The helping hands of engineering students

Students helping students
Sierra Moon wanted to bring her “passion” for learning to freshmen engineering students. Similarly, Chris Usher wanted to “make a difference” for the next group of incoming engineering freshmen. These two upper class students and many others are powerful, dedicated members of the Galipatia society, helping both the Galileo and Hypatia learning communities at Virginia Tech succeed in their first-year studies in one of the nation’s most highly acclaimed colleges of engineering.

The mentors serving the Galipatians represent just one of a number of college-wide engineering student groups serving other students as they matriculate their way through the complex engineering curriculum. This issue of Engineering Now focuses on some of the communities of engineering student groups who act as facilitators, mentors, caregivers, and more to their peers and to the aspiring engineers.

As another example, before each entering class joins the Hokie community, they are welcomed as high school students if they elect to participate in the annual Open House. The welcoming committee is mostly other caring engineering students who are volunteers participating on the college Dean’s Team. These highly motivated undergraduates assist the college with its various recruiting efforts.

Later, when the teenage students enter the demanding educational classrooms of the aspiring engineer, yet another cadre of slightly older peers are waiting to help. They are the members of the Software Assistance Triage or SWAT team. As the new students arrive on campus, each carrying a tablet and/or a laptop, they can be faced with numerous challenges, readily answered by the SWAT team members. These technologically gifted students are available to assist with the installation of software and operating systems, any driver and networking issues, and hardware problems. And there is no cost for this service!

Also, the new freshmen should be pleased to learn that their convertible tablet PC requirement was first vetted by the undergraduates comprising the Student Technology Council (STC). The STC originated in 2005 to provide the college’s administration with feedback about technology devices based on their personal experiences as undergraduates in the classroom. They help the college revise its ever-evolving computer requirements. This state-of-the-art requirement is part of the college’s edge over other educational choices in the U.S.

As the students progress to sophomore, junior, and senior status, they start looking for possible internships, co-operative education experiences, and their first full-time employment as an engineering graduate. Again, Hokies are among the ones helping their colleagues by running highly visible career fairs. The Council for the Advancement of Engineering Minority Organizations organizes its Engineering CareerFest each spring semester, which follows the Student Engineers’ Council’s Engineering Expo in the fall. Both groups use the money they generate to fund various scholarships, design team needs, student conference costs, and other worthwhile student endeavors.

By all measures, the students have helped to establish our highly acclaimed national reputation for producing quality engineering graduates. In an independent survey of 479 recruiters, Virginia Tech’s College of Engineering was among the top five places where recruiters looked for new hires.

At Virginia Tech’s College of Engineering, we have strong, solid teams of students who assist our faculty and staff from recruiting through employment. The Virginia Tech motto of Ut Prosim starts early. We hope you will enjoy reading this issue of Engineering Now, all about our communities of engineering students helping their peers throughout their young-adult lives.

Richard Benson
Dean of Engineering
The evolution of Virginia Tech’s engineering learning communities
Successful engineering learning communities operate on a shoestring budget

The Next Step
CareerFest links employers to diversity in engineering

Welcome to the Fold
Dean’s Team facilitates visits of engineering Hokie hopefuls

Software Assistance Triage
The evolution of the Engineering Technology Help Center

Student Technology Council
Today’s college student, living in the digital technology era
HYPATIA
A Greek philosopher historically recognized as the first notable woman in the field of mathematics, and the head of the Platist school at Alexandria around 400 AD. She died a martyr.

GALILEO
A 17th century intellect called the father of science and the father of modern physics. He spent many years under house arrest.

MADAM CURIE
A 20th century physicist and chemist who won two Nobel Prizes. She eventually died from her long-term exposure to radiation.

LEONARDO DA VINCI
Considered by many to be the true Renaissance man, with talents ranging from engineering and science to architecture and painting. He escaped the more difficult times of the three aforementioned legendary geniuses, Hypatia, Galileo, and Curie, and, some legends say, died in the arms of Francis I, the French king.

THE EVOLUTION OF VIRGINIA TECH’S ENGINEERING LEARNING COMMUNITIES

By Lynn Nystrom

In 2001, Virginia Tech’s Center for the Enhancement of Engineering Diversity (CEED) implemented Hypatia, a residential-based learning community for freshman women in engineering. The mission of Hypatia remains steadfast today: to bring together first-year women engineering students in a residential environment designed to provide encouragement and support in pursuing engineering degrees.

Essentially, the program was comprised of students helping their peers as they pursued their aspirations to become engineers.

By its third year, Hypatia enrolled 52 women on the fourth floor of the wing of Slusher Residence Hall. And its retention numbers were impressive. Of the first three classes in Hypatia, 90 percent were still pursuing an engineering degree, 17.5 percent more than among the females who had started in engineering but had not become members of Hypatia.

As role models for young women and men interested in engineering and science careers, Virginia Tech selected four truly inspirational historical figures. The first two names, Hypatia and Galileo, serve as the engineering residential learning communities for entering women and men. DaVinci and Curie are newer concepts, offering similar programs for students in biological and life sciences and in physical and quantitative sciences.
Last year, a record number of female students applied – 105 out of the 300 females admitted into engineering.

As the initial successes of the learning community mounted, Bevlee Watford, the associate dean for academic affairs for the College of Engineering, proposed creating Galileo in 2004 as a male counterpart to Hypatia. Watford’s goal was to enroll some 200 young men in Galileo, and like the Hypatians, they would be clustered in their math, chemistry, chemistry lab, and engineering explorations courses.

They would also enroll in the Galileo Seminar, a two-credit course that addresses skill development, exploration of engineering professions, and engineering activities. It was also based on the Hypatia Seminar, except the course for the females included the exploration of issues surrounding women’s roles in a predominantly male field.

In the fall of 2005, 162 freshman male engineering students enrolled in Galileo. After the first five years of the Galileo program, the retention/graduation rate for participants was 85 percent. The control group was at 78 percent.

The goal of having the two learning communities act as both recruiting and retention programs was realized. About six years ago, a number of the participating mentors, the second-year students, decided they wanted to have an impact on how the program evolved, said Susan Arnold-Christian, assistant director of CEED and in charge of the combined Hypatia/Galileo program, called Galipatia. They wanted to be more than mentors, and a few met with Watford to determine what, if any, role they might have. As a result of the discussions, the third-year students who wished to remain became the Student Leadership Team of the program. They took control of the four committees: social, academic and professional development, community service, and announcements.

The program had started on a shoestring budget, with students volunteering to help other students. Now, Arnold-Christian said, it operates on about $40,000 a year. The money is used mostly to train and pay a nominal fee to mentors, and to provide community-activity funding, such as transportation to community service projects.

In 2010, Watford collaborated with her counterpart, Jill Sible, of Virginia Tech’s College of Science, to submit a proposal to the National Science Foundation (NSF) for almost $2 million to increase science, technology, engineering, and mathematics (STEM) graduates in the physical
and quantitative sciences at Virginia Tech. The proposal described the successful practices of the College of Engineering and its plans to adopt similar programs, including a learning community for the physical and quantitative science that would complement Hypatia and Galileo.

NSF approved the proposal, and the College of Science has added the Curie Learning Community for both men and women. Curie became the fourth learning community in the fall of 2012 at Virginia Tech, as the biological life sciences hosts the DaVinci Learning Community, aimed at helping students in animal and poultry science; biochemistry; biology; dairy science; food science; and human nutrition, foods, and exercise, as well as the majors in the College of Natural Resources and Environment.

With the continual evolution of the learning community environment at Virginia Tech, the next step was the decision to house all four of the groups in Lee Residence Hall starting with the 2012-13 class. The close living quarters will allow the engineering and science students to live in the inVenTs Learning Community.

The four communities within inVenTs will retain separate identities, but will have access to shared programming, activities, and classroom space in the building, as well as access to faculty, academic administrators, student affairs staff, and other students who can offer ideas, encouragement, and collaboration across various disciplines offered by the two colleges.

"inVenTs is a concept of innovation and invention," said Arnold-Christian. "Two spaces in Lee Residence Hall are being renovated into laboratory and classroom space equipped with technology so that the science and engineering students can work together on pieces of undergraduate research."

"This type of learning community may be unique to Virginia Tech," Arnold-Christian added.

The almost $2 million grant over five years gives the students a small part of the "pot of gold" to further develop programs to meet the goals of the inVenTs community, Arnold-Christian said.

"Long-term, and in a perfect world, our goal would be to have Hypatia the same size as Galileo," Arnold-Christian added. "Our hopes are to achieve a more diverse community."
Callie Zawaski understands the need for the camaraderie of a peer group. Her career choice traditionally attracts the interest of only some 16 to 18 percent of women on a national level. At her small high school in Ohio, she recalled even more formidable numbers. Only one other female classmate who she considered to be “mathematically minded” was attending her school. Zawaski wanted her first year in engineering at Virginia Tech to be different, so she applied to become a member of the university’s Hypatia Learning Community. That was 2009. Today, as a junior, she remains with the group as part of the Hypatia Leadership Team.

“I found so many friends with similar interests. I owe a lot to this program. We became so close, and our residence hall was wonderful to live in,” Zawaski said.

Hypatia, started at Virginia Tech in 2001 by Bevlee Watford, associate dean for academic affairs in the College of Engineering, has grown because of champions like Zawaski. She was one of about 100 female freshmen enrolled in 2009, and she benefited from shared academic experiences with fellow first-year students trying to learn about subjects like vector geometry or engineering problem solving.

Through Hypatia, Zawaski was able to seek the support of second-year engineering students who served as mentors and lived in the same residence hall. Her experiences turned her into a champion for the Hypatia Learning Community, and she decided to stay on the following year as a mentor and to help improve the program. As a second-year mentor she worked with up to nine mentees.

“We concentrate on getting people to balance their lives. We keep track of who is locked up in their room all the time. We pass on knowledge, share experiences, and even talk about eating right. We often learn by trial and error, but we focus on approaching things with a positive attitude,” Zawaski said.

Sierra Moon agrees with Zawaski’s assessment of Hypatia.

As an adolescent, Moon started in a small school district in south central Virginia, and she did not find herself particularly motivated. By the time she was ready for high school, her mother decided to send her to Chatham Hall, a nearby private girls’ school in Chatham, Va. Suddenly, calculus became her “absolutely favorite” class. Physics was fun, too, she recalled.

At Chatham, Moon found encouragement from her teachers to pursue engineering, and she applied to nine different colleges. As she narrowed her choices, her mother read about the Women’s Preview Weekend at Virginia Tech, when high school girls have the opportunity to meet current students and stay overnight in a residence hall. Current members of Hypatia hosted the high school students attending the preview.

From this experience, Moon said she “got off the fence,” and decided coming to Virginia Tech and living in the Hypatia Learning Community would be beneficial. Following a successful freshman year, Moon also decided to remain with Hypatia as a mentor. “I wanted to bring my passion to the program. Hypatia does so many great things for the participants,” Moon said.
Around the same time, Watford recruited Susan Arnold-Christian to the assistant director position, and she starting meeting with the mentors on a regular basis. “She is amazing. She listens to us, and helps us improve,” Moon said.

The third-year Hypatia students plan activities under the auspices of four different committees: social, academic professional development, community service, and announcements. The social committee might arrange tailgate parties and various other food-oriented events, a bingo night, or even swing dancing. Community service might include walking dogs housed at the local humane society shelter, cleaning the community walking trail, or assisting elderly homeowners with chores. Professional development provides help with resume writing, interviewing, and communication skills.

Moon, an engineering science and mechanics major, plans to remain a member of the Hypatia Leadership Team, and help organize the groundbreaking fourth year program for 2012-13.

Lauren Gibboney was pulled into Hypatia once she discovered its participants would likely be in the same classes with her, and nearby for communal studying and assistance with homework assignments. “I was five hours away from my home in Chesapeake, but I found the Hypatia community helped,” she explained.

She was actually disappointed with her above-average academic performance her first semester, so she reviewed her study habits and is triumphant with her almost continual Dean’s List status ever since.

As a first-semester freshman, she found herself drawn to the computer science (CS) curriculum, a subject that allowed her to have fun designing graphical user interfaces and some mobile application devices. Hypatia and Galileo residents helped her make the theoretically life-long career decision, and she was thankful. So when it came time to decide her living arrangements for her sophomore year, she opted to serve as a mentor for the next crop of incoming freshmen.

As a mentor, Gibboney spent up to about two hours a week meeting with her advisees as a group, another five or so hours visiting the students individually in their rooms or working as a part of the Announcement Committee, and an additional hour in the one-hour weekly class offered to the Hypatia students.

“My mentor group was really close, and it was good to help get them acclimated to college. Although I told them that reading and studying were very important, I stressed that breaks were equally important,” Gibboney said. “Students came with both academic and nonacademic problems. Some things pertained more to professional development.”

Gibboney, the 2011-12 president of the Society of Women Engineers, spent her third year as a member of the Hypatia Leadership Team, and will return in the fall of 2012 as a member of the inVenTs Leadership Team, again breaking ground in how the learning communities at Virginia Tech are evolving to include more students in increasingly enhanced environments.

She believes the undergraduate research community that will be facilitated by the renovation of space in Lee Residence Hall, home of inVenTs, will work well. As a CS major, she was involved with developing software programming for her friends working on the autonomous underwater vehicle in the Ware Lab, an entire building devoted to student design team projects. “I loved it,” she said.

“Although I told [the students] that reading and studying were very important, I stressed that breaks were equally important.”
In an astonishing three-year period, Chris Usher graduated Virginia Tech with his degree in computer science (CS), and headed off to a lucrative position at Microsoft’s headquarters 3,000 miles away. In the six semesters he spent in college, two less than the norm, he used much of his spare time with Galileo, the engineering learning community for men.

Usher’s fast-track program was the result of spending his junior and senior years of high school at Frederick Community College, allowing him to garner a number of advanced credits. His brother was already at Virginia Tech, so he was privileged to some advanced visits to the southwestern Virginia campus. He wanted to be part of this “top program,” he recalled.

But he also wanted to continue to excel, and he decided joining the Galileo community would be beneficial. “I made mistakes with some of my study habits my freshman year. I had built myself up a little more than I should have. College was so much harder. “It was nice to start studying in groups. I learned how far in advance I needed to start studying for an exam or work on a project. It was good to have second-year students on our hall helping with the classes and mentoring. We also got advice on which professors to get,” Usher smiled.

With the positive influences from his peers and mentors in Galileo, “my mistakes were rectified by the second semester,” Usher said. One of the mentors even helped him with his decision to major in CS. “I was attracted to computer science as a high school student because I could solve problems without a huge amount of resources. I really just needed a computer and the creativity it allows,” Usher said.

The Galileo mentor, a computer engineering major with a CS minor, both curriculums that are in the College of Engineering, “was very honest in his comparison” of the two subjects, allowing Usher to make his decision.

“And I built some great friendships,” Usher added. So when his first year was over, he knew he wanted to remain with the Galileo Learning Community, and “make a difference for the next group of incoming freshmen.”

As a mentor, Usher worked with about eight freshmen on a regular basis, and using financial support from the Center for the Enhancement of Engineering Diversity (CEED), he was able to take them out to dinner three times the first semester. The budget was merely $6 per person, but as Usher noted, it was nice to get freshmen off campus, as some never venture into the downtown area.

He also called upon other mentors as needed when freshmen asked specific questions outside his realm of expertise.

By now, Usher was totally enamored by the benefits of the program, and spent his third, in his case, his senior year (2011-12) as a member of the Galileo Leadership Team. There is about a one-to-five ratio of leadership team members to mentors, and they will help out the mentors as needed. Usher continued to live on campus, although it was no longer required. “I never wanted to live off-campus. It forces me to put in more effort.”

“...It was nice to start studying in groups. I learned how far in advance I needed to start studying for an exam or work on a project...”
Ed Mitchell took his first steps toward accelerated academic programs when he was accepted into Virginia Beach’s Kemps Landing Magnet School for academically gifted sixth, seventh, and eighth graders. Then he became part of the Mathematics and Science Academy, a rigorous program of study emphasizing these two subjects, enhanced by an infusion of technology, at Ocean Lakes High School, also in Virginia Beach.

“It was then that I realized engineering melded two of my favorite subjects, math and science,” Mitchell said.

He applied to four engineering colleges, was accepted at each one, and decided Virginia Tech was the “best fit” for him. “My parents and I toured the campus for one day only, and I liked the people I spoke to and I liked the architecture. The stone gave it a medieval feeling,” he recalled.

He was late applying to live with the Galileo community so he ended up on a wait list for a few months before he was accepted. “I was really excited when I got in as I had friends in Galileo already. Living in the community ended up helping me in more ways than just my engineering classes. I found the assignments in the seminar were really good for professional development,” Mitchell said.

Mitchell, the youngest of the students interviewed for this article, said he found his mentors in 2010-11 really helped him as a freshman. They got study groups formed and met other needs. “The mentors knew a lot of the material for the engineering classes. Mine was particularly helpful. I wanted to give that type of experience back,” he added, answering why he chose to stay with the Galileo program his sophomore year.

He took the leadership training, where he participated in games that taught good communication skills and resourcefulness. “One was being let loose in a maze with a blindfold on. There was actually no way out, but the participants did not know that. We learned we should not be afraid to ask for help,” Mitchell explained.

Mitchell’s high praise for the Galileo mentors echoes what each of the other students interviewed for this article said. As more of the students became involved with ownership of the program, as designed by Watford and Arnold-Christian on their shoestring budget, the better the mentoring became.

Mitchell recalled one student he mentored was introverted and had a particularly difficult time. He did not go to the opening picnic, nor any of the training sessions or the social activities. Mitchell described the young man as “having a troubling time, and I had to help him get adjusted. As the semester went on, he got better, and now he’s met many friends.”

As hard as mentors like Mitchell try, the success rate is seldom 100 percent. Another of Mitchell’s mentees was very homesick and in trouble academically from the beginning. “I spent a lot of time talking to him, and tried to give him confidence,” he said, but the young man left not too long after the start of the freshman year. Such an experience just makes Mitchell work harder for the program.

He spent both semesters of his sophomore year on the Galileo academic committee, helping students with review sessions for tests, and offering office hours where anyone could come in to get extra help. He also was part of the leadership team that participated in the process of selecting next year’s mentors. “This was the first time we were part of the process. And his team has now met with this coming year’s team, trying to grow the communication,” he said.

He is now a member of the Galipatia leadership team for 2102-13, overseeing the mentors of the Galileo and Hypatia programs. As he stays with the program, Mitchell believes some of the people he has met through the learning communities will become lifelong friends, some of them even coming from his high school.
Let’s Go!

CAMEO!
Just past the entryway to Squires Student Center, an undergraduate student stood off in a corner by himself, dressed sharply in slacks, white shirt, bold tie, and dark sports coat. With only thin air as an audience, he introduced himself, mimicked shaking hands, and then pulled out a sheet of paper as if to hand off a résumé. He practiced this no less than three times. Such a sight is not unusual at a university.

Not far away, behind a row of doors that lead down a hallway, was the young man’s destination: the 2012 Engineering CareerFest, the annual job fair hosted by the Council for the Advancement of Minority Engineering Organizations (CAMEO) that gets more than 1,200 students in touch with some 100 potential employers, ranging from small aerospace tech companies to massive, world-known entities such as the Central Intelligence Agency and the Goodyear Tire and Rubber Co.

Among the job-seekers, making his way between booths manned by potential employers and hundreds of fellow engineering students, was Cameron Crowell, a senior from Winchester, Va. Crowell knew exactly why he was there: to meet with someone from Orbital Sciences Corp., a Vienna, Va.-based company specializing in manufacturing and launching satellites.

“I’m into the private space thing, and it would be an incredibly good place to work,” he said, adding that the recruiter at the booth told him the CEO of the company is more likely to sit and lunch with interns than at a table or in a room with other high-level employees.

Despite the lagging economy that has kept job growth low, CAMEO is successful at helping Virginia Tech engineering students find jobs before they leave campus, according to both CareerFest organizers and the attending companies.

CAMEO serves as the umbrella organization for student organizations that fall under Virginia Tech’s Center for the Enhancement of Engineering Diversity (CEED), including the National Society of Black Engineers, Society of Asian Scientists and Engineers, Society of Hispanic Professional Engineers, and the Society of Women Engineers. CareerFest is the culminating event of the group’s academic year, organized, coordinated, and planned entirely by student members, said Sandra Griffith, assistant to Bevlee Watford, director of CEED.

“The entire mission of CAMEO rests upon supporting engineering students, more so the minorities within engineering,” said Sabrynn Edouard, chair of CAMEO for 2011-12 and a senior in computer science. “Our main focus is to make sure that all the generated profit from the career fair is given back to the students through funding the organizations’ conferences, campus events, and the annual CAMEO scholarship. Companies come to our organizations as a means to meet with the largest diverse group of engineering students Tech has to offer.”

CAMEO’s reach is far, and national. Edouard landed a job...
as a cyber analyst for Northrup Grumman at a St. Louis job fair she was attending as part of CAMEO.

Preparing for any job fair can be daunting for both sides. Companies attempt to present themselves in the best way possible, even giving out free candy or toys, and students perfect their résumés and upgrade their wardrobes. CAMEO makes every effort to ease the process for all.

“We try to simplify the process by contacting the companies, planning the CareerFest, and giving students information ahead of time so they can come prepared,” said Haley Cherniuk, from Massillon, Ohio, and chair of CAMEO for 2012-13. “Employers love the energy new hires and interns bring to their respective companies in addition to the quality of engineers Virginia Tech produces. This keeps the companies coming back.”

Similar to the larger Engineering Expo organized by the Student Engineers’ Council held during the fall semester, CareerFest allows Virginia Tech graduates to return to campus to meet with fellow and younger members of the Hokie family. At the SRA International Inc. booth, company employees and engineering alumni Laura Elhaney (computer science ’11) and Erik Mencke (mechanical engineering ’11) admitted it’s strange to be on the other side of the job recruitment table, and not the ones handing out résumés.

At the CIA booth, where photographs and surnames of the employees are verboten, recruiter “Lisa” said of CAMEO, “We find these can be more beneficial to us because of the diversity and also the potential of these students.” Because of Tech’s rigorous engineering program, she and her fellow recruiters can expect a “higher caliber of students here.” The CIA’s global mission means it must recruit a workforce that is diverse in every way, including racially and religiously, she added.

The CIA casts a wide net at career expos, looking for analysts, science and technology researchers and developers, information technology officers, and facilities support staff, according to Lisa. The last slot is mandatory: The CIA handles all of its own facility construction, from first mark of pen on paper to the last light bulb, so they need architects, industrial engineers, construction supervisors, and maintenance workers. “We need all types of engineers, even weapons specialists and people who can reverse engineer things,” she added.

Edouard and other students said being part of CAMEO helped her grow as a student and a leader.

“CAMEO as a whole has learned that companies are looking for innovators and fresh faces; students who are well rounded, not just the student who has a 4.0 GPA and nothing else on his or her résumé,” the Chesterfield, Va., native said. “[Employers] appreciate seeing engineering students who go out of their way to gain additional skills through extracurricular activities and professional experiences.”
On an especially bustling spring day at Virginia Tech’s student center, an undergraduate approached a College of Engineering staff member and politely asked, “What is going on today?” The quick reply: “Open House for the College of Engineering. Those are all visiting high school students and their families. Lots of hopeful Hokies, full of excitement.”

A bright smile broke out on the undergraduate’s face, and she let out an “Aww.” One could only guess she was thinking back to her first visit to Virginia Tech, all the excitement – and maybe intimidation – of visiting a college campus whilst still in high school, thoughts of moving away from home and leaving family to join the ever-growing family of Hokies.
“That’s so sweet,” she said, before moving on, making her way between hundreds of parents and their teen children.

The College of Engineering’s annual spring Open House is one of the busiest days of the year for staff and faculty. From the ballroom to smaller meeting rooms, and stretching across campus to various laboratories, more than 400 potential students, many with younger siblings in tow, and parents in the lead, could be seen everywhere. They queued at information booths, or hurried from one seminar to the next to learn and ask about the process of admission, SAT scores, and the differences between engineering departments.

Much of the work behind the 2012 Open House was led by Loralyn DeWitt, undergraduate recruiter and a master’s student in industrial and systems engineering. Organizational efforts were massive, she said. The long series of seminars were planned to the minute and moved about on a scheduling board until the exact fit was found. Department heads were asked to speak about their fields of study; tour guides walked visitors to labs; buses returned them to the vehicles they arrived in; hundreds of welcoming packets were provided, and myriad questions about forms, locations, food, maps, tours and classes, were answered.

Helping to carry the load are student members of the College of Engineering’s Dean’s Team, a group of highly motivated, dedicated, and outgoing undergraduates who assist the college with its recruiting efforts. In addition to Open House, members of the Dean’s Team hold morning information sessions every weekday, individually meeting with prospective students during visits to Blacksburg, and helping at university-wide open houses and related events, such as Hokie Focus. Members also travel off campus across the United States to tell high school students about the Hokie Nation.

Bevlee Watford, associate dean for academic affairs, said members of the Dean’s Team are “incredibly articulate, outgoing, exuberant, love Virginia Tech, very smart, very involved in extracurricular stuff in the college, the university, and the community.” With the help of the Dean’s Team, Watford leads the larger sessions at this and other events, including the Admissions Open House weekends.

As a Californian high school student, DeWitt did not get to attend Open House. “I really wish I had attended it because not only would it have made my decision to attend Virginia Tech’s College of Engineering earlier in my college search, but it would have also made me more confident in my decision to study engineering,” she said. “However, my mom is an engineer and contacted the person in my position now for me to meet with a member of Dean’s Team and have a tour of the Ware Lab. That trip helped me make my decision both
to attend Virginia Tech and to study engineering.”

Now a member of the Dean’s Team for three years, she considers organizing the yearly Open House as an opportunity to give back and provide hundreds of students a greater chance to learn about Virginia Tech and engineering. “When you’re choosing a school, you have to take in all of the resources around you and make the best decision you can,” DeWitt said.

Dean’s Team member Aruna Nagarajan, a senior and also a member of the Open House planning committee, well remembers attending Open House as a high school student from Oak Hill, Va., and facing one of life’s then-greatest decisions. She uses that memory to help her now.

“My favorite part of sharing my experiences and the various opportunities available at Virginia Tech to prospective students is when they look back wide-eyed in awe. Four years ago, when I was on the other side of the conversation, the expression on my face was identical,” said Nagarajan. “So, I try to convey to them that these opportunities and more are available to everyone and help them feel more confident about their careers at Virginia Tech. Lastly, I try to always include my favorite thing about Virginia Tech…the people, the Hokie Nation.”

That Hokie spirit is enforced at the Open House as students and parents are told of campus-wide service projects that reach out to communities, such as a group of engineering students who traveled to Haiti to build a footbridge across a dangerous river. Later in a seminar headed by Watford, Dean’s Team members speak in a roundtable discussion of why they chose to study at Virginia Tech. One after the other, from a swimmer to a foreign exchange student to an undergraduate from Georgia, each said, “I fell in love with the place.” Everyone in the audience, parent and teen, listens. Understands. Beams.

Roughly 70 students applied to join the Dean’s Team for the 2012-13 academic year, with select applicants chosen for interviews conducted by current Dean’s Team members. Sixteen students were invited to join the now 43-member team.

Weeks after Open House ended and her graduation with a master’s degree loomed, DeWitt said one of her proudest moments of that busy day at Squires was when she took a quick break. “I looked at a classroom with hundreds of prospective students and their families,” she said. “It made me smile knowing that all of our hard work was making an impact. I also really enjoyed receiving emails after the event from parents and students who said attending Open House made them decide to apply to or attend Virginia Tech.”

A member of the Virginia Tech Baja student team explains the off-road vehicle to visitors during a College of Engineering Open House tour of the Joseph F. Ware Jr. Advanced Engineering Laboratory.

Thousands of potential students and their parents attending the 2012 Open House were able to quickly learn about the college’s various departments at information booths, before later breaking off into groups to hear individually from the college’s programs during information seminars.

Loralyn DeWitt, undergraduate recruiter and a master’s student in industrial and systems engineering, holds court at the 2012 College of Engineering Open House, directing potential students and their parents to dozens of information sessions, seminars, tours, and other events.

The Dean’s Team is “incredibly articulate, outgoing, exuberant, love Virginia Tech, very smart, very involved in extracurricular stuff in the college, the university, and the community.”

— Bevlee Watford
SOFTWARE ASSISTANCE TRIAGE

The evolution of Virginia Tech’s Engineering Technology Help Center
By Lindsey Haugh

Initiating a Fundamental Paradigm Shift

“It became clear, early in the game, that young resident experts would float to the top and as time went on, they solved many of the problems,” said Charles “Butch” Nunnally. “They” were helpful engineering students, assisting their peers with new technology.

Speaking today as a retiree, Nunnally was referring to 1984 when he first started the Software Assistance Triage (SWAT) team, a group consisting of four to six undergraduate and graduate electrical and computer engineering students.

Eighteen years ago, Nunnally served as the first assistant dean of engineering computing at Virginia Tech. It was a time when Virginia Tech’s College of Engineering was making history as the first large public university to require its engineering undergraduates to come equipped with a personal computer. With this new requirement, as well as the addition of telephones in dorm rooms, the SWAT team was born.

Nunnally asked these student aides to use their knowledge to solve computer and phone difficulties their peers might be experiencing with these new technologies. This service was free.

Their first task center was the size of a utility closet. When possible, technical support was handled over the phone, but often the SWAT team member would go to the dorm when the problem demanded a hands-on approach.

Funding for the team’s needs would come from the electrical and computer engineering departmental budget. Software tools for the students to use to diagnose the problems were purchased and a larger PC shop was established to provide a center for assistance.

“I felt fortunate to be in the position to lead and help initiate a fundamental paradigm shift with the presence of computers in each of the student’s hands. I also had the challenge of pulling faculty along on the ride as well,” recalled Nunnally.

As Technology and Enrollment Flourishes

When Dale Pokorski joined Virginia Tech’s College of Engineering as the director of information systems in 2008, she jumped right into re-inventing the SWAT team, which then consisted of one supervisor named Ryan Spoon, one graduate student, and a couple of seasoned undergraduate technicians.

SWAT had transitioned to a much larger space in Torgersen Hall, as this was a far more convenient location for engineering students. SWAT saw an immediate increase in business.

When Pokorski took over, the designated space looked like a “storage room for aging media.” The space had been used as the college’s media lab. But with the university’s creation of Innovation Space, a multimedia computer lab that provides free and open access to software, hardware and specially-trained staff, the media sources could be eliminated from the disorganized SWAT space.

Not only did the enthusiastic director want to reorganize the space, but she also started to analyze the team’s purpose. She encouraged the development of training policies and practices, established an inventory tracking system, and then, with the help of Spoon, turned the storage space into an organized working environment.
Starting in 2009, Pokorski was able to purchase cabinets for storing loaner devices, tables and chairs, and a re-purposed Hokie passport reader for check-in purposes.

Along with the larger Torgersen location and increasing enrollment came an intensified need for technical support amongst the engineering student body. Once Pokorski and Spoon's team completed the remodeling of the SWAT office, inside and out, they were ready to hire additional technicians and better serve the student population. Pokorski began to advertise technician jobs. She did not limit positions to engineering students. Her goal was to put the best-qualified students in place.

**Forming the “A-team”**

Jeff Lewis was hired as a SWAT team leader after Pokorski and Spoon began to revamp the team. At the time, Lewis was taking a break from school, working full-time as a computer programmer, sitting behind a desk with little to no interaction with the public, trying to earn money toward college tuition. The SWAT team opportunity was appealing because he could work 40 flexible hours a week, allowing him to return to the classroom as well.

“My first year (with SWAT) was a bit intimidating. Five out of the seven part-time technicians who had been on the team since their freshman year were graduating, leaving us with a huge void to fill,” said Lewis. “It tends to be very rare for technicians to leave the team if they are not graduating.”

Lewis needed to bring in new recruits, and develop and implement the new training policies and practices set forth by Pokorski and Spoon. Today’s training for the technicians consists of learning how to install the required software and operating systems, troubleshoot driver issues, remove virus and malware, and diagnose hardware issues.

Usually, for the first month of each semester, 14 students start as temporary technicians, then the group is cut back to six permanent positions for the remainder of the semester. Three team members are available to provide assistance, Monday through Friday from 9 a.m. – 5 p.m., with one of two supervisors present.

In 2010, Spoon and Pokorski hired Naresh Kumar Coimbatore Selvarasu as the second leader to help train and supervise the growing group of student helpers. By his second year with SWAT, Selvarasu became the student technician supervisor.

Selvarasu already had his masters in mechanical engineering from Purdue University, and experience as a software developer at Cognizant Technology Solutions. This real-life work experience gave him the background needed for SWAT.

“Even after two years of working with the student technicians, I am humbled by their expansive knowledge concerning the field of computers. Even though I am their leader, they teach me something new every week,” said the studious supervisor.

In addition to being present in the SWAT office part-time, Selvarasu juggles working in the High Performance Computation Fluid Thermal Science Lab under the guidance of Danesh Tafti, professor of mechanical engineering, with his studies. He is now pursuing his doctorate in mechanical engineering.

Selvarasu said he doesn’t really consider coming to the SWAT office “work,” and finds it a welcome break from the lab or his studies. “This job can get quite interesting at times,” said Selvarasu.

“On one occasion 200,000 viruses were found on a single machine. We had to totally wipe the machine clean and start from the beginning. The same student came back at the end of the semester with another 70,000 viruses and the process was repeated,” said Selvarasu.

He also enjoys the camaraderie of the SWAT team. “Although we would like to get together more outside of the office, we do try to meet up at an off-campus restaurant for dinner every so often. We have such a diverse group this year, it’s fun to often hear about what the students do in their extracurricular time,” Selvarasu said.

For the 2011-12 academic year, the SWAT team consisted of engineering, computer science, and interestingly, a psychology major.

**Cost of Services = Priceless**

Torgersen 2080, the current SWAT team office, is a madhouse the first week of classes. Prior to this particular week,
the student technicians meet with Lewis, Selvarasu, and Pokorski. The groups of student technicians, already armed with self-taught or learned computer expertise, train on specifics related to the software and devices the engineering students will use in everyday application. They also train on how to rid computers of the latest virus.

During this time, hours of operation are extended. The students check in using the electronic passport reader and wait for a technician to come to their aid.

Seventy percent of the time, the problem is one the technicians are already familiar with. The other 30 percent require the technician to perform research – talking to other technicians or searching the solution out online. Sometimes the manufacturer is consulted, and at times, learns of this new problem for the first time as well.

“We are extremely excited if we come across a delicious problem,” said Lewis with a grin. “Most problems are so simple to us because we do this everyday. We feel so rewarded when we solve that particular problem that even voodoo can’t seem to fix.”

Matt Kummer, a SWAT technician, fixes an engineering student’s computer, and the price cannot be beat. It’s free.
The number of SWAT customers served and the number of device loans increases every semester by at least 30 percent. A total of 6,446 student customers were helped during 2010. But in just the first week of classes in the fall of 2010, 709 students were helped in the SWAT office. In the fall of 2011, 260 students were helped the first day of classes.

For the 2010-11 academic year, 2,840 diagnostic tests were performed, 458 viruses removed, 545 operating systems installed, 1,647 pieces of software installed, and 956 devices loaned out.

The average cost to correct one of the above problems at the Virginia Tech bookstore is $55, at Best Buy $117, and at SWAT… $0.

Engineering students find out about this priceless service at freshman orientation, word of mouth, or by chance if they stumble upon the website (http://swat.eng.vt.edu/).

The average number of visits per student is three a semester.

**Not a Geek**

Nathan Bingham, knows first-hand what the madness is all about. He was a student technician during the opening week of classes in the fall and spring of 2011-12.

“In addition to starting classes myself, I have also been working the first week of classes about five hours a day,” said the senior majoring in aerospace engineering.

He landed the SWAT job in 2011 when he stayed in Blacksburg to take classes during summer sessions. But when the first day of the fall semester arrived and the SWAT office was suddenly overcome with students needing immediate attention, Bingham was in shock.

“I don’t think anything can prepare a technician for the first week of classes….I had to remain calm and start with one student and go from there. Soon I was able to help multiple students at once. I would help one with software installation, while helping another with a virus issue. I learned to multitask in no time,” said Bingham.

Bingham also believes he has improved his interpersonal skills as a SWAT member. “I think most of us with computer knowledge are sometimes perceived as geeks and introverts. In speaking for myself, especially in this position, I have to be able to converse with the student, listen to the needs, diagnose, and correct the problem. Then Itry to explain to the student how he or she can correct the problem the next time around,” said the articulate senior.

“The most rewarding on-the-job moment occurs when you show someone how to correct their device issue, and they have their own personal ‘ah-ha’ moment,” said Bingham smiling.

Bingham’s interpersonal skills, talents, and hard-work have paid off. Post-graduation, he will join the Aero Engine Controls team in Indianapolis, Ind., as a control systems engineer, developing software for helicopters and jetliners.

**We Are Still Learning**

SWAT team services are certainly invaluable to the student engineering body.

“We are still growing our services as the engineering requirements are expanded to other device offerings,” said Pokorski.

In order for the student technicians and supervisors to be properly prepared for future semesters, they are analyzing the latest computers and slates, attending vendor launches, and updating the SWAT website to better serve the student engineering population.

“When we are prepared with knowledge of the latest, cutting-edge equipment, the students coming in for help benefit immensely,” said Pokorski.
Today’s College Student, Living in the Digital Technology Era

How exactly do the first-year engineering students go about choosing which technological device is the one for them?

They are living in a world where technology in the classroom is advancing ever so rapidly. They are able to access information, collaborate with peers and professors, and create new types of content in a vast number of ways. Which one is the best?

At Virginia Tech, their upperclass colleagues are a huge help. When the freshmen and transfer engineering students enter school in the summer and fall 2012 they are expected to purchase the following items: a convertible tablet personal computer (PC) or alternative combination of devices meeting the minimum specifications, the university software bundle, and the engineering software bundle. To some, the choice is not easy.

Enter the Student Technology Council (STC).

The origins of the STC started in 2004 when Glenda Scales, the associate dean of international programs and information technology for the College of Engineering at Virginia Tech, solicited the help of students to explore the opportunity of integrating Apple’s Powerbook laptops into the heavily populated, Windows PC Virginia Tech engineering curriculum. Instructions were to test virtualization tools, such as Virtual PC, to see if they could effectively run programs like Autodesk Inventor and P-SPICE to realistically use in the classroom. After much debate and examination, they answered the question affirmatively.

Concurrently, Scales tasked a second group of students to test the latest convertible tablet pc, a mobile computer running an adapted version of the Windows XP operating system with a pen-enabled interface. The tablets looked to be promising technology at the time and were adapted by the college.

In fall of 2005, the STC was officially formed to provide engineering administration their feedback, based on their own personal experiences of using certain technology devices. This feedback impacts the administration’s decisions, and helps to determine the computer requirements for the incoming engineering freshman.

For the 2011-12 academic year, the STC was made up of 21 members. New members are recruited each year from across the college. The current members select new members based on their department, academic year and standing, as well as submitted short essay questions. Students apply online via the STC website and are only accepted in the fall.

Pizza and Techie Talk

At this particular meeting, the students came shuffling in, making small talk as they gather around the conference room table. Discussion consists of upcoming midterms, the Android tablet, the Kindle for Android, and more importantly where is the pizza delivery guy?

Their diligent faculty advisor, Dale Pokorski, director of information technology for the
College of Engineering at Virginia Tech, reassures the students the pizza will be there soon and calls the meeting to order.

Pokorki has been with the group since 2009 and views herself as the facilitator. “I coordinate the meetings and pass along all the comments from the meetings to Dr. Scales and Dean Benson,” said Pokorski. “The students do the rest and always provide input from a vastly different perspective than faculty.”

Technically there is no budget for such a group. All of the new technologies for the students to pilot, such as the tablet PCs and slates, come from the information technology budget and vendor donations. And so does the pizza.

The piloted devices are recycled through the Software Assistance Triage (SWAT) Team office and are used as loaners for students and faculty, said the dedicated advisor.

The room buzzes with various topics of discussion, ranging from the Windows 8 software release and how will it impact the price of a tablet to the every popular “MAC question.” Will the MAC be a recommended device to this fall’s incoming freshman?

The anticipated pizza does arrive and for a few moments there is silence while the hungry students help themselves to their free dinner.

One STC member starts techy talk again. “The Samsung tablet is my favorite by far,” he said. “It boots up in a third of the time as others, but you still can’t use programs on it like you can with a laptop.”

This prompted Pokorski to ask, “Well, what are the minimally acceptable devices and should these models be recommended at all?”

By definition, the “minimally acceptable” are the cheaper version of the tablet or PC, but not necessarily the best option in terms of speed, efficiency, and software compatibility.

“Using a slow laptop or a tablet that doesn’t have the needed software on it is frustrating and keeps you from concentrating and listening in class,” said another student member.

It’s pretty much the consensus of this group that the cheaper versions should not be allowed. And having a tablet in your possession doesn’t mean you still don’t need your laptop as well.

“The students also want to develop a blog, providing a platform for conversation between the STC members and those interested in learning more about new and emerging technologies,” Pokorski explained.

“Long-term goals are to continue to work with the students to help evaluate and discover new technologies that the college may be interested in using. Most recently their input was solicited to aid Scales in her role in developing “Classroom of the Future.”
The meeting adjourns with discussion of their final meeting date before the school year comes to a close.

The Voices

Matt Moliterno, a freshman mechanical engineering major is confident and intelligent.

Having graduated high school from the Maggie L. Walker Governor’s School for Government and International Studies in Richmond Va., Moliterno radiates the “ability to lead, participate, and contribute in a rapidly changing global society,” as specified in the magnet school’s mission statement.

He chose Virginia Tech because of the “wonderful engineering reputation.” Also, in high school, Moliterno saw Tech alumni helping his older friends, who were Virginia Tech engineering graduates obtain jobs in their perspective fields.

“In this economy, knowing I will have a job upon graduation is of utmost importance,” said Moliterno.

The freshman dreams of working with a consulting firm, helping companies set up factories, or designing manufacturing machinery, post graduation. He would love to travel or work in Canada since he has a dual citizenship, Canadian and US.

While participating in the Virginia Tech chapter of Engineers without Borders, Moliterno satisfies his need to travel, explore, and more importantly “feel extremely rewarded by his volunteer work” with the nationally acclaimed organization.

As a member of the STC, he is able to provide “direct input based on his own unique experiences of using the equipment.” This is “so crucial to determine what students want, what the faculty needs, and how it’s actually used in the classroom (or not). The faculty tends to agree because they want to be up-to-date on whatever the latest device the student is using,” said Moliterno.

He was given a Samsung slate to pilot this year. His conclusion: Samsung did a better job than other slates at performing effectively with the integrated software.

He often fields complaints from engineering friends, who know of his involvement with the STC. “I hear other freshman engineering students complain about mandatory requirements—they already have their preferred laptop and don’t want to spend more money to purchase another. Tablets are expensive. Or they complain because they don’t know how to use it or take care of it, or even upgrade the software,” said the knowledgeable freshman.

But Moliterno knows there is a valid reason the college has set technology standards. And working with the STC isn’t just about listening to griping and complaining. A “cool thing” members get to do is attend “Road Maps,” Moliterno said.

A Road Map is an event where the computer or tablet vendors showcase their future product plans, not yet made public. This gives the college a “heads up” on what products should be taken in consideration when determining their requirements. It is important to maintain good relationships with the vendors in order for the College of Engineering to stay abreast on future launches.

This fall, he anticipates less restrictions of what devices can be used in the classroom based on the fact there are so many more new PCs, tablets, slates, and MAC products flooding the market. More time has been spent on finding a way to be flexible and incorporate new technology.

Further out, Moliterno would like to think laptops would become much smaller in scale, “about the size of a cell phone with the power of an iPad.”

Moliterno plans to return in the fall as a member of the STC. He enjoys being an advocate for all engineering students. “We all benefit if technology in the classroom is successful,” he said.

Madeline “Maddie” Scholl, a sophomore, is bright, energetic, and fearless when it comes to sharing her true opinions.

“Engineering has always been in my blood. I grew up with my dad reading Popular Science to me and I was one of few female peers who participated in the robot leagues in middle school.”

The members of the 2011-2012 Student Technology Council, from left to right, are: Maddie Scholl, Brandon Vella, Nick Ferri, Andrew Weckstein, Brandon Myers, Eric Bruning, Alex Schneider, Reese Moore, Rehan Syed, Matt Moliterno, Omar Saleem, Randall Ferrance, Allie Grimes, Doreen Ng-Sui-Hing, Michael Athanas, and Dale Pokorski, advisor.
She was also influenced by Tech alumni to choose Virginia Tech for her path of higher education. The “overwhelming sense of school spirit and the impressive engineering program won me over.” She had applied and received academic scholarships from the prestigious Air Force Academy and Penn State, but would choose Virginia Tech in the end.

Scholl is also a first-year member of the STC, a full time student, and busy with several university related organizations. She is heavily involved with the Kappa Delta sorority, planning events for Prevent Child Abuse America and the Children’s Hospital of Richmond. A McNair Scholar mentor, Scholl spends time with first generation college students to show them the ropes of the college world.

More related to her mechanical engineering major, Scholl volunteers at the RoMeLa Lab, shadowing grad students who work on CHARLI 2, the full-sized humanoid robot and winner of the past two RoboCups. The sophomore once spent five days in a single week, working one to three hours a day, doing the “grunt work, cutting and sanding robotic parts so the grad students may build more robots.”

When she received the email soliciting engineering majors to join the STC, Scholl thought, “why not be a part of change within the university and impact students in a positive way. I know I was appreciative of any suggestions I could get in terms of classes to take, what supplies to buy…really anything. Coming to college with sound advice under your belt is the ideal way to start your college career.”

“Invent the Future is personified in the STC and the College of Engineering because we are working towards using the latest technology innovations as tools to educate ourselves for the future – to prepare for what happens after college,” said Scholl.

Although Scholl doesn’t see herself as an expert on technology, her opinions are based on her unique experience with the tablet or PC she was given to test throughout the semester. She doesn’t have the “in depth technology background that some of the other members seem to naturally embody,” but she brings a set of “refreshing eyes to the table.”

She was given a donated slate 500 to “play with” and provide feedback. She used it for studying for finals and reading documents, but in the end came back to her PC laptop to do the “real work.”

As a freshman, to save money, she chose the cheapest computer. Now with the STC experience and knowledge, Scholl knows cheaper does not mean better. Her prediction to the future of devices such as the tablet is they will become more affordable, like other technologies.

She too sees the personal computer and tablet devices becoming increasingly smaller, but faster at the same time.

“And I think CHARLI 2 will play in the World Cup… in my lifetime,” said the idealistic sophomore with a hopeful smile.