Beyond that adjustment, however, students can use the shock of the return as a profound means of cognitive development. These three domains are interrelated, and addressing any of them often requires addressing the others.

The emotional difficulty of returning home as a changed person frequently surprises sojourners. Some argue that the shock of the return can be harder than the shock of going abroad, especially because it is unexpected.[5,22,27] Students might feel like outcasts, alienated and lonely because they feel different from the people around them. They feel anomic and disconnected because their foundation for understanding the world, the worldview they acquired growing up, now is revealed as being, in part, culturally produced instead of natural or inherent. They might be sad about the loss of their host culture, and some even become clinically depressed. They clearly need some assistance, and a variety of programs are often available for them.[5,22,27] These programs range from available psychological counseling to different kinds of peer groups. Another common approach is to get the students to use their experience abroad in their campus life, perhaps by becoming an ambassador for education abroad or by working with international students.

The behavioral challenges that students face upon their return might involve basic interactions, like what counts as appropriate eye contact or physical contact, or might be more profound, like how to respond to conflict. For example, one colleague who did ethnographic work in Papua New Guinea found that the habit he had acquired of maintaining constant eye contact with an interlocutor, which was the norm where he worked in New Guinea, led to repeated misunderstandings with strangers back home, who thought he was communicating his attraction to them. Cultural Learning Theory focuses on such social and behavioral skills of interaction as the key means of adaptation. The behavioral adjustments in reentry training have attracted less scholarly attention than the others, but they do provide easy entry into thinking about cognitive shifts.[22] Indeed, many pre-departure exercises, such as Bafa Bafa, prepare students for culture shock by having them play roles using unfamiliar behavioral norms. The awkwardness and

unfamiliarity of the behavior allows students to begin thinking about cultural difference because the unfamiliar behaviors are described as "normal" in a different culture.

If navigating the emotional and behavioral adjustments are necessary for students to resume their everyday lives upon their return, the cognitive adjustments are the ones that allow for the most profound learning. As with behavior, students confront situations in which what had been natural, normal, and common sense before now stands revealed as being in some way culture bound. They come to see that the very way in which they make sense of the world derives, in part, from their cultural upbringing. The reaction to this realization can be emotionally distressing, as noted, but it can also provide the opportunity for transformative learning, as it has been described in the literature on adult education.

Transformative learning occurs when students are able to reflect critically on the cultural assumptions, values, beliefs, and behaviors that guide their everyday activities. As Mezirow put it, it is:

> a rational process of learning within awareness as a metacognitive application of critical thinking that transforms an acquired frame of reference - a mind-set or worldview of orienting assumptions and expectations involving values, beliefs, and concepts - by assessing its epistemic assumptions.[1]

In other words, this learning occurs when the learner has a cognitively dislocating experience in which their frame of reference—their cognitive construct of the world—is challenged and, with proper support, opened up for examination. This "metacognitive" examination involves intense, critical reflection on those events. Based on this reflection, the person can reformulate their frame of reference, or cognitive construct, of the world to incorporate both their old and the new way of looking at things.[13] Or, in Mezirow's terms again, it transforms the old frames of reference "to make them more inclusive, discriminating, open, reflective, and emotionally able to change."[23] The goal is not to adopt both frames of reference, or devolve into complete relativism, but rather to be able to step back and think about how one's frame of reference shapes one's experience and understanding of an event, and how it might look from a different perspective.

Transformative learning fits well with notions of global competence, as we will see, but how does reentry programming make it possible? The primary connection is that reentry programs provide the time and space to systematically reflect on o ne's international experience to see how the two frames of reference can be integrated. The theory that experience requires reflection in order to translate into learning draws on Dewey's model of experiential education and Kolb's cyclical theory of development.[4] They argued that concrete experience is turned first into abstraction and then into active guides for thinking or action. Thus, reflection allows the individual to examine specific events or feelings, which they can abstract into an understanding of the cultural boundedness of action and perception. In turn, they can use this new understanding to guide their interactions with, and evaluations of, others. The reflection that drives this learning process can take many forms, including reflective essays, journaling, small discussion groups, mentoring other students, or synthesizing one's experience for a conference or publication, but the more intensive and systematic the reflection, the better.[10]

Global Competency as a Means to Resist Culture Shock

Turning back to the matter of global competence for engineers, how might reentry programs help cultivate it? One could argue that a globally competent engineer is one who can navigate and even learn from both culture shock and reverse culture shock in order to work effectively with others. At the very least, cultivating global competence will require guiding students through these challenges. We must, however, explore the specific dimensions of global competency that reentry programs should address.

As noted above, Downey et al.'s definition[2] provides a useful entry point for defining global competence for engineers. But what makes it possible to work well with people who define and solve problems differently? What are the areas of skill and knowledge required? The subject itself is a topic of much debate, which cannot be thoroughly represented here, but five key areas of skill and knowledge appear across a number of these different models.[2,7,11,16,20,25] These five areas do not exhaust the possibilities, but they do offer some understanding of the role that reentry programming can play. First, competence requires the ability to communicate well, whether in a different language or their own language without local colloquialisms (for example, the frequent use of sports metaphors in American English). Second, competence means an openness toward cultural difference, a positive orientation to different points of view that would allow one to engage others. The third domain is the knowledge of the world required to understand others' perspectives. This knowledge includes not only the history, politics, and culture of a country or region, but also an understanding of globalization and the global economy. Fourth, engineers need to have some understanding of other engineering traditions, as shown in the Engineering Cultures approach that Downey and his colleagues have developed. Finally, and most fundamentally, global competence requires the cognitive ability to see that problems can be defined and solved in different ways and to understand that everyone has a culture-bound view of the proper definition and solution. It requires a kind of cognitive flexibility that allows one to see that other point of view without losing one's own point of view.

Of these five areas, knowledge of the world and of other engineering traditions are largely outside the scope of any reentry program, but openness, communication, and cognitive flexibility can be developed through such a program. Reentry programs can produce an openness toward cultural others by helping students successfully reintegrate into a home environment while still retaining a positive attitude toward their experience abroad. Returning to the three domains of reentry described above, the affective challenges that students face on return can lead them to evaluate their experience negatively, to suppress it, to put it away in a "shoebox" and not let it shape their thinking.[18] By helping students navigate the emotionally fraught process of reentry, educators can prepare them to learn from their experience and integrate it into their understanding of the world. Such an integration would make students much more likely to be open to further intercultural interaction.

While reentry programs do not teach language, they can help students develop a meta-awareness of their behavior that would allow them to interact more effectively with others from different cultural locations, making successful communication possible. Eye contact, posture, and proximity (awareness of personal space), for example, are all aspects of behavior that significantly impact communication. If, through reentry programs, a student can develop the

ability to be aware of their own behavior and adjust it according to how others are responding to it, then they will become much better intercultural communicators.

The last element, cognitive flexibility, depends upon transformative learning. Understanding that others might define and solve problems differently requires the kind of self-awareness that can only come from experiencing difference and then reflecting on it systematically. The shift from what Perry called "dualistic" thinking (I do it the right way and theirs is the wrong way) to more "relativistic" thinking (my way of doing things makes sense for my context, but their way works for their context and possibly others, too) comes from reflecting on experience.[4] Indeed, such learning can only come through reflection, in Dewey's terms, as students abstract from their distinct experiences of difference into a broader understanding of how culture shapes the way engineers perceive the world and apply their knowledge. This stage is perhaps the most important of all for cultivating global competence. Without the ability to see the world through others' eyes, one simply cannot work well with them.

Obstacles to Reentry Programs

Despite these benefits of reentry programs, the programs are tough to implement, and are therefore uncommon. Three reasons are behind this rarity. First, the unexpected nature of the challenge—again, the person is coming home! That should be easy!—makes it less likely that sojourners will plan for it and that institutions will arrange programs for it. International educators may be well aware of the need for the programs, but if they do not fit institutional common sense, they may never be embraced. The second difficulty stems from the practical situation of returnees: they move on to other activities, like summer jobs or new classes, and their concern shifts to what is newly facing them. Engineers especially have tight schedules, and something like reflection on a trip that is already completed (and for which they have already earned credit) can seem unimportant. Third, just as education abroad is often a self-contained experience for the students, so it is for the institution. Once students have completed a course, there is often no way to continue engaging them. The student no longer has any concrete obligation to the now-completed course or courses; therefore, the institution cannot hold the student accountable for their post-trip learning.

In light of these practical problems, global engineering programs need to learn from others' experience. A survey of how specific institutions' reentry programs can further the ongoing conversation about how best to support students' intercultural learning and cultivate global competence. I start with an example from outside of engineering and then briefly profile several institutions' approaches before summing up the variety of practices that exist.

A Pioneering Program

Bruce La Brack, at the University of the Pacific, helped pioneer the field of reentry programming with his first reentry course in 1977.[18] He based that course on his experience as an anthropologist returning from fieldwork. The understanding that the return home is when the "real" culture shock took place had been common among anthropologists almost since Bronislav Malinowski made participant observation the standard field research method in the 1930s. While anthropologists have known this for some time, it was scholars in the field intercultural communication that studied how this problem of reentry to the home culture could be addressed

in education abroad.[19] La Brack built on the work of those interculturalists as he developed his program.

La Brack now has over thirty years experience of experimenting with reentry programming, and his approach parallels, or has been adopted by, others. The key part of his approach is coupling the pre-departure and the reentry: students must take a cross-cultural learning course before leaving and again upon returning. Before they leave, students articulate what problems they expect from their experience abroad, and they keep a daily log of life at home. When they return, they use these materials, coupled with readings about navigating experience abroad and the return home, to analyze their experience and to help understand what they have learned and how they have changed. Class discussions, writing exercises, and a final, reflective paper analyzing their reentry provide different ways in which the students systematically examine through their experience. Furthermore, doing this "in a supportive atmosphere with others who have their own failures and triumphs to report is an important step in dealing with any unresolved conflicts about the overseas experience as well as coping with current adjustments."[18] La Brack is careful to note that the class is not "a therapy group," but having the ability to reflect on experience, both through repeated writing and through discussion, is key to their learning.

A Cross-Section of Reentry Programs for Engineering Schools

La Brack's program targets all students, and many, if not most, of them are not engineers. So what are some engineering-specific approaches to reentry? What issues do they address and how? A full survey of these approaches was beyond the scope of this paper, but a few programs that have substantial international experience demonstrate a wide range of possibilities of wrap-around approaches to global competency, including reentry programs. Exploring a few, rich examples can help us understand both the diversity of global engineering pedagogy and the practical (and institutional) problems that these programs face.

At Virginia Tech, the Rising Sophomore Abroad Program for engineers offers an intriguing hybrid example of an on-campus preparation course, followed by a two-week education abroad trip in Europe. Students apply in their first semester to take the course in their second semester, so they go abroad early in their academic career. The course covers the gamut of preparation, from culture-specific knowledge for the places they will visit, to basic issues of travel abroad, to a focus on the Engineering Cultures framework that emerged from the STS Department at Virginia Tech. Further, the course has begun partnering with North Carolina A&T, an historically black college. The students from UNCA&T join during the semester via distance-learning technology and also come on the trip itself, giving all students the healthy sense that cultural difference does not just exist across national boundaries. The trip, like the semester-long course, exposes students briefly to different engineering cultures by making site visits to universities and companies in Germany, Italy, and Switzerland. Following the course, students have to complete an e-Portfolio in which they reflect on their personal development during the course, analyze cultural differences in engineering processes and business environment, and articulate how they would explain the value of their experience in a job cover letter or interview.[17]

Purdue has a wide range of activities in global engineering. Educators at Purdue have developed the innovative Global Engineering Alliance for Research and Education (GEARE) program in

Mechanical Engineering, the Engineering Projects in Community Service (EPICS) program, and a Global Engineering Cultures and Practice Learning Community for first-year students. Many of these programs incorporate elements of a "wrap-around" approach to education abroad. As part of GEARE, for example, Purdue created 1-credit courses for before, during, and after travel. The reentry portion of this sequence, recently designed by Brent Jesiek, draws together students from GEARE, who have just returned from abroad, and other students pursuing the Minor in Global Engineering, who may have gone abroad a year or more before the course.[15] This variety of students made it difficult to emphasize the psychological exercises and support that help students deal with the affective dimension of reentry shock, but the course offers a range of activities that help students to re-engage with their experience abroad and to integrate their international experience into their career plans and professional self-presentation. Specifically, the course activities encourage students to participate in several activities that will encourage their global orientation, such as serving as an "ambassador", mentoring a service-learning team, or interviewing a peer or a professional about their global experiences. Finally, the course includes structured reflection in the form of a final writing project.[15]

Georgia Tech has long been a leader in international learning. Its International Plan serves as a model for engaging, as Lohmann, Rollins, and Hoey[20] put it, "the three components of global competency (language proficiency, international coursework, and international experience)." In the plan, the international coursework and the language proficiency requirements serve as preparation for the student's sojourn, and a senior capstone requirement serves as a post-trip integration program. The preparatory courses, it should be noted, include not only language — a vital component of global competency — but also historico-cultural understanding *and* global economic awareness. These (relatively) in-depth treatments can provide important knowledge that students can use to reflect on and make sense of their international experience. The capstone course, on the other hand, requires the students to apply their international experience to a problem within their discipline, which ideally will let them explore cultural variation in problem definition and solution, as well as giving them a chance to make their experience professionally relevant.

At the University of Virginia, we do not have a comprehensive wrap-around approach to education abroad in engineering, but we do have a few experiments that will hopefully develop into more robust programs. First, the International Studies Office has created an innovative set of seminars that collectively provide a wrap-around experience. These Cultural Orientation, Reflection, and Engagement (CORE) seminars are open to all students, and while they are pitched for either the pre or the post-trip phase, a number, such as the one on Cultural Stereotypes and Generalizations or the one on Cross-Cultural Miscommunication, could be taken both before and after the trip. These seminars, with the exception of a one-credit course during travel, are one-time, for two hours, but the office is planning to offer a full wrap-around course with 1-credit each before, during, and after travel. The course will conclude with a reflective paper integrating the seminars and their experience abroad. Related to the CORE seminars, the International Studies Office has created a returnee conference and global fête at which students can present a "creative expression of the meaning of cross-cultural experiences in their lives."[28]

Within the School of Engineering and Applied Science and the College of Arts & Sciences, a colleague and I conducted a one-time experiment that we hope to develop into a standard offering. The course, called Project Synthesis, enrolled teams of students who had just returned

from a summer of service-learning work. It focused on the cultural and political context of their work as a means to develop their reflexive awareness of their cultural location. It included the key elements of peer sharing, personal reflection, processing their experience by relating it to their discipline (with the goal of publishing in a peer-reviewed journal), and extensive discussions of the politics and ethics of service learning. The course was meant to be a part of a broader wrap-around approach for service-learning teams, although the framework at this point remains ad hoc.[26] Like most programs, we are working toward developing a broader, systematic strategy toward increasing students' global engagement.

Reflections on the Variety of Reentry Practices

These programs offer a limited, unrepresentative sample of engineering education abroad programming. Further, they all come from the United States, which severely limits their representativeness. Future comparative work in the area would be worthwhile. Nevertheless, these reentry programs do offer a number of approaches to consider. They take a wide variety of forms and address different aspects of the returnees' experience. It would be difficult to articulate the best practices for these programs because the institutional contexts vary significantly, but we can at least explore this variety and make some observations that might clarify thinking about the programs.

First, the programs have different degrees of integration into the curriculum. La Brack's courses at the University of the Pacific are long-established pieces of an international studies curriculum. The capstone course at Georgia Tech is the culmination of the International Plan, while the Global Engineering Minor at Purdue requires the one-credit reentry course. Virginia Tech's Rising Sophomore Abroad Program is growing, but still stands alone as a course. At the University of Virginia, the CORE seminars are only beginning to count for credit. The project synthesis course that I co-taught was a stand alone course as well. Institutional contexts vary, but it seems clear that deep integration into the curriculum would be desirable for any program seeking to cultivate global competency.

Second, the programs take different forms and therefore different approaches to helping students. Full courses allow students to rigorously reflect on and integrate their experience, while seminars or workshops attract students for one or a few sessions to give them a chance to process their experience. A conference or party for returnees can provide the education abroad office a means to maintain connection with them and offer at least a single event during which the students meet socially with others to talk through their experience. Finally, the chance to work with international students or to serve as an ambassador for education abroad provides a way for students to integrate their experience abroad into their life on campus.

Third, the programs address different domains of the reentry experience. Psychological counseling, which has not been discussed here, is something that many schools offer for students struggling emotionally with their adjustment. La Brack's course and my project synthesis course allow students to talk through their behavioral missteps, as well as deal intensively with the cognitive aspect of returning. The capstone at Georgia Tech and the Purdue's Global Engineering Reentry course both help students integrate the experience into their professional lives. Indeed, a program to help students articulate how their international experience relates to their career plans is both a common and an appealing approach to reentry programming.

Fourth, the programs vary in their administrative structure. Throughout the paper, I have made little distinction between the different administrative divisions of the universities, yet those divisions can have tremendous impact on the success of a program. At the University of the Pacific, the programs were based in the School of International Studies.[4] At Purdue and Virginia Tech, the programs come from departments of Engineering Education. At Georgia Tech, the Offic of International Education administers the International Plan, but the engineering departments teach the capstone course. At the University of Virginia, the International Studies Office runs the CORE seminars, which gives them broad reach across the university, but makes creating credit-bearing courses difficult and also precludes a specific focus on engineering. My own project synthesis course was based in the Department of Engineering and Society in the engineering school as well as the Department of Environmental Science in the College of Arts & Sciences. These limited examples do not indicate whether a single administrative structure would best serve these programs; however, programs most attentive to cultivating engineering-specific global competence would reasonably be expected to come out of, or be in partnership with, the engineering school.

Fifth, the programs have different approaches to reflection. The courses generally involve some form of final writing assignment that asks them to reflect on their experience. Seminars build in brief reflective exercises. The La Brack course and the project synthesis course at the University of Virginia provide repeated, systematic reflection on the experience of returning, through discussion in class with peers and through repeated reflection alone. The La Brack course's use of thoughts and experiences recorded before the trip provide an especially powerful means to highlight what they have learned from the trip. Like La Brack, Jackson emphasized that providing students a supportive atmosphere in which to reflect enhanced their ability to learn from their experience.[14,18] Providing this repeated opportunity to reflect on one's experience, and using different modalities to do so, has a greater impact on student learning.[10]

Conclusion

The goal of producing globally competent engineers enjoys broad support in engineering schools and in companies that hire engineers. But the programmatic and practical obstacles to achieving that goal remain enormous. As Downey argues, global engineering education remains at the periphery of engineering education.[3] Perhaps this peripheral location helps account for some of the difficulties that educators have faced in translating the wide acceptance of the wrap-around approach in interculturalist theory into practice in actual education abroad programs. The potential of these programs for fostering transformative learning, leading to global competence, should not be overlooked. The variety of strategies for providing a wrap-around model described here are only a small, non-representative sample, but they do offer some hope that this approach might become more of an institutional fixture in engineering education.

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