Growing Math Lab Turns Tables on Cadets

BY DANIEL STINNETT '07

Samantha Alpert '14 works a problem on the new SMART board. – VMI Photo by John Robertson IV.

Since it was established two years ago, VMI's Open Math Lab has seen growth in cadet usage and the number of tutors available, receiving positive feedback all along the way.

Maj. Randall Cone, mathematics professor and director of the lab, along with other VMI math professors, mathematically inclined cadets, and members of the community assist cadets with any math class offered at VMI. It is open weekdays from noon to 4 p.m. and Sunday through Thursday from 6 to 11 p.m.

The lab is one part of the Mathematics Education and Resource Center, which in addition to the lab also provides workshops, internships, and K-12 outreach.

Offering a comfortable, quiet, and centrally located place to seek help, the lab attracts a broad spectrum of cadets, from those striving for an A, to those who are struggling to pass. Between 20 and 25 cadets visit the lab per day for an average visit of an hour and a half. At any given time, there are three to four tutors available, more than ever.

"We have some cadets come in for three hours at a time. Some just have one little question and sit down for 15 minutes," said Cone.

Statistics show cadets' performance in their math classes improves after they visit the lab. Most cadets who use the lab once come back multiple times.

Usage has increased so much that a math tutor supervisor, Capt. Kristi Brown, was hired to oversee the lab when Cone is away or in class. "She's been a real blessing for us," Cone said.

The lab was created in response to the difficulty many cadets experience with math classes during their 4th Class year.

"The Institute was in tune with a national problem – K to 12 math education seems to be declining," explained Cone. "We have high standards in our math classes at VMI, and when students come in and have a weak background, the gap increases."

Before moving to its home on the top floor of Preston Library, the lab opened in the spring semester of 2012 in Carroll Hall.

"It was apparent really quick that was not going to do," said Cone. The small space regularly resulted in long lines and crowded quarters. After a postwide search for an underutilized space, the lab moved in to its new location in the fall of 2012.

"We completely reconfigured the space – everything has changed except the carpet," said Cone. Along with the new whiteboards and round tables, an eye-catching addition is the SMART Board E70, which Cone aptly describes as a "six-foot iPad." Funded by VMI's National Science Foundation STEM Grant, the touch screen is used for conducting workshops and illustrating principles for cadets. "Once you're done working on something, you can save it, and give cadets all the work they have done," explained Cone.

Tutors at the lab use inquiry-based learning, a much more collaborative process than traditional teaching methods.

"We turn the tables – we get [cadets] to teach us, which is the best way to learn" said Cone.

"What [cadets] don't get is a homework service. What they do get is a coach," Cone explained. "When a cadet comes in, I usually ask them to go to the board with me. ... I ask them to describe what they are doing and where they are getting caught."

From there, tutors ask questions about recently learned principles or previously solved problems to lead the cadet to the answer. "Instead of telling them how to do it, I'm encouraging the cadet to figure it out on their own," said Cone.

Colleges around the county are keeping an eye on the progress of this lab and its success with inquiry-based learning. "We're really proud of what's happening here at VMI," said Cone.