AC 2012-4604: PROFESSEURS SANS FRONTIERES: SPREADING FACULTY KNOWLEDGE AND EXPERIENCE AROUND THE WORLD

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Professeurs Sans Frontières: Spreading Faculty Knowledge and Experience Around the World

Abstract

Engineering education is a global enterprise. Nowhere is that more evident than in countries where there is a severe shortage of this invaluable commodity. A study of the war in Afghanistan in an attempt to isolate the root causes of this conflict invariably points to the lack of education among the populace which serves as a breeding ground for extremists and insurgent indoctrination. In his book, Three Cups of Tea, Greg Mortenson describes the motivation for his campaign of promoting peace through education as follows: "If we try to resolve terrorism with military might and nothing else, then we will be no safer than we were before 9/11. If we truly want a legacy of peace for our children, we need to understand that this is a war that will ultimately be won with books, not with bombs."

A by-product of the poor educational system is a shortage of engineers and the accompanying poor state of civil infrastructure that permeates the country. In addressing this problem, the national leadership of Afghanistan is working to reinvigorate the country's university system. Part of that effort has been the establishment of the National Military Academy of Afghanistan (NMAA); a four-year, bachelor degree granting institution modeled after the military academies of the United States. Two of the primary degrees offered by NMAA are in Civil and General Engineering. In the summer of 2009, faculty members from the United States Military Academy (USMA) traveled to NMAA to serve as mentors for the budding Academy.

This same principle applies beyond Afghanistan. There is a continuing need for engineering expertise and education in Nicaragua, India and elsewhere. Engineering faculty and students today can expect to work on projects far beyond the borders of their home countries, in settings ranging from villages in the developing world to the most modern of cities. The mental and cultural dexterity required to work in widely diverse environments is seldom explicitly taught, but nevertheless it must be learned. Students may gain international experience through study-abroad programs or service-learning programs in developing communities and professors may foster student development by including their own international work experiences in classroom lectures and discussions.

This paper gives a brief overview of various outreach activities to Afghanistan, Nicaragua and India. It discusses the authors' activities abroad, describes some of the varying needs, and conveys lessons learned and issues which must be considered when conducting this type of global outreach. It describes a practical application of learning theory as well as the teaching and reinforcement of that theory as part of continuing faculty development in both emerging and developed educational systems. It also discusses the augmentation of student education through a formal service learning program conducted through Engineers Without Borders.

Introduction

Engineering education is a global enterprise. Corporations are engaged globally as a matter of routine. It makes sense that educators would seek global engagement for themselves and their students. Indeed,

there are many organizations that offer such opportunities for college faculty and students. From the summer of 2009 to the winter of 2012, the authors participated in three very different outreach programs to Afghanistan, Nicaragua and India. There are many lessons that were learned through these endeavors that are not readily apparent and are important in planning an effective outreach experience. This paper gives a brief overview of the three outreach activities. It discusses the authors' activities abroad, describes some of the varying needs, and conveys lessons learned and issues which must be considered when conducting these types of global outreach.

Outreach 1.0: Afghanistan - 2009

What did you do with your summer vacation? In 2009, a group of faculty members from the United States Military Academy (USMA) and the United States Air Force Academy joined forces and traveled to Afghanistan for the sole purpose of helping to build that nation's fledgling university system. Their focus of effort was at the National Military Academy of Afghanistan (NMAA) located in the capital city of Kabul (Figure 1). They joined the core cadre of advisors as rotating members for the months of June and July. Their mission was to assist the NMAA administration and faculty in the continuing development of the engineering curriculum and to mentor the engineering faculty in their development as effective engineering educators. To fully understand the challenges this group faced and the opportunities that drew them to these challenges, some background on the situation is necessary.

Figure 1. Dr. Grant Crawford and Dr. Elizabeth Bristow (authors) at NMAA

The latest estimates place the population of Afghanistan at nearly 30 million, ranking it as the 40th most populous nation on earth. The life expectancy of 45 years for both males and females places it at 221st on the list; only Angola has a lower estimated life expectancy. The population is largely illiterate. Of those over the age of 15, only 28.1% can read and write; 43.1% of the male population and 12.6% of the female population. In Afghanistan, a young boy can expect eleven years of education and a young girl only five. This is based on the child's School Life Expectancy (SLE); the total number of years of schooling (primary to tertiary) that a child can expect to receive [2].

Formal Education in Afghanistan

The history of formal education in Afghanistan is closely tied to the state's turbulent political history. Modern secondary education was first established in 1903 to provide training and professional development for civil servants [7]. Postsecondary education developed a few decades later, from the 1930s through the 1970s. Engineering and technical education were similarly affected by the establishment of a pro-Communist government [10]. By 1978, undergraduate-level education in engineering was well-established; most formal postsecondary technical education took place at two premiere programs. The Faculty of Engineering of Kabul University, which was established in 1956 in collaboration with USAID, used American textbooks and curricula. Kabul Polytechnic Institute, established in 1968, was patterned after engineering instruction in the Soviet Union [10].

Postsecondary education degraded significantly beginning in 1978 with the establishment of the pro-Communist government. This decline occurred in spite of the new government's strong focus on education, which accounted for about 10% of Afghanistan's national budget during the 1980s [8]. This apparent contradiction was caused largely by a disconnect between nationally-imposed values and popular values: the focus on communist ideology and Russian as the primary language was rejected by people outside main population centers, so many Afghans opted out of formal education.

The establishment of the Islamic Republic of Afghanistan in 1992 prompted a renewed focus on education. The new government worked to replace Communist schools and establish basic education. Because of the complexity of this task, it initially neglected higher education [8].

Progress was slowed only a few years later by the rise to power of the Taliban in 1995. Taliban leaders closed girls' schools in areas they controlled [8]. In these areas and elsewhere, basic and higher education continued to decline as the country was torn by insurgency and ethnic fighting [7].

At present, Afghanistan is missing many of its former lead academics, who were killed or fled during the turmoil [7]. In many fields and at many universities, higher education curriculum was frozen in the 1970s and the curricula, textbooks, and laboratory techniques are now decades old. Technical and vocational education is largely theoretical, and many engineering and technology students progress all the way through an undergraduate program without a laboratory or design experience [10].

The cultural issues that hinder the re-establishment of an effective educational system in Afghanistan are many. The country is a mix of ethnic groups that live in a primarily tribal society outside of the primary cities. The breakdown is: Pashtun 42%, Tajik 27%, Hazara 9%, Uzbek 9%, Aimak 4%, Turkmen 3%, Baloch 2%, other 4% (Figure 2). Afghanistan is an Islamic Republic consisting of the following split: Sunni Muslim 80%, Shia Muslim 19%, other 1%. While Dari (50%) and Pashto (35%) are the official languages, 11% of the country speaks a Turkic language (primarily Uzbek and Turkmen), and 4% speak one or more of 30 minor languages (primarily Balochi and Pashai) [2].

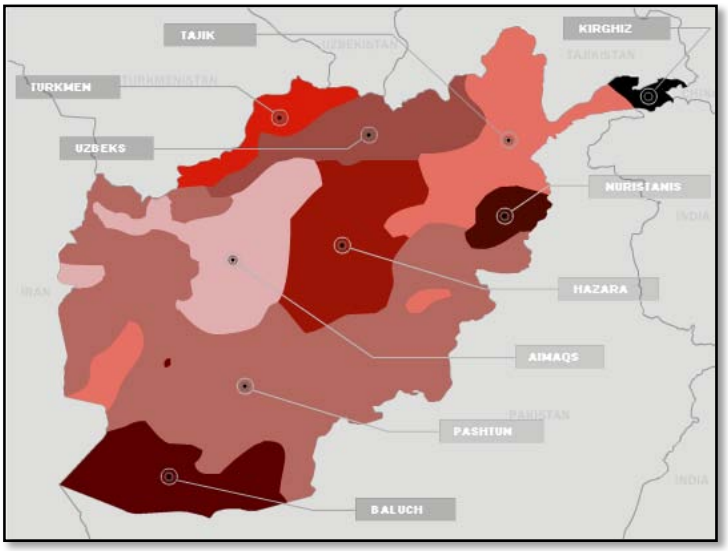

Figure 2. Ethnic Map of Afghanistan [3]

Overview of NMAA

In the current post-war period, the NMAA has become the self-described 'Crown Jewel of Afghanistan' by the country's leadership. The mission of the NMAA is to produce officers for the Afghan National Army who also have a four-year bachelor's degree. Following a period of assessment and evaluation, the Afghan government chose USMA at West Point as the model for its own academy. The academy brought in its first class of 120 in 2005 and graduated 84 male officers in January of 2009. The second class of 212 men graduated in March of 2010. This was the senior class during our visit in the summer of 2009. The third class of 299 men graduated in March of 2011. Current plans set future class sizes at approximately 600 cadets of which 10% to 20% will be women. The first ten women were attending the academy as part of the medical program during the summer of our visit [11].

The academy currently has 318 faculty and staff members; all Afghans. The faculty members all hold a bachelor's degree, with a few holding graduate degrees. The academy is currently located at the former Soviet Union aviation school campus, adjacent to the international airport in the capital city of Kabul. Plans and construction are underway that will move the academy to its permanent location in Qargha on the western outskirts of Kabul in the summer of 2011 [11].

Current Status of the Academic Program

The original four faculty members in the civil engineering program at the NMAA were civilian adjunct professors from Kabul University [5]. Although the original policy of the Afghan Ministry of Defense was to employ only Afghan Army officers as teachers, the civilians were hired to contribute additional training and expertise. Since the program graduated its first students in January 2009, about half of the faculty has been comprised of the program's own recent graduates. Many of the junior engineering faculty members are rotating through Master's degree programs in the United States and liaison assignments with the U.S. Army Corps of Engineers in Afghanistan.

Appropriate Learning Theory

In mentoring the faculty at NMAA, the team used Bloom's Taxonomy for the cognitive domain [9]. Depicted graphically in Figure 3, Bloom's Taxonomy was particularly useful in mentoring the faculty through the process of scoping lesson objectives and lesson activities at the level appropriate for the course material, the stage of student development, and the overall objectives of the course.

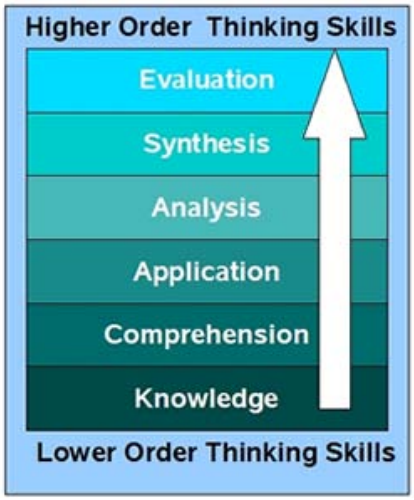

Figure 3. Bloom's Taxonomy Graphic [6]

The team also relied on Lowman's Model of College Teaching [4] as a tool to council and mentor faculty members in their own development as engineering educators. The faculty members clearly understood the need to be at a high level in the Intellectual Excitement dimension. This was a particular concern for the junior faculty members. The team worked with the faculty in also stressing Interpersonal Rapport dimension of Lowman's model. Our goal, of course, was to help them move towards becoming the 'Complete Exemplar' described by Lowman.

NMAA Mentorship Roles

Our mission was broad and deliberately unstructured so that we could find the ways we could best help once we were in country and familiar with the people involved. The most important motivation for sending people, rather than offering assistance via phone or internet, was the potential for mentoring made possible by face-to-face contact.

Because of the efforts of previous faculty mentors and the establishment of a rigorous teacher-training program, the faculty members in the engineering program were already fundamentally sound teachers. Their relative inexperience as instructors, however, made strategic tasks such as lesson and course planning more challenging for them. This was a main focus of our professional development efforts during the summer.

Civil Engineering Program Mentorship

In particular, the civil engineering department lacked a full hydrology course. An earlier faculty mentor had written a few lessons on open channel flow, but the larger course plan and most of the course lessons were still undeveloped. As an added challenge, the course was in session when we arrived: the instructors were teaching the established lessons without a larger strategic plan for the course and with only a short lead time before the prepared lessons were completed and new lesson plans were needed.

The first step in completing the hydrology course was to create an overall course plan. The scope of the course was patterned after a similar class at the United States Military Academy, which covers both open channel flow and hydrology in a single junior-level class. Although the scopes of these classes were similar, the Afghan course also needed a unit on closed-conduit flow (which is covered in a different course at USMA). The semester at NMAA was 70 lessons long – nearly half again as long as the semester at USMA – but local custom dictated a slower pace of instruction. In many cases, the starting point of the lesson plan was the corresponding USMA plan, but the concepts were expanded over more lessons, and logical break points were established at different points.

Dr. Bristow delivered about six lesson plans to the instructional team without extensive collaboration, in order to increase the lead time between the lesson currently being taught and the lesson currently being developed. Once the time between development and presentation was increased, she encouraged the instructional team to take a key role in development of the lesson plans. Dr. Bristow asked for their help in writing lesson objectives, in designing presentations, and in structuring concepts. The instructors were reluctant at first, stating that their inexperience disqualified them from participating in course planning and citing a wish to defer to the mentoring team's greater experience, but with some encouragement and coaching they produced lesson plans which were far more complete and realistic than we could have given them without consultation. Once they had created a few lesson plans, their confidence and willingness to participate in planning increased considerably.

New Aeronautics Course

About six months prior to our trip, the NMAA Superintendent and Dean requested assistance in developing a 48-lesson course in aeronautics for senior cadets designated to be commissioned into the Afghan Air Corps. Unlike our country, all of the Afghan military aviation assets (fixed wing and rotary wing) are assigned to one organization. The young men who will become the pilots for these aircraft

come from each of the academic majors at the academy. The leadership was adamant that the course would contain fundamental aeronautical engineering content and not be a flight training course. They wanted the students to understand the physical principles and design characteristics of the aircraft that they will someday fly.

The desire for an engineering course that contained both fixed wing and rotary wing content and that would be accessible to the non-engineering majors required a unique course design with a custom text. Preparations for developing the syllabus and writing the text (gathering references and resources) were completed prior to departure from the U.S. Actual work on the text could not be started until the team arrived at NMAA and made an initial assessment of the knowledge and skills possessed by the prospective students and obtained detailed input from one of the primary constituents of the course, the Afghan Air Corps.

From the first week in country, it was obvious to both the mentor team and the NMAA administration that the involvement of this constituent would be necessary for the course to fulfill its mandate. Dr. Crawford and representatives of the NMAA faculty met each Saturday with various leaders of the Afghan Air Corps; typically over several cups of *chai* (green tea). One of these meetings was with the commander of the Air Corps, Lieutenant General Dawran, a former Soviet-trained cosmonaut (Figure 4). With his full support, the NMAA team was able to obtain various aircraft parts, including an unserviceable gas turbine engine, to use as physical models in the class. Access to the Air Corps' various aircraft and technical information aided in the formulation of realistic aircraft performance models and example problems for use in the course.

Figure 4. Dr. Crawford (center right) and Lieutenant General Dawran (center left) with NMAA Department Heads

The development of the aeronautics course consumed nearly all of two months in planning, writing the text, translation, development of course problems, preparation of PowerPoint materials, acquisition of physical models for the course, and preparation of a new classroom (Figure 5). The text had to be presented in English and Dari and the Afghan instructor had to be prepared and ready to begin instruction in the fall of 2009. As the team left NMAA at the end of July, the course was ready for its initial offering.

Figure 5. New Aeronautics Course Classroom

Textbooks

Educational assessments of higher education in Afghanistan frequently cite decaying educational infrastructure, outdated lecture notes, and lack of access to textbooks as key issues [10]. Access to textbooks was a significant challenge during this collaboration. In contrast to many American college and graduate-level programs, the Afghan students were not expected to purchase their own textbooks, but neither do they retain them for reference once the course is complete. The course textbooks remain the property of the Academy and are re-issued to the next year's students.

Course textbooks for the hydrology course were ordered in spring of 2008 by a previous faculty mentor. The long lead time was intended to compensate for the difficulty of shipping and moving goods within Afghanistan; however, the books had not arrived at the Academy as of June 2009. Students had no access to the textbook while the course was being taught; even the faculty members had only limited access, as the single copy of the textbook was kept locked in the Department Head's office and only released on request. The students' only reference materials were the lecture notes they copied in class and a faculty-developed study guide which highlighted key concepts in each lesson.

The interim solution to this problem was to greatly expand the study guide, since it served as a permanent reference which the students could carry with them in future deployments. Key course concepts were expanded, and with the permission of the textbook publisher, we included copies of critical diagrams and charts.

A longer-term solution to the lack of course textbooks came only when the unit's logistics officer began an investigation into the fate of the original course textbooks. After several weeks of searching, the class set of course textbooks was located, along with many other textbooks, in a local warehouse within Kabul. Complete reconstruction of the events which led them there was unclear, but it seemed likely that the shipping chain was interrupted at that point. With some negotiation of local politics and navigation through the acquisition process, the Academy took possession of the textbooks and transported them to an on-site warehouse for inventory and distribution. This one seemingly simple victory – though in application it was not simple at all to locate and take possession of the textbooks – had a significant impact on instructional effectiveness.

Professional Development of Faculty

A primary aspect of the team's mission at NMAA involved the professional development of the faculty with regard to their continuing growth as teachers. The team worked with faculty members, focusing on their understanding and application of Bloom's Taxonomy as a foundation for assessing the abilities of their students and as a tool for planning objectives for each lesson. Team members visited classes and provided individual feedback to faculty members using Lowman's model as a template; recommending areas in which faculty members could focus efforts to improve. During the summer, each academic department at NMAA went through an assessment of its programs, conducted by an

Figure 6. Assessment Day for the Department of Civil and Mechanical Engineering

internal committee of administrators and department heads (Figure 6). It was an initial step towards what we hope will be the future pursuit of external accreditation.

Current Needs and Continued Engagement

The current needs of the NMAA with regard to the authors involve continued mentorship for individual faculty members. This is ongoing through email and other social media. Some continual improvement is ongoing in the aeronautics course, again via email. Faculty members from West Point and the Air Force Academy continue to volunteer for mentorship positions at the NMAA. They provide an additional conduit for continued contact and involvement with our Afghan colleagues.

Outreach 2.0: Nicaragua - 2011

Although many readers may not have access to outreach opportunities through the military channels we initially used, other non-governmental organizations provide ample opportunities for faculty and students alike to undertake service learning domestically and internationally. One well-established organization which provides opportunities for engineering faculty to volunteer their time or make monetary contributions is Engineers Without Borders (EWB). EWB "supports community-driven development programs worldwide by collaborating with local partners to design and implement sustainable engineering projects, while creating transformative experiences and responsible leaders" [12]. EWB-USA members participate in professional or student chapters on a wide variety of projects in locations around the world. Members have the opportunity to travel but need not do so in order to make valuable contributions to their chapter's project. For those who do travel, EWB-USA provides extensive informational resources on its website to help members prepare for their journeys.

Figure 7. A student on an EWB-USA assessment trip makes new friends while conducting a road survey near Granada, Nicaragua.

During the spring and summer of 2011, Dr. Bristow and the USMA student chapter of Engineers Without Borders-USA planned and completed its first survey trip to a village outside Granada, Nicaragua to assess the condition of its water distribution system and the main road connecting the village to the city of Granada. This trip, which was largely student-planned, included eight students and two professors. It gave students important development opportunities and realistic professional challenges, allowing them to struggle with the challenge of planning an assessment mission without a clear idea of the area's layout, key challenges, or resources available on the ground. Personal development was also a significant benefit of the experience; students saw firsthand the consequences of extreme poverty and inadequate infrastructure, and they gained firsthand knowledge of a culture different from their own.

Figure 8. Students on an EWB-USA assessment trip near Granada, Nicaragua conduct a door-to-door survey to determine the community's most pressing needs.

Upon arrival in Nicaragua, students spent their initial time on location conducting topographic surveys of the area's main roads (Figure 7). Exposure to the area allowed them to fill in many of their knowledge gaps on the social structure, infrastructure status, and quality of life concerns. The students

met with local water board members, village and city leadership, and local engineers to inquire about the status of the water system. They also visited each household to ask local residents about their chief concerns with the infrastructure (Figure 8).

When they returned, the students built on their newfound data and understanding of the community to further focus their design goals. Having discovered that the water system was adequate to the community's needs, they turned their attention to brainstorming ways to control the frequent severe flooding which troubled the area. The process of designing a replacement for a culvert which was undersized and caused significant backwater flooding allowed them to exercise their growing engineering skills as well.

Outreach 3.0: India – 2012

A more limited type of faculty development outreach was that conducted in India. Dr. Crawford and Dr. Stephanie Farrell from Rowan University conducted two teaching workshops at the Jawaharlal Nehru Technological Institute in Kakinada, India from 2 – 7 January 2012. Coordinated through the Indo US Collaboration for Engineering Education (IUCEE), the Proven Strategies for Effective Teaching (PSET) seminars focused on student learning, teaching strategies, and assessment techniques.

IUCEE Background and Mission [13]

Over 150 leaders of engineering education and business from the United States and India conceptualized the IUCEE program in 2007. Its goal is to help create good quality engineering talent in order to find solutions to the global challenges facing humanity such as energy, environment, health and communications. IUCEE aims to build a solid base for engineering education and research by strengthening four pillars of education:

- Learner-Centric Teaching
- Research Excellence
- Outcomes-Based Quality Supported by Accreditation
- Innovation and Entrepreneurship

PSET Content

The PSET workshop was conducted twice during the week of January 2-6, 2012 at JNTUK. The first workshop (Jan 2-4) was attended by 43 participants, and the second workshop (Jan 5-6) was attended by 102 participants. While sponsored by the University's College of Engineering, faculty attendees for the workshop included members from 17 diverse disciplines including fifteen in Computer Science, eight in English, and even one in Medicine (Figure 9). The workshop was a hands on experience in which participants were instructed to bring several lessons from a course they were currently teaching and would like to re-design. The workshop consisted of seminars with embedded breakout

Figure 9. 1st Session PSET Participants with Dr. Farrell and Dr. Crawford

sessions that allowed for presentation of theory, demonstration of application, and opportunities for the attendees to apply and share their own insights. Specific workshop content included:

- Felder's Model of Learning Styles
- Lowman's Model of Teaching
- Bloom's Taxonomy for the Cognitive Domain
- Writing Learning Objectives
- Active Learning Techniques
- Cooperative Learning
- Problem-Based Learning
- Inquiry Based Learning
- Inductive Teaching Methods
- Classroom Assessment Techniques
- Teaching Assessment Techniques

Dr. Farrell and Dr. Crawford conducted the workshop as a series of seminars that included mixture of presentation, free exchange, embedded activities, and breakout sessions. Some concepts were modeled using 'skits' by the presenters or video clips from popular movies. Assessment instruments were embedded into the seminars. Feedback was collected, assessed, and quickly shared with the participants to model the feasibility of using these same techniques in the classroom.

PSET Feedback

Pre and post workshop surveys were planned and conducted for the purpose of measuring the effectiveness of the workshop and with the aim of providing IUCEE with input for use in improving future workshops. Workshop attendees were surveyed prior to the initial seminar and after the final seminar had been concluded. Feedback from workshop participants was exceptionally positive. A copy of selected questions from the post-workshop assessment tool, as they were presented to the participants, is located in Appendix A at the end of this paper. The results for these questions are presented in Figures 10 through 13.

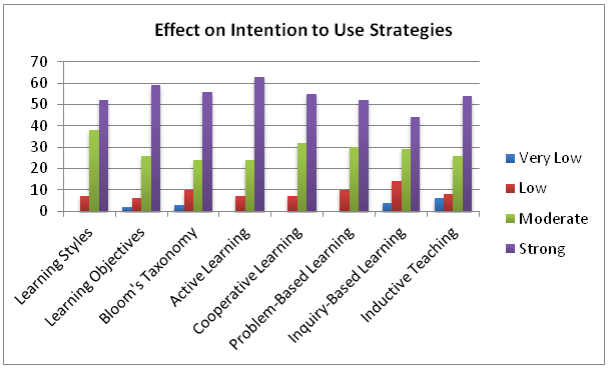

Figure 10. Effect of the PSET Workshop on the Intent of the Participants to Use Selected Teaching Strategies in the Future

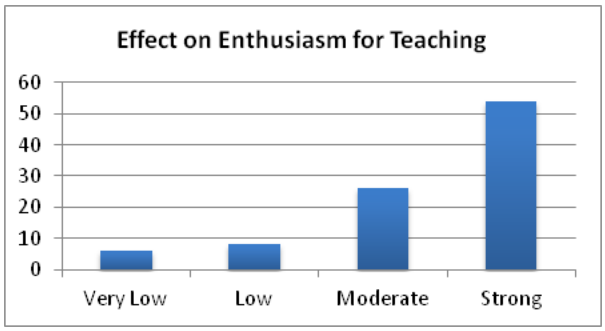

Figure 11. Effect of the PSET Workshop on the Participants' Enthusiasm for Teaching

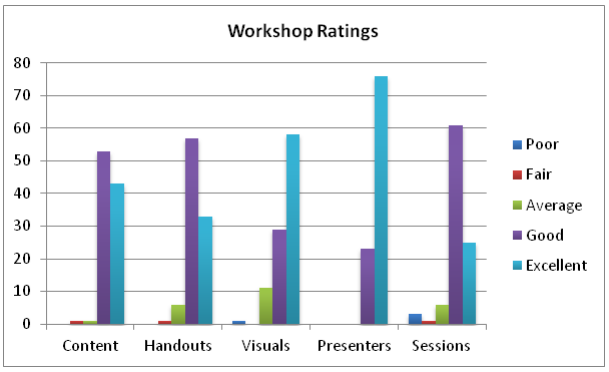

Figure 12. Participant Ratings for Various Workshop Components

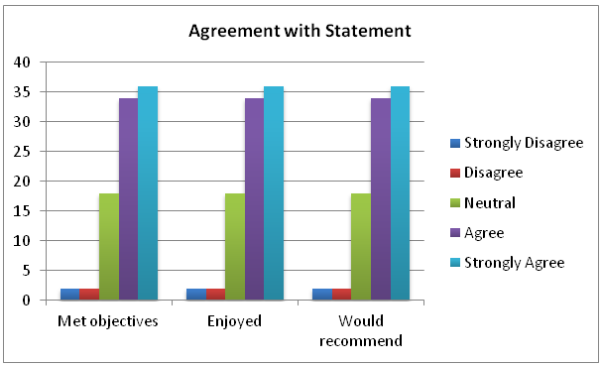

Figure 13. Participants' Ratings of PSET Utility

Both workshops had a significant impact on the majority of the participants with regard to their intent to use specific teaching strategies and techniques in the future and with regard to their increased enthusiasm for teaching. One area for improvement that is shown in Figure 12 and was born out in the open-ended comments of the respondents was in visual content of the sessions. The participants loved the visual content of the seminars: cartoons, photos, videos, and skits incorporated to highlight points of emphasis and provide examples (both good and bad). Figure 12 indicates a strong rating for the visuals that were used and a less favorable rating for the individual sessions (although still good). Open-ended comments were heavily weighted towards the desire for more visual content across the sessions.

Lessons Learned

The authors learned many valuable lessons from their experiences. First and foremost: these were extremely rewarding endeavors. For anyone considering this type of professional service, we offer the following advice and reflections.

This takes a lot of time and energy…a lot. Don't plan on accomplishing anything else during your time at the foreign location. If you find that you are able to, so much the better. We were completely immersed in outreach activities during our time abroad.

If you intend to collect any useful assessment data as part of your experience, this should be planned and prepared prior to departure. We did not do a good job of this with our trip to Afghanistan and missed the opportunity to collect information that could have been extremely useful. We also missed the opportunity to model this behavior for our colleagues. Taking this lesson to heart, we devoted a significant amount of time to planning our assessment strategy, writing the survey instruments, and incorporating these into the seminars for our trip to India.

Ideally, the planning for an outreach such as the summer in Afghanistan starts at least a year before the trip. The outreach to India was organized with several months of preparation. In all cases, it is important to have a clear sense of the scope of work that will be accomplished and begin to establish a relationship with colleagues at the host institution/organization. This also allows time to learn about the people, culture and needs of the host country. Sources of cultural information include the CIA's World Factbook at (https://www.cia.gov/library/publications/the-world-factbook/index.html) and the U.S Department of State travel website at (http://travel.state.gov/travel/). The Department of State has additional information needed to prepare for traveling overseas. Participation in their Smart Traveler Enrollment

Program (STEP) affords access to the most current information about the country to which you are traveling and allows you to receive automatic electronic updates on the country. This information includes their travel advisories and warnings which can also be accessed directly from the State Department website. It also has information on passport and visa requirements, some of which require significant lead times.

An internet survey of the country's culture on the internet is a good start, but will not give you a complete picture of the people with whom you will interact. If time allows, it is helpful to read more extensively about the country through some recommended literature. For Afghanistan, we had a well-developed reading list that can be found with the packing list at Appendix B.

Ensure that you have adequate funding for the entire trip and potential contingencies. How are you getting there and back? Where will you stay? Where will you eat? If you are in an area of questionable stability, do you have the funds to quickly get to a place of safety? You should also have a plan for how you will access additional funds during the trip. You cannot always count on a functional ATM on every corner or the ability (or desirability) to use a credit card. In planning your funding needs, you should also plan for personal expenditures. Trips of this nature offer the opportunity to acquire a unique memento or two.

Medical planning is critical for a trip like this; both before the trip and during it. Determine what immunizations are required or recommended for area you will be visiting and allow plenty of time to complete any series. You may find it useful to coordinate with a 'travel clinic' that specializes in fulfilling this need. You should also ensure that you have an adequate supply of prescription medication for the duration of the trip. If this is not possible, you will need a plan to replenish these critical supplies. You should also know the locations and capabilities of medical care facilities in the event urgent or emergency care is required. The Centers for Disease Control and Prevention has a good online reference for evaluating your vaccine requirements that can be accessed at http://wwwnc.cdc.gov/travel/.

If at all possible, you should obtain a good mailing address prior to departure. Any consumables that you routinely use and desire while away may need to be sent from the home. This obviously includes your favorite toothpaste, soap, shampoo, and deodorant. It may also include any office supplies that you foresee using while away. Standard paper sizes differ between the U.S. and Europe; the European standard A4 paper size is what was available in Afghanistan. If we had realized this, we would have included printer paper in our 'care package' that we mailed prior to our departure. A modified packing list that we used for Afghanistan is included as Appendix B at the end of this paper.

Finally, some thought should be given to communications planning. What telephone and internet access is available at the host institution? What is available in the host country? What actions do you need to take with your cell provider prior to departure? Will you need to arrange for special hardware or software support? This is particularly important if the software that you plan to use requires a network license.

Conclusion

Our experiences are only a few examples of how engineers can make a significant impact beyond their normal scope of influence. We took the knowledge and skills that we have developed in our careers and used them in a capacity we had never anticipated. When asked, "What did you do?", we can honestly say that, "We made a difference." If asked, "Was it worth it?", the answer is a resounding, "YES!"

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Appendix A – Selected PSET Workshop Survey Questions

What effect did the workshop have on increasing your intention to incorporate the following concepts and strategies into your teaching?

	No effect	Slight effect	Moderate effect	Strong effect
Learning Styles				
Lowman's Two-Dimensional Model of Effective Teaching				
Learning objectives				
Bloom's Taxonomy				
Active Learning				
Cooperative Learning				
Problem-based Learning				
Inquiry-based learning				
Inductive sequences				

What effect did the workshop have in increasing your enthusiasm for teaching?

	No effect	Slight effect	Moderate effect	Strong effect
Enthusiasm for Teaching				

Please check the rating that represents your opinion on the following:

	Poor	Fair	Average	Good	Excellent
Workshop Content					
Workshop Handouts					
Workshop Visuals					
Workshop presenters					
Breakout Sessions					

Please check the response that most closely represents your opinion on the following:

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
The workshop met my objectives					
I enjoyed the workshop					
I would recommend the workshop to others					

Appendix B – Afghanistan (Extended Trip) Packing List

Bring with Us

Bags with:
Clothes
Sturdy Shoes
Exercise clothes
Pajamas w/ house shoes
Seasonal clothing (fleece/coat/gloves)
Towels/Wash Cloths
Personal Hygiene Items - Pack a one month supply in bags.
    Pack a TSA authorized toiletry kit to account for 36 hours of travel to Manas/Kabul.
Underwear
Cap
TSA Locks for bags (4)
Locks for bags and locker (3)
After-Hours Clothes
Shower Shoes
Eyewear
    Glasses
    Sun Glasses
Prescription Medications
Books
Inflatable Pillow
Laptop – wth Skype, (Satellite Internet Optional)
Camera
iPod
Thumb Drive/USB Hard Drive
Phone Card
Passport/Visa
Cash for purchases. *NOTE: $1000 recommended for Afghanistan*

Early Shipping

Twin Sheets (2 sets)
Foam Pad
Pillow
Books
Personal Items
    Razor Blades
    Shampoo
    Lotion
    Soap
    Deodorant
    Toothpaste
    Toothbrushes
    Shaving Cream

Q-Tips
Wet Wipes
Sun Block
Games/Cards
Stationary
Medications
Tylenol, etc.
Docking Station
Extra Power Cord
Computer Keyboard
Optical Mouse
Writable CDs
USB Hard Drive
European Adapters

Reading List (for Afghanistan)

*Hosseini, K. (2003). The Kite Runner, Riverhead Hardcover.
*Hosseini, K. (2007). A Thousand Splendid Suns
*Michener, J. A. (1986). Caravans, Fawcett.
*Mortenson, G. and D. O. Relin (2006). Three Cups of Tea: One Man's Mission to Promote Peace . . .One School at a Time, Viking Adult
*Seierstad, A. (2003). The Bookseller of Kabul Little, Brown and Company

Ahmedi, F. and T. Ansary (2005). The Story of My Life: An Afghan Girl on the Other Side of the Sky Simon Spotlight Entertainment
Chayes, S. (2006). The Punishment of Virtue: Inside Afghanistan After the Taliban The Penguin Press HC
Stewart, R. (2006). The Places In Between, Harvest Books.
Tanner, S. (2003). Afghanistan: A Military History from Alexander the Great to the Fall of the Taliban Perseus Books Group.

Electronic Files

Email Address List
Work Files
Course/Teaching Files
Research Files
Email .pst File