

**AC 2009-1860: IMPLEMENTING A FACULTY DEVELOPMENT STRATEGY AT
THE NATIONAL MILITARY ACADEMY OF AFGHANISTAN**

Eric Crispino, United States Military Academy

Andrew Bellocchio, United States Military Academy

Scott Hamilton, United States Military Academy

Aaron Hill, United States Military Academy

Stephen Ressler, United States Military Academy

Implementing a Faculty Development Model at the National Military Academy of Afghanistan

Abstract

Now starting its fifth year of existence, the National Military Academy of Afghanistan (NMAA) in Kabul has recently graduated the first class of cadets with a major in civil engineering. Since the inception of the Civil Engineering Department and major in March 2007 to the first graduation, the faculty has quadrupled in size to support new, bigger classes of junior and senior cadets. This rapid program growth has greatly increased the demand to attract, develop, and retain qualified engineering instructors from the small pool of post-Taliban educated engineers. Drawing the country's brightest engineers to teaching is growing more difficult as salaries for practicing engineers reconstructing Afghanistan are rising and will quickly outpace salaries for NMAA engineering instructors. Additionally, all engineering faculty members have aspirations to attend graduate school in the United States or other developed nations. Recent years have shown 25% of the existing engineering faculty at NMAA depart annually to graduate school or higher paying jobs in industry. This high faculty turnover and rapid program growth prescribes that the engineering faculty will experience a constant influx of engineers that are new to teaching.

In light of NMAA's desire to continue to provide a modern, high quality engineering education to its graduates, one of the most critical tasks has become faculty development. While initially engaged and focused on course development, US mentors quickly discovered the need to develop and implement a teaching workshop for new and current instructors with little teaching experience. We modeled the instruction after the ASCE Excellence in Civil Engineering Education (ExCEED) Teaching Workshop hosted annually at West Point and other locations in the US and adopted the content for the instructors at NMAA. The teaching workshop introduced the new Afghan instructors to effective teaching methods inside and outside the classroom. It included eight seminars, demonstration classes taught by the authors, and practice classes taught by the Afghan instructors. The workshop seminars focused heavily on Joseph Lowman's two dimensional model of effective teaching.¹ This paper will describe the process of developing and implementing a new instructor workshop at NMAA and also highlight the many challenges and provide recommendations to growing a quality engineering faculty in any developing nation.

The Crown Jewel of Afghanistan

On January 25, 2009 the National Military Academy of Afghanistan (NMAA) in Kabul graduated its first class of cadets. Of the 84 graduates in this class, 18 of them studied Civil Engineering in a program designed and implemented by faculty members from the U.S. Military Academy at West Point and U.S. Air Force Academy in Colorado. The initial tasks these faculty members faced included design of curriculum and courses, development of laboratory facilities, and hiring faculty. We deployed to Afghanistan between January and August 2008 as the Civil Engineering program entered its second year (the NMAA school year, which follows the Islamic calendar, begins in March and ends in January). Our tasks included developing the final courses for the civil engineering curriculum, formalizing the laboratory component of the curriculum,

and faculty development. Faculty members from West Point continue to support the developing engineering program at NMAA and several volunteers will deploy to NMAA during the upcoming summer.

Laying the Foundation to Civil Engineering in Afghanistan

Dr. Chris Conley and Colonel Steve Ressler, from West Point's Department of Civil & Mechanical Engineering, deployed to Afghanistan in January 2007 to begin designing the four semester Civil Engineering curriculum and to develop the courses for the first semester of the program. One of the largest challenges they faced was finding qualified college level engineering instructors. The Afghan Ministry of Defense initially instituted a policy which required all faculty members at NMAA to be Afghan military officers. Since there were no members of the Afghan National Army (ANA) who were qualified to teach college level engineering, the Ministry of Defense granted an exception which allowed civilian professors from Kabul University to teach at NMAA.²

The Dean of Engineering Faculty at Kabul University played a critical role in identifying talented candidates. Recognizing a great developmental opportunity, he encouraged his faculty members to apply for part-time employment at NMAA. Conley and Ressler hired three brand new candidates who proved to be very successful as adjunct-faculty members and one more experienced professor who had worked at Kabul University for many years. All of these instructors were hired under U.S. Army contracts at the competitive salary of \$550 per month. Unfortunately for NMAA, after only one semester of teaching, all of the three new instructors hired by Conley and Ressler were selected to attend graduate school in the United States under the Afghan Merit Scholars Program.³

In the summer of 2007, Major Richard Gash deployed to Afghanistan and eventually hired more adjunct faculty members from Kabul University to replace the three instructors selected to attend graduate school and to meet the increasing teaching demand as the program expanded. As Gash began preparing course material for the second semester of the Civil Engineering program, he noted a trend was beginning to develop. The Civil Engineering program was growing at a fast pace and many of the well qualified graduates from Kabul University, who could potentially teach at NMAA, were either applying to attend graduate school in the United States, Japan, or India, or seeking high paying engineering consulting jobs with Non-governmental agencies. Relying on adjunct faculty from Kabul University had both positive and negative implications for NMAA. While the young engineers from Kabul University were some of the best in the country and provided the Civil Engineering program with a reasonably high level of expertise, there was no continuity within the program. The gains and improvements made by the first group of instructors were lost as the second group of adjunct faculty joined the team.

Nevertheless by the end of the first year of teaching Civil Engineering it was clear to the Afghan leadership at NMAA that the Civil Engineering program was gaining a reputation as the best academic program at the Academy. As a result of this great reputation, more cadets wanted to sign up to become Civil Engineer majors. As the program moved into its second year, a new class of almost 300 cadets selected their academic major and from this group of cadets 72 signed up to study civil engineering. This raised the total number of civil majors to 90 between the first

two classes of cadets to enter the academy. The large increase in the number of civil engineer majors meant that the newly arrived mentors had to attract candidates with civil engineering degrees and quickly prepare them to become educators.

Attracting the Best and Brightest

The first several instructors hired by Ressler, Conley, and Gash proved to be a great success for both NMAA and Kabul University. The partnership formed between NMAA and Kabul University has positive benefits for both schools.⁴ NMAA benefits by receiving the best qualified engineering instructors available – something they desperately need. The Kabul University adjunct faculty members benefit in a variety of ways as well. The partnership provides Kabul faculty with daily personal contact with engineering faculty from West Point, access to modern engineering textbooks and course notes from West Point, access to a wide range of engineering laboratory equipment at NMAA, and exposure to modern teaching technology such as whiteboards, smart boards, video projectors, and a computer aided design lab.⁴



Figure 1: Civil Engineering Faculty—Spring 2008

Despite the many benefits for Kabul University and their faculty from teaching part time at NMAA, the rapidly expanding reconstruction efforts in Afghanistan have also created a huge demand for qualified engineers. Kabul University also struggles to attract and retain high quality instructors in this environment. Salaries offered by private engineering firms range from \$700 to \$3,500 per month depending on the degree of the engineer and background experience.⁵ In contrast, a first year instructor at Kabul University receives only \$80 per month and \$200 per month during their second year. Eventually through academic promotion at Kabul University, a senior instructor can earn up to approximately \$650 per month at the time of this writing. It is critically important to the future success of engineering education at NMAA and at Kabul University that both schools be able to retain a highly qualified faculty.

Developing Faculty in a Developing Nation

Between January and August 2008 we deployed from West Point to Afghanistan to develop courses for the civil engineering curriculum and performed a wide range of program development tasks. At the time of our arrival, the Civil Engineering faculty consisted of 4 part time adjunct faculty members from Kabul University and one full time Afghan National Army (ANA) Colonel. As the only full time faculty member, the Afghan officer served as the acting department head of Civil Engineering. He had been hired by the Afghan Ministry of Defense shortly after Gash departed Afghanistan. Although he lacked academic credentials compared to those from Kabul University, he was able to successfully accomplish the day to day administrative tasks of the department. Of the four part-time faculty, two members were in their first year of teaching. With 6 courses and 20 sections starting in 2 months, there was a great need to hire and develop faculty in a very short time.

The Rookies

Upon arrival, we immediately began the process of searching for more faculty members to meet all of the teaching requirements of the upcoming semester. Based on a standard teaching load of 2 sections for adjunct-faculty members, we needed to hire six new instructors to meet the demands of increased enrollment. Once again the Dean of Engineering at Kabul University helped identify the best qualified graduates. We interviewed numerous candidates Kabul University and from industry and eventually hired six as part-time instructors. All six of the new instructors had graduated from Kabul University just months earlier and none had college level teaching experience (see Figure 2), although a few had taught high school part time while attending college. It is worth mentioning that the level of even the best students from Kabul University was significantly below what we expected from an accredited civil engineering program in the developed world. Thirty years of warfare, internal strife, and international isolation had taken a huge toll on Afghanistan's educational capacity.

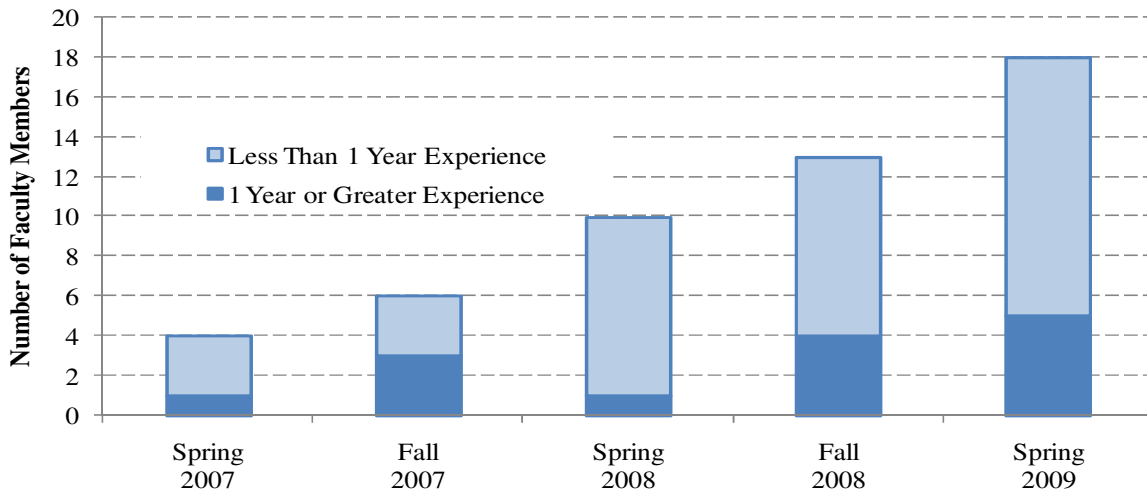


Figure 2: Faculty Teaching Experience

The lack of teaching experience we faced in the spring of 2008 is similar to that experienced in each of the first 5 semesters of the civil engineering major. Figure 2 highlights the inexperience of the civil engineering faculty. Quite simply, the rookies far outnumber the veteran teachers, and even the veteran professors lacked knowledge of modern pedagogical practices. With only a few weeks before the semester, a “spring training” was required to get our teachers in shape, in addition to helping them with course preparation. To do this, we instructed these recent college graduates and veterans on the fundamentals of teaching and gave them chances to practice. Our role as mentors was to coach the recent Kabul graduates in making the transition from student to teacher and to update and improve the skills of those already teaching.

Growth of the Civil Engineering Program

The lack of experienced faculty will continue for the next few years as the Department’s teaching load rapidly expands to meet larger enrollments. This growth is attributed to the increasing size of each graduating class from 84 to over 300 cadets and the development of senior level engineering courses. In the first year of teaching to a class of juniors only, a faculty of 5 taught a total of 14 sections during the spring and fall semesters of 2007. In the second year of teaching to both senior and junior classes, a faculty of 13 taught a total of 52 sections during the fall and spring semesters. This rapid expansion, shown in Figure 3, is projected to continue until reaching a steady state of 92 annual sections for 2011 and beyond.

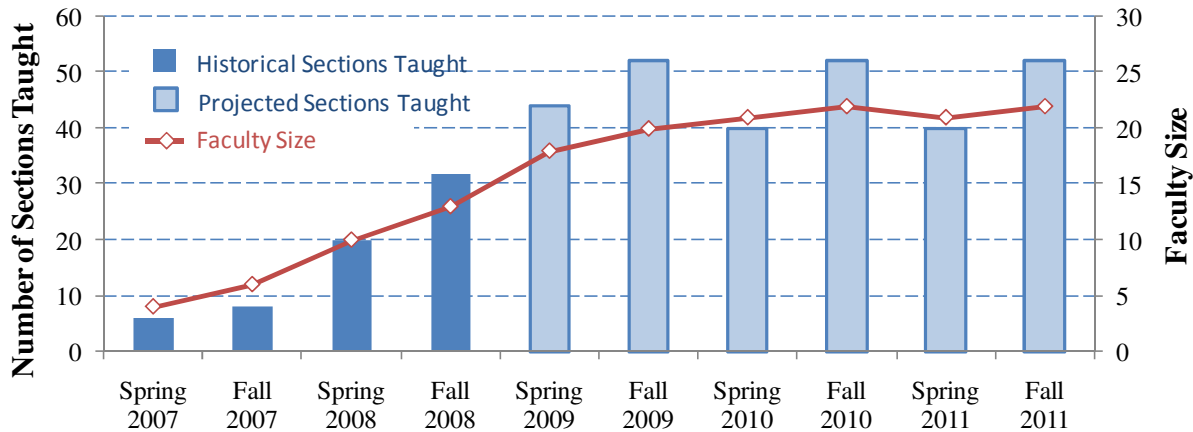


Figure 3: Growth of Civil Engineering Department by Semester

To keep pace with this steadily increasing workload, the Civil Engineering Department's faculty size increased from 4 part-time instructors in the spring of 2007 to 1 full-time and 9 part-time instructors in the spring of 2008. The Department must continue to add more faculty members to employ 18 instructors in the spring of 2009 and achieve a steady state of 22 instructors after 2010 (Figure 3). This growth means that US mentors will continue to hire more instructors over the next few years. The past three years has shown that most of these new faculty members will likely be recent graduates of Kabul University and possess little teaching experience. Again, we faced the conclusion that developing these new teachers will be vital to the successful growth of the Civil Engineering Department.

Graduate School Attrition

In addition to the growing size of the faculty, the civil engineering department has experienced an extraordinarily high faculty turnover rate. Over the first two years of teaching, 9 of the 20 (45%) instructors hired have departed NMAA. Of those nine departing, seven left to attend graduate school in the United States or Japan. The opportunity of higher education, further exposure to modern engineering, and greater pay is too tempting for the young, motivated instructors hired immediately after graduating from Kabul University. For Afghanistan as a nation, this is a promising start to rebuilding and sustaining its infrastructure. For NMAA as a developing university and Kabul University as well, this faculty attrition, for a variety of reasons, is a major challenge to providing high quality instruction. Although the relationship between NMAA and Kabul University graduates is mutually beneficial, many hired faculty use their short time at NMAA primarily as a preparatory program to broaden their engineering knowledge and improve their English skills as they await graduate school admittance.

Other instructors departed NMAA for more lucrative jobs in the private industry and a few simply did not meet our expectations. One veteran faculty member left due to his interest in his other job opportunities and his unwillingness to meet his contractual obligations at NMAA. At NMAA the adjunct faculty members were expected to instruct class at a scheduled time and spend a certain number of hours preparing for class and helping students. This requirement was very different than the norm at Kabul University where the much of the faculty only shows up to lecture and then only when it fits their schedule. Another veteran faculty member was dismissed

for failing to show up for class repeatedly and for his general unwillingness to adequately prepare for his lessons.

For at least the next five years, NMAA will experience this high attrition of faculty. The administration can expect one out of every three faculty members to depart for graduate school after a year or two of teaching. Experience has shown Afghan students will take three to four years to obtain a master's degree at an American University. Another question that remains unanswered is *will these engineers with advanced degrees from the developed world return to teaching, or even to Afghanistan?* Kabul University has sent faculty members abroad since 2006, and to date none have completed a master's degree and returned. To overcome the high attrition, the civil engineering department must continue to attract Kabul University's best students and then efficiently develop them into effective teachers.

Developing Faculty

The turnover rate the authors faced was similar to the regular challenges faced by many academic departments at West Point. Much of the teaching staff at West Point (57%) is composed of junior military officers who are assigned to West Point for a period of 3 years. In the Department of Civil and Mechanical Engineering at West Point, where excellence in engineering education is a hallmark, has developed a faculty development system over many decades to prepare these junior officers, with no previous teaching experience, to excel in the classroom. The department experiences an almost 30% turnover of faculty annually, and an average instructor has only 2 years of teaching experience. Yet through their faculty development model, they maintain an excellent reputation as high quality teachers.

Implementing a Teaching Workshop in Afghanistan

We set out to implement a similar faculty development program at NMAA to prepare not only the six new faculty members we hired after arriving, but also the other instructors who had been teaching at NMAA for one semester. We created a faculty development workshop based heavily on the Excellence in Civil Engineering Education (ExCEED) workshop sponsored by ASCE and the Instructor Summer Workshop (ISW) conducted each summer with the new faculty in the Department of Civil and Mechanical Engineering at West Point⁷. The program consisted of 8 teaching seminars which are shown in Table 1. We each conducted one demonstration class to illustrate the teaching techniques discussed in the workshops. The final portion of the workshop included one practice class in which each new instructor taught a practice class to us and their peers. We concluded the workshop with a small graduation ceremony and presented the participants with certificates—something culturally and personally important to our Afghan counterparts.

Table 1. Faculty Development Seminars

Seminar Title
1. A Model Instructional Strategy ⁷
2. Principles of Effective teaching ⁶
3. Introduction to Learning Styles
4. Planning a Class - Learning Objectives ⁸

5. Planning a Class – Board Notes
6. Teaching Technology – Whiteboard ⁹
7. Teaching Techniques – Questioning ¹⁰
8. Homework and Grading

One of the most eye-opening seminars was seminar 8 – Homework and Grading. We learned after several weeks in Afghanistan, that regular graded homework assignments were not common in either Kabul University or many of the departments at NMAA. Since frequent assessments and feedback is essential to the model instructional strategy we presented, we strongly encouraged our Afghan counterparts to begin incorporating homework assignments into their courses. During this two-hour seminar we described how to construct good homework assignments and introduced different grading models such as using a cut scale vs. using a holistic grading philosophy. The seminar also included a practical exercise in which the new instructors were asked to grade actual examples of student work.

Demonstration Classes

The demonstration classes, not shown in Table 1, were drawn from the Statics and Mechanics of Materials course which many of the new instructors had been hired to teach. During each of these demonstration classes the Afghan instructors were asked to record strengths and areas of improvement based on what they observed. The teaching seminars and two demonstration classes spanned a period of three days. After this time, the six new instructors began teaching their practice classes to their peers. It is worth noting that demonstration classes, which were conducted in a very interactive and engaging manner, represented an unfamiliar style of instruction. In fact, after the first demonstration class was presented we were told by our Afghan counterparts they would not be allowed to teach in such a manner at NMAA. The acting department head produced a NMAA faculty manual which specified that ALL classes would consist of five minutes of taking attendance and administrative requirements, 40 minutes of uninterrupted lecture, and concluded with ten minutes of student questions. This almost inconceivable obstacle to the authors was successfully removed, but only after getting permission from the Dean of Education.

Classroom Assessment

During each practice class, all new instructors conducted an assessment of their peers teaching the class. At the completion of the class, we lead the group through a discussion of the strengths and areas of improvement for the lesson. Many of the instructors chose to teach entirely in English; however, a few were not fully comfortable teaching a whole lesson in English and chose to use Dari, one of the languages in Afghanistan. Even though we can speak very little Dari, we were able to follow the class through the written material (most of which was English) and were able to judge many of the teaching mechanics we presented in the faculty development seminars.



Figure 4. A new instructor teaches a practice class to his peers.

The emphasis on quality teaching did not end with the seminars. Over the next four months we made numerous classroom visits to view and assess the quality of the instructors. After each classroom visit we discussed what we saw with the instructor. We intended for these visits to be non-threatening and completely for the purpose of improving instruction. After several weeks the young teachers became comfortable with our presence in their classes and welcomed our feedback.

Beginning to Assess Faculty Development

It is currently very difficult to assess teaching effectiveness at NMAA. The systems used at colleges and universities in the United States for end of course feedback simply do not exist in Afghanistan. There are no automated mechanisms for an instructor to post an informal survey on a course website or on a course Blackboard page. An end of course assessment of their first engineering semester was conducted by Gash in 2007 with success; however, the survey of two courses took a great effort to administer, translate into Dari, and translate back to English.³ The mentors and faculty currently lack the staff to adequately conduct assessments by hand for the 16 engineering courses in the curriculum.

Additionally, open critique of another, especially to senior or ranking personnel such as a teacher is avoided within Afghan culture. The Civil Engineering Department has begun to recognize the need for assessments as a tool to help instructors improve student learning. The progress is slow and it will take time before NMAA is ready to implement a university wide system. In the interim, growing a culture of giving and accepting honest, open feedback is vital to improving the teaching level at NMAA. To promote this, the ExCEED seminar on Classroom Assessment Techniques, originally omitted at NMAA, has been included in subsequent workshops.

Without any formal, quantitative assessment data from students, we surveyed the instructors. Several months after the faculty development workshop and the new instructors had taught for a semester, we asked them to comment on the workshop:

- When asked how the seminar changed the way you approached teaching, one instructor responded: “Having a good attitude in class, Bringing models for visual presentation of concepts, and questioning during the lesson for better engagement”.
- When asked to comment how the seminar helped prepare them for teaching, another instructor noted: “Showing physical models has helped me more last year, it was interesting for my students while analyzing forces in 3D, truss calculations and so forth”.
- An instructor commented that the seminar on grading was particularly useful and the method taught to fairly evaluate student work was “a powerful tool.”
- In organizing a class, one instructor noted that the workshop helped him “Talk about the main points of each topic and relate the topic to prior learning.”

Although this initial feedback is anecdotal, it certainly suggests the seminar was positively received by the instructors.

The Future of Faculty Development

Each civil engineering instructor, with the exception of the ANA Department Head, is a part time adjunct faculty member. These adjunct faculty members split their days between a full teaching load at Kabul University and a part-time teaching load at NMAA. As such, most part-time faculty can only handle 2 to 3 sections of 18 cadets. The small class size is reflective of the small class sizes used at West Point, but is also a requirement given the small classroom facilities at NMAA. With the class size restriction and full teaching load at Kabul University, the adjunct faculty at NMAA are unable to handle larger enrollments. The short term solution to coping with this increasing load and overcome graduate school attrition has been to higher more faculty members. The long term solution, however, is to hire full-time faculty members that teach 4 or more sections over multiple courses.

A Long-Term Solution: Full Time Faculty

To draw full-time faculty members, the US Army will have to raise the pay scale to stay competitive. Incentives that reward years of service, teaching multiple courses, directing a course, and level of education are required to keep the young instructors longer.¹¹ Additional incentives will attract more experienced instructors and those returning from graduate school. Those returning from graduate school will also inspire the civil engineering cadets to life-long learning. One danger with this plan is that it will create competition between the US Army, Kabul University, and other Afghan Universities which could adversely affect our relationships.

The long term hope is that within five years, those faculty members that depart NMAA for graduate school return to Afghanistan as qualified, highly proficient engineers. They will then be the engineers that rebuild the nation's roads, bridges, and facilities. NMAA's hope is that some of these graduate students will also return to teaching and add a much greater level of expertise to the civil engineering program.

A Long-Term Solution: Military Faculty

As the civilian faculty serve as excellent engineering role models, it is also important to an academy that commissions army leaders to provide military role models for its cadets. Similar to West Point and the US Air Force Academy, a mix of junior rotating faculty, civilian faculty, and permanent senior military faculty provide the best example for cadets. The junior rotating faculty bring recent field experience to the classroom while the civilian faculty provide technical expertise. A small number of senior military faculty members add continuity and leadership.



Figure 5: Senior cadets working on their civil engineering homework

As a first start, a tentative plan is in place to retain six recent civil engineering graduates of NMAA for a fifth year.¹¹ These new lieutenants will serve as instructors to the department's introductory mechanics and design course. The best long term prospects to incorporate rotating and permanent military faculty into the civil engineering department come from the first few classes of NMAA graduates. It is realistic that in ten years, after serving in the ANA and earning a graduate degree from the United States or in time from Afghanistan itself, NMAA graduates could play a significant role as engineering educators.

Until such time as full time civilian and military faculty are a possibility, the sustainment of quality engineering education hinges on the US mentorship given through the teaching workshops, classroom assessments, and daily contact with the adjunct faculty.

The Challenges in a Developing Nation

Developing a high quality engineering faculty at NMAA presents many challenges. We believe the challenges we faced, such as high turnover and lower levels of faculty education are not unique to Afghanistan and could be encountered by an assistance effort to any developing nation. A report from the International Bank discusses similar conditions in Africa.¹² Communication is foremost. In Afghanistan English is the declared language of engineering. Most of the engineering faculty members spoke English quite well; however, the English writing and reading abilities are much lower. The English abilities of the students at NMAA are even lower than their instructors. In some cases, a few engineering students had never taken any English classes. All of the engineering textbooks used at NMAA, which have been purchased by the United States, are in English and many cadets struggled to understand them. Engineering texts in the native Persian dialect (Dari) or Pashto simply do not exist. Texts available in Persian (Farsi) are outdated and unreliable. Engineering instruction at NMAA is a mix of Dari for explanations and English to describe technical terms which is also the case at Kabul University. To overcome the students' inability to understand the textbooks, mentors placed great emphasis on making short lesson summaries of key concepts in direct, clear writing. Additionally, the combination of two and sometimes three languages greatly slows the pace of instruction. A typical statics lesson that may be taught in one hour at West Point, would usually take about one and half hours to teach at NMAA.

Developing nations must seek to establish a balance between growing quality engineers for industry and qualified engineers to teach at Universities. In Afghanistan, Kabul University faculty members are employed by the Afghan Ministry of Higher Education. Without providing competitive salaries, many top engineers will be lured to higher paying jobs in the private sector. To mitigate this problem, the team of US advisors at NMAA has established a graduated pay for faculty hired under the auspices of US Army contracts. This pay system provides annual pay raises and bonuses for additional degrees, teaching multiple courses, and serving as course director for large enrollment courses. Even with this system the authors experienced cases of faculty candidates being selected and, after signing a contract, changing their minds in favor of other higher paying jobs in private industry. The governments of developing nations must be aware of these competing demands for engineers and offer incentives to retain top engineers in education. Ultimately it will be the engineers who remain in education who will teach and provide the subsequent generation of engineers.

In a developing program, the need for continuity is critical. There is a high rate of personnel turnover at NMAA and this will continue for several years. Without a continuous presence at NMAA, educational gains will be lost in this turnover. To minimize this loss between engineering mentor deployments, the lessons learned by a group of instructors are captured and annotated for future instructors. Additionally, we worked to establish a course assessment process during our tour. This process, based on the course assessments done regularly at West Point, will help ensure that modifications and updates to the course content is documented and

archived. For each course in the civil engineering program, hard copies and digital copies of all course materials were produced. As new instructors arrive and begin teaching at NMAA they can focus more on teaching mechanics rather than course development during their initial semesters at NMAA.

Conclusion

We initially deployed to Afghanistan with the intent of concentrating and focusing our efforts on developing courses and material for the upcoming semesters. Our experience quickly taught us that faculty development was as critical, if not more critical to developing a program of quality instruction. This finding mirrors the call for action from the World Conference on Higher Education. In their adopted framework to bring about change and development of higher education they called for “academic staff to update and improve their teaching skills” and for the establishment of systems for that development as a method of reducing the higher education gap between the developed and developing worlds.¹³ In providing assistance to developing countries, faculty development may be one of the best ways to improve education in the developing world and close the higher education gap.

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