

West Point's School for Scholars: The Center for Teaching Excellence

Text and Photos by Ted Spiegel

"AMERICA'S BEST COLLEGE: HOW WEST POINT BEATS THE IVY LEAGUE" is the headline of the 24 August 2009 *Forbes* article heralding the U.S. Military Academy's triumph over the likes of Princeton, Harvard and M.I.T. The 7th paragraph yields the nitty-gritty of success

"Classes are small, with no more than 18 students. Cadets work their way through a core curriculum in which an English major has to take calculus and a chemist has to take a philosophy course. Since there are no graduate programs, faculty and administration can focus on the undergraduates."

Sharpening that focus is the challenge of West Point's Center for Teaching Excellence, founded in 1994. Incoming faculty, fresh out of graduate programs at civilian universities are introduced to the CTE shortly after their summer arrival. CTE's purpose: to enhance cadet intellectual development through high quality faculty development programs. Its mission: to provide consultation and resources to faculty; conduct educational research and development; and serve as a conduit for educational information. In its first ten years, CTE was primarily a resource for consultation and literature about teaching techniques and topical seminars about education.

By 2004, CTE had a two-year program in full swing, awarding its first Dean's Master Teacher Certificates in May of that year. Currently, more than 150 of the faculty tap into the center, with 50

graduates per year. The voluntary two-year MTP program involves 16 monthly classes, extensive readings and a second-year research or literature search monograph.

Over the course of each summer, Dr. Mark Evans, CTE Director, welcomes many small groups of new instructors to West Point. The group of 12 he greeted the day after Reception Day in 2009 contained only two who had taught previously. Amongst his remarks was a simple insight. When posing a question whose answer would carry the whole class forward, "pause intentionally so all of the cadets will start thinking about the answer. Then select one cadet to make the response. The pause gets them all thinking. If you call out one cadet's name, then pose the question, the rest are not engaged."

In his remarks Evans spotlighted one of the cornerstone theses of teaching: Bloom's Taxonomy of Educational Objectives: 1. Knowledge (Remembering previously learned material) 2. Comprehension (Grasping the meaning of material) 3. Application (Using information in concrete situations) 4. Analysis (Breaking down material into parts) 5. Synthesis (Putting parts together into a whole) 6. Evaluation (Judging the value of a product for a given purpose, using definite criteria). Moving up as far as possible from 'knowledge' is clearly desirable.

As new faculty enter their West Point classrooms they face dual challenges. One MTP candidate observed: "instructors are given a



Dr. Mark Evans, CTE Director, presents a concept to a group of new West Point instructors.

great deal of latitude in how they instruct each class (teaching techniques); however, the entire course has established lectures with the same reading, problem sets, laboratories and objectives (curriculum).” During the first summer, seasoned faculty members in each department introduce their new colleagues to the curriculum materials. During the ensuing years instructors have the opportunity to enhance their teaching techniques through the resources of the CTE.

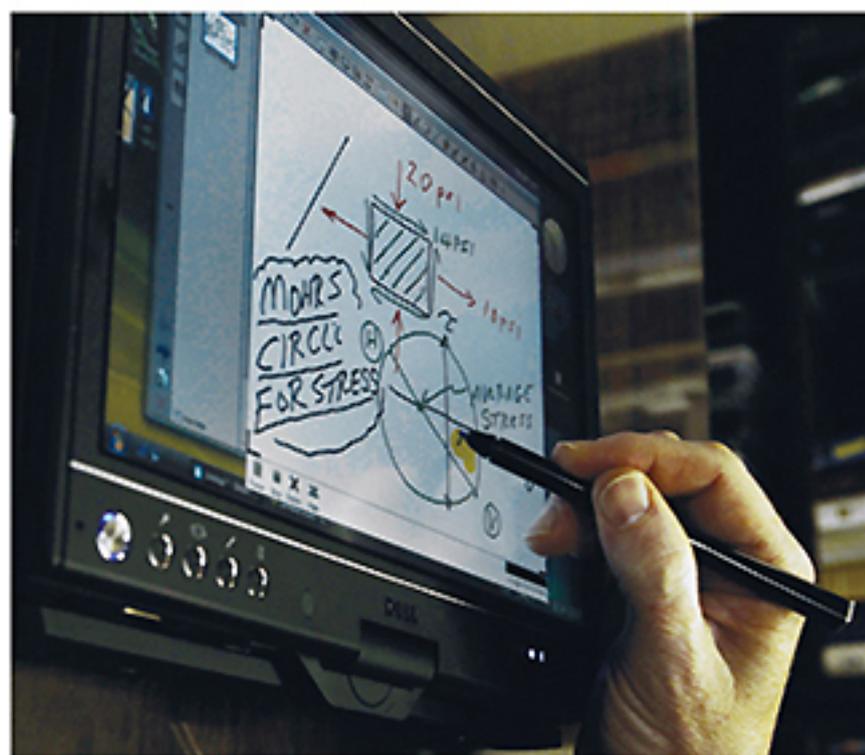
Over the last 50 years, West Point’s academic program has been continually evolving. The 1961 *Register* proclaimed: “The United States Military Academy is neither a university, a liberal arts college, nor an engineering school. It is a unique institution with a specific mission ... preparing the cadets for a single profession.” A West Point diploma represented completion of a four-year engineering-focused program. One prescribed curriculum—weighted 60% towards science and 40% towards humanities—fitted all. Cadets were offered no electives. Teaching revolved about faculty presentation and cadet mastery of the proscribed curriculum in a very linear format. By 1965 cadets could choose four electives from 20 advanced courses. By 1983, academic majors were introduced—16 to begin with. In 2010 there are 45.

Over the last century, West Point’s faculty has been challenged to create courses at the cutting edge of knowledge and thought in engineering, the sciences and humanities. Each department is continually modifying course content, and world culture is continually modifying how people learn. In September, MTP students addressed the issues surrounding “Course Design.” Their assigned readings led them to consider instructional goals and learning-task analysis while determining three to seven

reading, research projects/papers, hearing, writing, reflections, minute papers, discussion, labs, projects and design projects, trip sections (walking a battle ground, for example), movie and video clips, emotional responses (stress, pressure), case studies, cooperative groups, peer evaluations, peer instruction, producing a tangible product (testing a theory, surveying), incentive learning, comparative analysis, interviews, instructor feedback, assessments, demonstrations (watching), diagrams, application of technology, assemble/disassemble procedures, debate, and practical exercises. Kicking learning up-a-notch can involve a broad array of support.

In the February 2008 Center for Teaching Excellence Newsletter, Dr. Led Klosky and MAJ Jake Bruhl of the Department of Civil & Mechanical Engineering wrote “Education remains broadly out-of-sync with the trend towards on-demand content; we still rely primarily on a “push” approach. In our courses, we continue to implement the traditional education model: we decide which content is important, we prepare a lesson, and cadets come to class and recite or receive the information we deem important in a mode and at a time we choose. In effect, we force them to be followers in many aspects of their education; they live in a “pull” world, yet we continue to teach them in a predominately “push” environment.”

These remarks were at the core of an article describing an innovative teaching technology: “Video AI” (additional instruction). Dr. Klosky observes: “In their careers, cadets will be communicating with words in a variety of formats: blogs, tweets, informal and formal e-mails. Social media are evolving as a modern form of communication. Today’s students are conditioned to using their computers to pull info to themselves on demand: by forming good questions to yield a successful Google search, by absorbing what they choose to from television. This generation is not content to have others decide on the content of their knowledge



Mohr’s Circle is the subject of an “on demand” Video AI.

or their interactivity with friends via Facebook. This generation's learning is definitely going from "push" to "pull."

Klosky and Bruhl then set out to provide cadets with a new "pull" resource: short, focused videos that would serve as additional instruction in support of Civil Engineering 300, Statics and Mechanics. Imagine yourself as a cadet once more, looking over the shoulder of your instructor. He is narrating the diagram being created to explain "Mohr's Circle," a tool for analyzing stress. By utilizing a tablet PC, Camtasia screen capture software and a desktop microphone, instructors can provide "you-tube-like" videos: unedited five-minute explanations of the more difficult CE concepts. These Video-AIs can be "pulled" whenever cadets need them—no appointment necessary—from the BLACKBOARD Portal each department maintains. And this generation of teachers is paying attention to what the West Point's faculty is learning: The American Society for Engineering Education named the full Klosky, Bruhl and Bristol presentation the best Mechanical Engineering Division paper for 2008.

Dr. Klosky is a long time CTE Mentor (each MTP candidate has a mentor from another department). One insight he offered: "That 'pull' capacity is especially handy in COIN (Counter-Insurgency) operations. The ability to learn on the fly—language, politics, infrastructure—is valuable. It's unreasonable to think we can teach all of the details of the modern world. We have to teach cadets how to supplement their own knowledge—that's broadly described as life-long learning."

As COL Kevin McNabb, microbiologist and MSC veteran, began teaching in the Chemistry Department in 2007, he observed that cadets were reluctant to respond to his "any questions?" query at the beginning of each class. When they were willing to go beyond the embarrassment of simply 'not knowing' or being unprepared, their questions were not of universal value. But once the class was able to "take boards," good learning, actual hands-on practice with the material, got underway. His capstone research paper for the Master Teacher Program he completed in 2009 is entitled "Use of an Audience Response System to Evaluate and Streamline a General Chemistry Class." Its 30 pages describe the use of a new learning aid—commonly known as a "Clicker."



A cadet uses a "clicker" to provide input to an "Audience Response System" query.

Technologically speaking, the cadets use hand-held wireless transmitters to convey their responses to probing multiple-choice questions about the current assignment. An in-class receiver instantly tabulates and displays their answers on a projection screen. McNabb offers a frank observation: "With the clickers I can survey them anonymously; cadets don't like being singled out and looking stupid. They like the ARS because they can answer honestly. That's what I wanted: something to help me focus my attention where the cadets needed my input." Now he bases his teaching on their collective response to the clicker-enabled pre-class assessment rather than their faltering responses to "any questions."



ARS results are immediately tabulated and posted.

The net result of clicker usage is measurable

improvement: a more effective class-opening, more time at boards and a heightened knowledge and enjoyment of chemistry.

Dr. Evans and his CTE colleagues constantly assess and improve their efforts.

The following comments, drawn from surveys of MTP participants, convey the ongoing value of West Point's school for scholars.

On the yield of the MTP program: "I find the discussions with faculty from other departments and professions most enlightening. They often have a significantly different perspective from mine and can offer ideas for improving in the classroom that I've been unable to find."

On new activities based on MTP study topics: "The most recent new activity is [varying] how I teach based on learning styles. I tried to follow advice to split a lesson into several blocks, each focusing on a different learning style. It was interesting to see how the cadets reacted to each style. Some cadets were not at all interested in lecturing, while others were very interactive. When I moved on to working through problems on the board, a different group of cadets expressed interest. Lastly, we conducted in-class exercises, and a different group of cadets participated more."

On the teacher's ongoing reality: "I am beginning to understand how important their willingness to learn is. I really just thought they'd all come to class eager to learn and grow, when the reality is that happens for some cadets on some days, which means that, in any given class, I need to be prepared for them not to have that internal motivation and to provide it for them."

The front page of the CTE web site is at:

<<http://www.dean.usma.edu/centers/cte/>>

Newsletters are at:

<<http://www.dean.usma.edu/centers/cte/newsletter.cfm>>

Video AI paper is at:

<http://www.dean.usma.edu/centers/cte/MTP_Projects/Bruhl_08.pdf>

Clicker paper is at:

<http://www.dean.usma.edu/centers/cte/MTP_Projects/McNabb_09.pdf>