Mathematics Education: From Turmoil to Success
By Denny Gulick, Professor of Mathematics

Three true vignettes might help set the stage for this article:

A college freshman whips out his calculator to do a subtraction problem: $20 - 1$.

Another college student is dismayed because I would not give any points for a test problem on which she wrote nothing.

In Maryland nearly 50% of high school graduates need remedial mathematics in college.

In response to countless academic issues in schools and colleges around the country, currently there is a national effort to create a set of “college-ready standards” in mathematics that would indicate whether a given student graduating from high school is ready to take and succeed in college-level mathematics courses. (We are told that in Maryland, as in many states, nearly 50% of high school graduates need remedial mathematics upon entering college.) That is a tall order, given the diversity of student backgrounds, schools, teachers, and oversight institutions (school districts, state’s departments of education, etc.).

However, I believe that over time a few key strategies in mathematics education would make a dramatic difference in the percentage of college-ready students graduating from high schools around the country. Here are five such strategies:

1. Adopt an effective school mathematics curriculum.

2. Refrain from advancing students prematurely.

“Math Turmoil” continued on page 10
From the Director’s Desk:
A Changing Educational Landscape

By Spencer Benson, Director, CTE

This issue of the Teaching and Learning News is a bit different from previous issues in that it has a wide (perhaps eclectic) collection of articles all dealing with some aspect of teaching and learning. The thread that connects them is that in combination they illustrate the diversity and complexity of today’s educational landscape. I am especially delighted that in this issue we have an article from an undergraduate, Malcolm Harris, in which he describes the juxtaposition of a 2010 teach-in with the usual day-to-day class routines. For some of us, the imagery of a teach-in in Art-Soc may call up memories from two generations ago of one’s own undergraduate or graduate experiences in the late 60s and early 70s. Do social activism cycles repeat? We hope Malcolm Harris’ article is the start of a tradition and that we will be able to have frequent undergraduate contributors to the newsletter.

Denny Gulick’s article reminds us of the connections between pre-college and the university experience and the need to pay attention not only the benefits of technologies but the costs and the importance of building foundational skills and knowledge not only in math but in reading. How many of your students can quickly estimate the average of the following five numbers without using a calculator: 15, 18, 12, 20, 11? Having had numerous opportunities to work with grade school and high school science teachers I know that many (most) they are highly motivated, creative professionals with expertise in both teaching and learning that generally exceeds that of my University colleagues. Many of my best teaching strategies have been adopted from high school teachers.

Robert Pecoraro’s article on AFROTC leadership training reminds us that as a public institution of higher education we serve many groups and many needs. At CTE we often help departments and faculty design and redesign courses, the Air Force Instructional Development System (ISD) five phase process could be a model used for the construction or many types of curriculums and courses, and is not significantly different from the Understanding by Design paradigm that Wiggins and McTighe champion (see http://www.ascd.org/research_a_topic/Understanding_by_Design.aspx for more information or stop by CTE).

One of my goals when I accepted the Directorship of CTE was to facilitate the development of venues for professional development of faculty and graduate teaching assistants within each college and school. While CTE is effective in working with units throughout the campus the most effective and efficient means are often local. Gili Marbach-Ad and Kaci Thompson outline the impressive work and inroads that the College of Chemical and Life Sciences’ Teaching and Learning Center has accomplished, including external funding from both HHMI and most recently from NSF. In addition to the partnership with the CLFS’ Teaching and Learning Center, CTE works closely with faculty and graduate student professional development initiatives in Arts and Humanities, Behavioral and Social Sciences, College of Education and Engineering.

“Changing Landscape...” continued on page 9
Notes From the CTE Library:

*Student Engagement Techniques: A Handbook for College Faculty*

By Spencer Benson, Director, CTE

“For more than two generations we have heard repeatedly about the central importance of student engagement (student involvement) in fostering student learning. Numerous studies, reports and presentations stress the importance of student engagement in fostering learning. In addition, it is the focus of a national survey that evaluates student engagement at institutions of higher education – for more information on this see the National Survey of Student Engagement (NSSE) site, http://nsse.iub.edu/. What was lacking was a user friendly, easily readable, portable source that faculty could turn to for background information, ideas and models. Internet searches for “student engagement” yield a plethora of resources but finding the right information among these sites is time consuming and does not readily answer the questions “what can I easily do this week in my class to increase student engagement and learning?”.

Elizabeth Barkley’s new book clearly and robustly meets this need and does so in fashion that is user friendly, informative, and grounded in theory and practicality. *Student Engagement Techniques* (SET) does for engagement what Angelo and Cross’s *Classroom Assessments Techniques* (CATS) did for formative assessment. The author is a well know and highly respected teacher, author and musician who teaches at Foothill College in California. Her many accolades include being a Carnegie Scholar (http://gallery.carnegiefoundation.org/collections/casl_he/ebarkley/) and the 1998 Case-Carnegie California State US Professor of the year.

Student Engagement Techniques: A Handbook for College Faculty is divided into four parts. The first part, chapters 1-6 provide background information and grounding in the meanings of student engagement, active learning, motivation and the type of information and knowledge about teaching and learning every university educator should know and be able to utilize. She does this by providing information that is well organized and easy to read without using jargon or educationaleze and in a manner that is engaging. In my graduate class “Introduction to University Teaching” I assigned several of these initial chapters, for our discussion on student engagement. Feedback from the students with respect to the assigned SET readings was very positive.

Part one summarizes and builds upon a body of scholarly work, which Barkley judiciously cites. The second part, chapters 7-11, describes fifty tips and strategies (T/S) useful in addressing five teaching and learning areas: motivation, active learning, community, rigor and holistic learning. The T/Ss are short descriptions of specific teaching or learning challenges/ issues followed by various tips (pedagogical approaches) one might use to address the challenge or issue. This part, like part three, is organized as handbook/resource linked with specific teaching and learning issues. Its organization allows one to easily identify relevant T/Ss for issues

“From the CTE Library...” continued on page 5
Internationalization: A (necessary) educational component
By Anupama Kothari, PhD Candidate, Robert H. Smith School of Business

“Diversity” is a big word on campus these days. The University of Maryland attracts students from extremely diverse backgrounds with respect to race, age, sexuality, field of thought and so on. Along with the diversity of students locally and across the United States, the University also attracts international students and faculty who add to the multeity on campus.

Looking back, as an international student, studying in America was one of the hardest and most rewarding experiences of my life. Rewarding because of the skills that I have gained in terms of academics and in terms of life skills. Hard because, studying here often compromised my identity as an international student and required me to assimilate into the mainstream of American cultures, rather than to contribute my own cultural stamp to the campus community.

In graduate school, it was easier to retain my identity because of the large number of fellow international students who turn grad school at UMD into a mini United Nations of sorts. However, these students tend to remain in their own select cultural and ethnic groups, creating their own comfort zones. At the end of the day or rather one’s education, both the student and the University lose out. American students lose out as an important opportunity to learn about other countries and cultures, presented literally at their own doorstep without having to enroll and spend on a study abroad program, is lost. International students lose out because they either completely metamorphose into newly naturalized Americans, without a trace of their former roots, or remain intact fiercely resisting any opportunities to learn about the diversity of cultures in America. The University loses out, because they fail to mold students into global citizens ready to contribute to and compete in the globalized economy.

These are but some pressing arguments in support of internationalization. Internationalization has been defined by extant research as the need to infuse an intercultural or international dimension into as many aspects of university education as possible (Knight 2003). Unfortunately, internationalization is a shaky issue nationally. The call for internationalization started in the late 70s, with Japan’s advent as a powerful technological and economic rival to the United States. Prior to this, as military and economic leaders, the United States did not find a pressing need for internationalization. However, even in the 1980s, despite attempts by the American Association of State Colleges and Universities (AASCU) and President Carter’s appointment of the President’s Commission on Foreign Language and International Studies, internationalization was off to a slow start.

Although, campuses have come a long way in terms of internationalization since the 1980s, internationalization is a pressing and often neglected issue on most campuses. The technology boom of the nineties coupled with 9/11, have increased the need for an “internationalized campus.” However, the idea of internationalization is often confused with the idea of having a study abroad program. Study abroad programs comprise a small part of the initiative to internationalize. Additionally, it is also assumed (albeit incorrectly) that there is no scope for internationalization in the sciences and disciplines such as mathematics. Researchers have persuasively shown that there is an intense need...
“From the CTE Library...” continued from page 3 and the second being the development of learning attitudes, values and self awareness. In the knowledge and skills domain, example SETs are given for knowledge skills, recall and understanding, analysis and critical thinking, syntheses and creative thinking, problem solving, and application and performance. For those familiar with Bloom’s taxonomy this organization will look very familiar. In the second domain, SETs are provided for: attitudes and values, self-awareness, and learning and study skills. Many of these relate to Bloom’s affirmative learning taxonomy and are centrally important in the larger spectrum of student engagement. She includes two useful appendices, one that maps the SET to specific courses and professors and a second that crosswalks the SET to the NSSE survey items.

If you are interested in further information on Student Engagement Techniques: A Handbook for College Faculty you can skim passages on Amazon or in a more traditional fashion stop by CTE and actually thumb through one of our hard copies. Student Engagement Techniques: A Handbook for College Faculty is one of the dozen or so books on teaching and learning that I have purchased for my own library since I refer to it often.


The SETs are organized into two domains, the first being learning course-related knowledge and skills that might arise during the course of semester or in pre-semester course design. Part three, chapters 12-19 describe specific SETs and is organized similarly to the CATS book in that specific pedagogical protocols are described in detail with illustrative examples from various disciplines. Each SET is organized with respect to four essential characteristics: primary mode, activity focus, duration and online transferability. It is especially noteworthy that in this era of increasing use of online and blended course delivery techniques, Barkley pays attention to engagement, teaching and learning in these “non-traditional” venues.

The SETs are organized into two domains, the first being learning course-related knowledge and skills

University Teaching & Learning Program

Graduate students, boost your teaching, boost your CV – join the UTLP!

The University Teaching and Learning Program (UTLP) assists graduate teaching assistants (GTAs) in their professional development as college teachers. At the heart of the UTLP is the philosophy that teaching, like research, is a scholarly activity that requires intellectual engagement and public conversation. UTLPers thus fulfill a set of requirements that asks them to discuss teaching and learning in higher education, to be mentored by a faculty member, to develop a larger teaching and learning project, and to craft a teaching portfolio. UTLPers have a common commitment to improving undergraduate education and an eagerness to make their classes the best they can.

When UTLPers complete the program they are recognized at an annual reception and receive both transcript notation and a certificate acknowledging their participation in the program, tangible evidence of their thoughtful engagement with issues central to college teaching. Supported by the Office of the Provost, the UTLP is administered by the Center for Teaching Excellence.

For more information, please contact UTLP coordinator Henrike Lehnguth at lehnguth@umd.edu or call (301) 314-1283.
A Day of Action, Teaching, and Learning: Students Reflect upon and Re-envision their Learning Environments

By Malcolm Harris, Undergraduate Student, English and Government and Politics

With tuition expected to increase next year and state funding dwindling, students have plenty of reasons to question the affordability and ultimately the value of their education, but the call for the 4th was about more than funding. We wanted to use the day not only to bring attention to the creeping corporatization of public universities, including ours, but to call into question the student’s place in the university, to radically critique through our actions the ways we are taught and learn. We decided the best way we could answer the call from California was to demonstrate the kind of learning environment we imagined. Instead of telling people what we want, we decided to show them.

We left the day’s schedule relatively open, preserving space for any discussion attendees wanted to have. A lot of the organizers agreed that classroom discussions were often too limited and without space for students to make connections between what they are learning and their lives outside the classroom. If part of the problem with our University, as it stands, is an overly structured environment, then we would have to face the consequences of the opposite. I have to admit I was as nervous as anyone else when we first entered the building en masse. Once we put the banners up, everyone stood around for a minute, waiting for someone to tell them where to go and what to do. I cannot overstate the importance of that feeling for the lessons of the day itself; it is an indication of the socialization that comes with our current education that students have to stop and think about how to teach each other without a syllabus. Overcoming the anxiety that comes with control over one’s own education was a major component of the day, for the organizers as much as anyone else.

Our first teach-in was a discussion about the University’s decision-making structures. We talked about the history of shared governance as well as how and by who decisions are made at Maryland. After going through an inventory of student, staff, and faculty representation, many attendees were surprised that all shared governance bodies are ultimately advisory. Given how rarely we reflect on the operation of the University during class, attend-

The important thing is that we did not know what was going to happen.

“March Forth..” continued on page 13
During the summer of 2005, the College of Chemical and Life Sciences (CLFS) underwent an external review of its Howard Hughes Medical Institute (HHMI) Undergraduate Science programs. The review process included five groups of faculty members and graduate students that were engaged in curriculum enhancement projects. One theme that emerged from the external review was that graduate students in particular felt unprepared for their involvement in revising courses. Similarly, faculty were often unaware of national STEM (Science, Technology, Engineering and Math) education reform efforts that were complementary to the goals of their curriculum projects. Based on the recommendations of the external review committee, we decided to create more structured opportunities for both faculty and graduate students to learn about innovative teaching approaches and trends in STEM education.

We work closely with the campus Center for Teaching Excellence (CTE) so as to extend, rather than duplicate, their efforts. The activities of the Center, which were designed to achieve the goals we set for ourselves, include:

1. workshops for informal discussion of teaching issues
2. a formal preparatory course for entering graduate students that prepares them to teach laboratories and lead discussion sections for introductory biology and chemistry courses
3. teaching seminars by visiting teacher/scholars who have been nationally recognized for their ability to integrate teaching and research, to provide role models for current and future faculty
4. travel grants for current and future faculty to attend workshops and national conferences on teaching and learning.

We also work closely with individual faculty members to develop innovative teaching approaches, find external funding for teaching projects, assess the impact of teaching innovations on student learning, and present their results at science education annual meetings and in science education journals. Most significantly, the TLC has catalyzed "I like being involved in a common mission... The CLFS Teaching and Learning Center has supported my work. I work closely with the director on projects, and have benefited from invited speakers and workshops. I have also had the opportunity to work with faculty in teaching communities... Discussions in these communities have supported and motivated my interest in teaching."

Ann Smith, faculty member
Cell Biology & Molecular Genetics

"CLFS..." continues on page 16
At 0700 on Thursday mornings, if you walk by the Cole Student Activities Building, you would see formations of Air Force Cadets standing at attention while the national anthem is played; however, you might not be familiar with what exactly is going on. This article will discuss the teaching philosophy of the Air Force Reserve Officer Training Corps (AFROTC) at UM.

The AFROTC program started at UM in 1949, just 2 years after the formal founding of the Air Force, and this academic year celebrates our 60th year on campus. The mission of AFROTC is to develop quality leaders for the Air Force and we commission approximately 23 Second Lieutenants from UM annually. But how does AFROTC take a young student and develop them into this quality leader?

The curriculum for AFROTC is developed at the Air Force Holm Center’s Curriculum Division located at Maxwell Air Force Base in Montgomery, Alabama. The Curriculum Division completes an extensive and continuous review based on the principles of Instructional Systems Development (ISD), a five-step process that involves instructors, curriculum developers, independent researchers, and evaluators from both military and academic environments. This Air Force ISD model is composed of the following phases:

Phase 1 - Analysis: To ensure, through surveys, that specific Air Force requirements are met.

Phase 2 - Design: Identify what the education program should be; i.e., what the broad common tasks are that all Air Force Officers should be able to accomplish. In this phase, these tasks are translated into knowledge, skills, and attitudes that the education program can address. The Holm Center also obtains Department of Defense guidance on the objectives of the program, such as: 1. An understanding of the fundamental concepts and principles of military, naval, and aerospace sciences; 2) a basic understanding of associated professional knowledge; 3) a strong sense of personal integrity, honor, and individual responsibility; and 4) an appreciation of the requirement of national security.

Phase 3 - Development: Curriculum is then designed around educational program course goals and specific lesson objectives in each major subject area. All 144 AFROTC Detachments throughout the United States and Puerto Rico use this curriculum to standardize the academic learn-
“Changing Landscape...” continued from page 2

Yichun Zhang has been a visiting scholar from the Office of Educational Technology at Nanjing Normal University for the last five months. Yichun splits his time between CTE and OIT, working with both groups. His article on ELMS (BlackBoard) is a nice overview of the platform and its potential. It reminds us that technologies that we have available (such as ELMS) are tools and need to be used for purposes for which they are suited. ELMS has been a fixture on campus for a number of years and although it has both proponents and those that would prefer a different system it nonetheless provides a rich array of learning tools that can be adopted and adapted to facilitate student engagement and learning. It reminds us that the educational landscapes continue to evolve and new features appear often linked to technological advances. Increasingly there is discussion and debate regarding blended/hybrid learning approaches which reduce in-class face to face (F2F) time by moving some of the learning to online approaches. Several studies have shown that, when correctly done, blended learning pedagogies are as effective as traditional F2F pedagogies and provide the advantages of freeing up demands on physical spaces and allowing greater schedule flexibility for the learners (for more information see the 2004 ECAR report on Blended Learning (http://www.educause.edu/Community/MemDir/Profiles/CharlesDDziuban/43561). An emerging educational technology platform is mobile learning (m-learning) where the learning pedagogies involve smart devices, such as iPhones, iTouch, iPad, smart phones, etc that use apps (applications) which engage the student in activities that allow anywhere anytime learning. Mobile learning will be one of the themes of the campus’ April 23, Innovations in Teaching Conference (see http://www.oit.umd.edu/twt/ for more information). For more information about UM initiatives with mobile learning devices see the UM Mobility Initiative web site, http://mobility.umd.edu/. Recently I attended a wonderful MITH (Maryland Institute for Technology in the Humanities, http://mith.umd.edu/) seminar on StoryKit by Beth Bonsignore, in which grade school students used the free StoryKit app. for writing a digital story using iTouch devices. These students are but a few years away from being our students; will we be ready for them?

This issue’s book review looks at Elizabeth Barkley’s Student Engagement Techniques: A Handbook For Faculty. This is an appropriate review for this issue, which looks at a wide variety teaching and learning issues since “Student engagement is the product of motivation and active learning. It is a product rather than a sum because it will not occur if either element is missing.”

Faculty Handbook of Policies & Resources

- Can I reschedule a final exam?
- What are the University’s guidelines for attendance policies?
- In what cases I am required to submit early warning grades?
- What must be included in my course syllabi?
- Do I need approval to sell my own textbook to students taking my course?

This guide offers a brief introduction to the University’s policies, procedures, and resources related to teaching, advising and mentoring. It is available at the following address:

http://www.faculty.umd.edu/teach/InstructionalGuide.htm
3. Review basic concepts and skills frequently.

4. Prepare and mentor teachers adequately.

5. Treat teachers as professionals.

Let me mention that although I have never taught in school (i.e. K-12), I have taught college mathematics for several decades and have seen first-hand not only those freshmen who are well prepared for college mathematics but also those freshmen who are markedly deficient. Like mathematicians, college engineering and physics teachers across the country are tormented by student deficiencies in pre-college mathematics (including arithmetic, algebra, and trigonometry).

Now let us return to the five strategies and discuss them.

Adopt an effective mathematics curriculum: An effective school mathematics curriculum achieves a “balance among concepts, skills, and problem solving,” as the recent mathematics curriculum revision in Georgia asserts, and also brings depth to the discussion of topics rather than racing through scores of topics per year. There are mathematics curricula that are designed to satisfy these criteria, among which we mention the Georgia curriculum (grades 1-12), the American version of Singapore Mathematics (grades 1-12), the College Preparatory Mathematics (grades 6-12), and the middle school mathematics curriculum “Oregon Focus.” Each program is designed to be flexible in schedule and with enough depth so that the students can understand the material. For example, with the Oregon curriculum, “each grade level may cover three big topics, with about 20 skills, down from 60 to 70 skills in earlier years,” according to a recent article by Betsy Hammon in “The Oregonian.” However, for any new school curriculum to be successful, it is critical that the teachers be well trained with it and have enough time to plan for and implement the new curriculum after the training.

Refrain from advancing students prematurely: It is tempting for schools to insist on teaching more subject matter without concern for student understanding, and to insist on moving students from course to new course before they have mastered the material at hand. We know of a district that brags about 8th graders taking Algebra, though the teachers say frankly that the students have not mastered either arithmetic or pre-algebra. The “acceleration” of students without assessing their readiness can have two negative impacts: the student is likely to perform poorly in future mathematics courses and also develop a distaste for mathematics.

Review basic concepts and skills frequently: Many students in college cannot remember concepts, algorithms and facts beyond the upcoming test, because they did not learn them well enough to “own” them, and often just “studied for the test.” This has been noted by college teachers in chemistry, physics, and engineering. In fact, many don’t remember basic arithmetic or algebra skills taught to them in earlier grades. Thus it is critical that there be repeated review of important concepts and skills (mainly through cumulative assessments): in kindergarten, first grade, second grade, and through high school. This cumulative review is also important in college courses, and it is especially important for students desiring to major in science, engineering or mathematics. It is sometimes asserted that students don’t need to remember any mathematics because calculators and computers will suffice. In fact, students need to be prepared to analyze problems, which entails using their memory.

Prepare and mentor teachers adequately: College mathematics...
departments need to re-evaluate their courses for pre-service elementary school teachers, to make sure that the courses give a deep enough understanding so the students are in control of the subject matter when they teach. Next, the programs for teacher preparation in both mathematics and education need to be assessed to make sure that each required course is of critical value to the students. (Many potentially good teachers drop out of teacher preparation programs because they deem some of the required courses as ineffective.) In addition, many teachers say that they would have preferred more supervised student teaching and more discussions on classroom management. Also, appropriate mentoring of beginning teachers is extremely important. Finally, there needs to be a middle school teacher certificate, as well as a well-defined and economical certification program for mid-career people who would like to teach.

Treat teachers as professionals: Teachers habitually have long hours, lots of administrative paper work, classroom behavior issues, and rigid syllabus schedules hindering student understanding of concepts. Also there are school districts in which the teachers are required to give bogus test grades (e.g., a minimum of 50% irrespective of student performance on the test), or give re-tests for any student that wishes them. Giving re-tests on demand not only tends to minimize student preparation for the original test, but also takes away teachers’ precious planning time and/or lunch time. But the most distressing thing we heard from many teachers is that because of tough working conditions and the resulting stress, school teachers at all levels are frequently on anti-depressants or high blood pressure medicine. Such stress clearly affects student learning. Adding to the stress level are numerous suggestions--even at the federal government level--that the teachers be accountable for student progress in terms of standardized test scores, irrespective of rigid class and topical schedules, class and school climate, and student background.

How can the system be altered so that teachers are treated as professionals? Teachers in elementary school in particular need support from master teachers or from mathematics specialists (or both), and need support from the principal, the school, and the district. All teachers deserve adequate planning time for the diverse activities and obligations of their jobs. The state and school district obsession with raising standardized test scores needs to be redirected because the obsession is tormenting the learning of mathematics. What is needed is a classroom climate conducive to learning. Moreover, teachers need to feel that their views are worth hearing, and without the threat of punishment. Finally, it would be reasonable to include classroom teachers on statewide committees that make policy.

I believe that the five strategies discussed above would over time make a big difference in the preparation and attitudes of students when they graduate from high school, and would make them “college ready” in mathematics. There are many other more specific strategies that should be on the table. Here are three:

A. Send books for pre-schoolers: It is claimed in Georgia that a third of the children “come to school unprepared to learn, and 75% of students who are poor readers in the third grade will remain poor readers in high school.” With a substantial number of patrons, the Ferst Foundation offers one free book per month to each child from birth to 5 years old in participating counties, in order for “local communities to prepare all Georgia preschool children for reading and learning success.” Over 50 counties in Georgia are on board. Similarly, the Governor’s Books from Birth Foundation (GBBF) sends a free book each month to the children under 5 years old in Shelby County, Tennessee.

B. Give guidance to parents: All too often parents are unfamiliar with their children’s education. Parents reading to children, helping them to count and do simple additions in the classroom and at home helps children to learn, and 75% of students who are poor readers in the third grade will remain poor readers in high school. Visit www.facebook.com/CenterForTeachingExcellence
Phase 4 - Implementation: Individual instructors are responsible for learning occurring. They have the option to rearrange, modify, and adjust classes according to the unique attributes of their institution and student needs. At UM, we use subject matter experts to teach many of our lessons to facilitate this implementation; however, lesson objectives and samples of behavior must be met.

Phase 5 - Evaluation: This is a continual process that begins in the analysis phase and continues throughout the life cycle of the instructional system. During the semester, instructors are evaluated by the Professor of Aerospace Studies and the Detachment Education Officer. In addition, both UM and AFROTC end-of-course evaluations provide student feedback to instructors on performance. One final survey is completed when graduate supervisory surveys are conducted to collect data and analyze results, ensuring one last check that curriculum objectives were met.

Communication Studies are intertwined throughout all courses to develop officers with effective thinking, writing, and speaking skills. Students develop enhanced oral and written communication skills critical to military leadership.

The AFROTC program started at UM in 1949, just 2 years after the formal founding of the Air Force, and this academic year celebrates our 60th year on campus.

AS100, “The Foundations of the USAF,” is a freshman course. It briefly covers topics relating to the Air Force and defense. It focuses on the structure and missions of Air Force organizations, officerhip and professionalism. It is also a good introduction into the use of communication skills.

AS200, “The Development of Air Power,” is a sophomore course with the purpose of instilling an appreciation of the development and employment of air and space power. The course is concerned with the beginnings of manned flight and the development of aerospace power in the United States, including the employment of air power in WWI, WWII, Korea, Vietnam, the Gulf War and the peaceful employment of U.S. air power in civic actions, scientific missions and support of space exploration.

AS300, “The USAF Leadership Studies,” is a junior level course. This course is a study in the anatomy of leadership, the need for quality and management leadership, the role of discipline in leadership situations, and the variables affecting leadership. Case studies are used to examine Air Force leadership and management situations as a means of demonstrating and exercising practical application of the concepts.

AS400, “National Security Affairs/Preparation for Active Duty,” is designed for seniors. In this course students learn about the role of the professional military leader in a democratic society, societal attitudes toward the armed forces, the requisites for maintaining adequate national defense structure, the impact of technological and international developments on strategic preparedness and the overall policy-making process, and military law. In addition, students are given information to prepare them for their first active-duty assignment as an officer in the Air Force.

Communication Studies are intertwined throughout all courses to develop officers with effective thinking, writing, and speaking skills. Students develop enhanced oral and written communication skills critical to military leadership.

Let’s get back to the 0700 morning formation outside of the Cole Student Activities Building. Besides formal academics, there is a 2-hour weekly leadership laboratory consisting of leadership developmental activities to complement the academic program. It is a cadet planned, organized, and executed practicum conducted under the supervision of the instructors where cadets are divided into four groups based on their student status. Time spent with
We wanted to ...call into question the student’s place in the university, to radically critique through our actions the ways we are taught and learn.

trying to control the discussion. We sat in a circle, people would come and go as they pleased, fully in control of their relationship to the learning they were doing.

As good as the teach-ins were, and they were great, the discussion I found most valuable was the final one, a conversation about gender dynamics in the classroom loosely moderated by members of the Maryland Women’s Collective. Students almost never have the opportunity to discuss classroom dynamics since the class itself is never on the syllabus. This was not a session of complaining; we focused on practical tips for making classroom discussions accessible to women. In conversations like these we found commonalities we never before had the chance to discuss. An atrium, with students and teachers stepping over us on their way to class, was more conducive to my learning than any classroom I have seen at Maryland.

I can describe the events of the Fourth, but not the feeling among the participants. I know some organizers would have liked to see more people there, but the day was less about media spectacle than participants’ experiences. There was a moment when it clicked, that we could choose how we would learn. For me it happened when a friend turned to me and whispered, “We could do this every week.” We could, we could do it every day. On March 4, the Art/Sociology Building was our school, not just somewhere we attend, but a place of our creation.

Despite a number of invitations, no faculty members participated in the day’s events.

The views presented represent those of the author, who we thank for providing a student’s perspective on today’s complex university educational landscape.
“Internationalization...” continued from page 4 for internationalizing the mathematics curricula. This includes tracing the history of mathematics with an emphasis on the contributions of non-Western cultures and examining how students from other countries approach mathematics differently.

In fact this has created a whole new branch of mathematics termed ethnomathematics. The same applies to the sciences as well.

Challenges to internationalization include obstacles such as inadequate funding, the debate between a decentralized system (with each college or department possessing autonomy with respect to internationalization initiatives) vs. a centralized system (with an administrative office primarily responsible for internationalization initiatives) and overcoming faculty reluctance to internationalize curricula (spurned by assumptions that the curricula does not lend itself to internationalization or that it is sufficiently “internationalized”). However, the benefits of internationalization include having a diverse campus body tolerant and understanding of other cultures and countries and having globally competent students who are “world citizens” capable of communicating and competing with students from the rest of the world in a rapidly shrinking globalized economy. Internationalization also provides the University with an edge in attracting international students and in building collaborations with faculty from across the globe.

So where is this all leading to? In my (albeit humble) opinion, it is necessary to internationalize. We definitely need to plan and coordinate a campus-wide attempt to do so and to decide on the administrative and bureaucratic structure. Although this process entails considerable time and effort, it will make a significant and even path breaking contributions far as the future of the University identity is concerned. However, in the interim, while this planning process is underway, it is necessary to take modest steps to internationalize campus. To begin with, we must use of our existing resources – our immensely rich and multifaceted international faculty, staff and students. We could have cultural workshops where we learn about the ways of people from different countries and cultures. It is also important to try and include an international element to existing course offerings. This could be done by soliciting input from international faculty, international students and from students who have attended study abroad programs.

An international element could also be included into the traditional programs on campus that measure the language skills of international teaching assistants (T.A.s) in the context of an American university classroom. Keeping in mind the need for internationalization and the more pressing need for diversity and cultural acceptance, there could be concurrent programs that expose American students to different accents and even differences in spellings and units of measurement across the world. Finally, it is imperative to redesign study abroad programs. Currently, often a part of study abroad programs, students from an American university travel with fellow-students from the same university and spend a semester in a foreign country with the intent of gaining an international dimension to their studies. However, this goal of internationalization is mitigated by the fact that students often live with fellow Americans and take specialized courses for American students. Instead, living with students from the host country and taking courses that are part of the normal curricula in the country of choice may be a better course of action.

Globally, there is a shift in the economic climate, with large and traditional economic powers humbled by recession, and relatively unknown nations entering the foray of economic power play. Additionally, global terrorism is casting an even wider net, raising fresh suspicions and grounds for intolerance. In these circumstances, internationalization provides an educational institution with the means to produce globally competent citizens equipped with cultural sensitivity and tolerance.
Four Key Principles of Using Blackboard
by Yichun Zhang, Visiting Fellow, OIT & CTE

Blackboard Academic Suite provides a personalized study environment and strong academic support for students, and is gradually becoming one of the most important components of contemporary education. The internet has separated the temporal and spacial dimensions of teaching and learning activities, converting instructors from educators who are only in charge of teaching to organizers and guides of teaching activities. Hence, students have become the main body of teaching and learning; comprehending knowledge autonomously and collaboratively online.

1. Understanding the structure of Blackboard

The essence of Blackboard is not only to upload class materials online but also to enhance communication between students and instructors and among students themselves. It provides comprehensive information environment as well as support for online teaching by utilizing network technology to form an educational support platform for communications between students and instructors. Blackboard Academic Suite is composed of four tiers, as Figure I shows: teaching resources, users, learning support, and teaching management.

A) Teaching Resources: This is the component primarily dedicating to displaying contents and related resources to the students.

B) Learning Support: These are the teaching tools that Blackboard provides. Functions include using discussion boards to create forums, sending out questionnaires and surveys, conducting online exams to test how well students comprehend knowledge, etc.

C) Users: Users mainly include instructors and students. Instructors can set up and manage courses and register students. Students can browse course contents, participate in discussions, take online tests and surveys, etc.

D) Teaching Management: It helps instructors and administrators manage courses, in particular upload course materials, organize teaching activities, manage student accounts, etc.

2. Knowing the way Blackboard organizes content

The teaching content and materials in Blackboard are able to be decomposed and reassembled according to different teaching goals and the needs of online teaching. They can also be rendered using different media according to the features of the knowledge and the content being taught so that teaching materials are delivered to students in the way that maximizes the advantages of the Internet.

3. Utilizing interactive communication function of Blackboard

The interactive design of Blackboard Academic Suite is concerned not only with the communication between instructors and students and between students themselves, but also with the use of the interactive function as part of the support platform itself.

Blackboard Academic Suite establishes effective interaction in teaching, improves interest and dedication in users as learners, encourages student participation, and boosts their capability to thinking as well as increasing people skills. Instructors could divide students into groups for re-

“Blackboard...” continues on page 18
the establishment of a variety of faculty teaching and learning communities that facilitate curriculum redesign and support faculty in their efforts to adopt innovative teaching strategies (Fig. 1). Faculty teaching and learning communities focus variously on thematically linked sequences of courses in the upper-level curriculum (e.g., host-pathogen interactions), gateway introductory courses (e.g., BSCI 330 Introductory Cell Biology), and the interface between related science disciplines (e.g., bio-math, bio-physics) and the training of future faculty.

Enhancing and assessing graduate student preparation for teaching is also a major emphasis of the Center. All new graduate teaching assistants are required to take a teaching preparatory course. In the past, each biological sciences department offered its own course and the courses differed in content and size. In 2007, the instructors of the three departmental courses decided to team teach the course in order to help build community among the graduate students and create a lively learning experience. In collaboration with the Center, they developed a new curriculum and conducted formal assessments of the graduate students’ experiences. The results were very positive; students especially liked the feeling of community, the opportunity to interact with experienced teaching assistants, and the individualized feedback and mentoring provided by the course instructors. A paper summarizing these results was recently accepted for publication in the journal Studies in Graduate and Professional Student Development.

Figure 1. Teaching and learning communities served by CLFS Teaching and Learning Center

"As a new and relatively inexperienced faculty member in CLFS, I have found the Teaching and Learning Center to be a great resource that has helped tremendously in my growth as a teacher. Information from the TLC on venues for exchange of ideas has inspired me apply my training in research constructively to my role as an instructor and share ideas and innovations through publications, posters, and meetings. Events such as BioScience Day and seminars by teaching scholars have provided avenues for networking and professional development unavailable through the largely research oriented outlets typically available on campus."

Mike Keller, faculty member Biological Sciences

The Department of Chemistry and Biochemistry also collaborated with the Center in developing its own graduate teaching assistant preparatory program. The curriculum focused on those aspects of teaching that are unique to chemistry: laboratory protocols, simulating common laboratory teaching challenges, and specific challenges in grading chemistry assignments.

In the three and a half years that the Center has been in existence, there has been a surge in faculty participation in the scholarship of teaching and learning. Growing numbers of faculty are attending teaching conferences, giving presentations on their teaching innovations and submitting their teaching materials and approaches for publication. Recently, we have received several external grants to help continue these important activities.
everday activities is a big help. But taking an active interest in the child’s learning throughout the child’s education is extremely important. One avenue is to inform parents of self-help software for students. For example, the internet-available tutorial program “Study Buddy” is for middle and high school students. Generally the “tutors” are more advanced high school students or college students. It appears to be a winner for the tutors and those seeking tutoring. Also diagnostic testing devices such as ALEKS and MyMathTest not only can give a student an idea of his or her mathematics deficiencies, but also have accompanying programs that allow the student to self-remediate or, as a colleague in the Midwest asserted, “remediate with honor.”

C. Avoid over-use of calculators: Although it is important for students nowadays to use calculators and computers constructively to solve problems, many students have become prisoner to calculators, and need to be weaned from them. Indeed, some college students freeze if they are without a calculator as they strive to solve problems, or try to make everyday calculations in the store or with their budgets. As a colleague says, mathematics is about patterns – not just about numbers. Only after the pattern is seen can the calculator reasonably provide the answer.

In conclusion, I hope that those who make education policy will listen, and work constructively to put into action strategies like those suggested above and others that can help resolve the issues facing mathematics and the entire educational system. It is worth it, and hopefully it will begin now, in 2010.

The Faculty Teaching Consultation Division is designed to help provide support for campus instructors who would like to improve their teaching. Teachers work one-on-one with a Faculty Teaching Consultant, based on their own goals. The requesting teacher determines the issues to be explored, and the consultant provides an outside perspective, peer support for a plan of action, and suggestions for additional resources.

Consultations can address any number of areas, including, among other issues, assessment, active learning, collaborative learning, lecturing, instructional technology, syllabus construction, rubrics for grading, and scholarship in teaching and learning.

Any faculty member who teaches for the University of Maryland at College Park can request a teaching consultation, and they are completely confidential. For more information, contact the Center for Teaching Excellence at 301-405-9356 or via email at cte@umd.edu.

The AFROTC Program is much more involved. This overview gives an appreciation of the teaching philosophy involved in developing the future leaders for the Air Force. If you would like more information on AFROTC, please visit our website at http://www.afrotc.umd.edu/.
search on different topics, use group collaboration, discussion boards, or emails for communication.

4. Pay Attention to the learning phases in Blackboard

Blackboard Academic Suite encourages learning by action and collaboration and active learning, enhances students’ capabilities of recognizing and solving problems, and improves the management of informational teaching and learning, taking great advantage of the internet. Therefore, three phases should be emphasized when we use Blackboard:

A) Before class: carefully organize content, design materials for students to prepare for class, provide teaching and learning resources, and teach students how to use Blackboard.

B) During class: read course materials, listen to/read the instructor’s lecture, refer to other course materials and resources, and participate in discussions.

C) After class: complete assignments, conduct research in practice, write learning blogs, and summarize and improve the learning outcomes.

Blackboard Academic Suite takes advantage of the internet and pays attention to students’ initiative in active and collaborative learning, and fostering students’ abilities in problem-solving. Blackboard also:

1) Represents an advanced teaching mentality. It integrates theories into technology, utilizes technology to support teaching, and emphasizes students’ participation, and collaboration. Methods such as research and collaborative study are introduced and recommended to enhance the effectiveness of teaching.

2) Presents the latest discoveries in research. Online teaching provides plenty of teaching resources, research materials, useful cases, and various effective up-to-date tools and methods, making good use of the Internet.

3) Provides effective support for learning. It provides effective study tools and methods to support students’ learning.

4) Looks for best application. Students study cases from real life so as to master the knowledge and techniques and apply them into practice.

Online teaching provides students with a personalized study environment as well as strong support for collaborative study, and has gradually become an important component of modern education. Using the internet in the classroom facilitates communication between the instructor and the students, could improve instructors’ teaching skills, and compensate for the problem of inadequate student-instructor communication caused by campus division. It could also reinforce students’ capacities for self-learning by providing them with a research environment, and help instructors with evaluating their teaching by proving them with concrete data generated from teaching activities.

Clickers Update

Clickers: Short Term Loaner Program Has Moved!

The short-term clicker loaner program has moved to the OIT Classroom Support in Hornbake Library, Room 0125. Contact 4-8522 to reserve a set and for more information.

If you are interested testing out student response devices known as clickers, OIT has a loaner program where you can borrow clickers and a receiver to try out the system. Any classroom with a computer and LCD projector can be a clicker enabled classroom. All technology classrooms are pre-equipped to enable clicker usage. More information on clickers is available at clickers.umd.edu.
A CTE Conversation: Learning Communities at Maryland
Maryland Room, Marie Mount Hall, April 8, 12-1:30pm

CTE has long been convinced that building, supporting, and sustaining learning communities, small interactive groups of faculty or graduate students, is an effective way to nucleate the kinds of change that benefit the University and teachers and students as learners. Learning communities sometimes cohere around a specific issue and others gather to raise questions and seek answers about teaching and learning. This workshop will use “open spaces” to facilitate conversations about UM learning communities. Possible topics include effective practices for starting learning communities, work of existing learning communities, and the development of new learning communities to support faculty and undergraduate learning.

Resource: http://www.vcu.edu/cte/programs/FLC/IntroductionToFLCs.pdf
Facilitated by Spencer Benson and David Eubanks
RSVP: http://cte.umd.edu/RSVP/learning%20communities/

Science Education and Civic Engagement Conference
Monday April 19, 2010. Stamp Student Union
RSVP April 9

Hosted at UM by the Vice President for Research, the Dean for Undergraduate Studies, the Center for Teaching Excellence, and the College of Chemical and Life Sciences
Please * RVSP by APRIL 9 * to indicate your attendance at selected sessions or the full day with lunch.

The program will feature: • David Asai, Director of the Precollege and Undergraduate Science Education Programs for the Howard Hughes Medical Institute • David Burns, Executive Director of the National Center for Science and Civic Engagement and Co-recipient of the 2008 Bruce Alberts Award for Excellence in Science Education • Flora Lichtman, National Public Radio, “Science Friday” • Congressional Staff Panel on “Communicating with Congress on science and policy” • UM Faculty Panel on “Using Big Questions from Faculty Research to Engage Students in Learning Science”

Faculty and Graduate Students interested in Science Education are encouraged to come. (See complete agenda for the conference online). Registration fee for UM participants will be paid for by Vice President for Research, the Dean for Undergraduate Studies, the Center for Teaching Excellence, and the College of Chemical and Life Sciences.

For more information or to register visit: http://cte.umd.edu/RSVP/SENCER%202010/info.html

Innovations in Teaching & Learning Conference
Conference Date: April 23

Jointly sponsored by the Office of Information Technology and the Center for Teaching Excellence

Learning at the University of Maryland takes place in many locations and within the context of a variety of forums. Instructors are challenged on a daily basis to find innovative ways of enhancing student learning experiences. In traditional classrooms, distance, collaborative or independent learning environments, students and faculty explore a variety of techniques and tools meant to improve the overall academic experience.

Conference registration fees are waived for faculty, instructors, teaching assistants and instructional support personnel at University of Maryland College Park (registration is still required).

Maryland Day
April 24

http://www.marylandday.umd.edu/
CTE Summer Institute on Teaching and Learning with New(er) Technologies
May 26-28, 2010 8:30am to 4:00pm
Application deadline: 19 April

Supported by the Associate Provost for Academic Affairs and Dean for Undergraduate Studies, the UM Mobility Initiative, and the Office of Information Technology Academic Support Unit

This hands-on institute is offered for members of the faculty who want to increase student learning through pedagogies that implement new(er) technologies. Faculty who would like to have dedicated time, support, direction, and feedback as they increase student learning with these pedagogies are invited to apply. Faculty participants will benefit from feedback, guidance and colleagues’ experience as they develop ways to make new(er) technologies part of their pedagogy. The institute will help faculty address specific challenges—and meet specific learning outcomes—in their classrooms.

Faculty participants will receive a $1,500.00 stipend.

Mobile Learning With generous support from the Office of Information Technology, six faculty slots will be reserved for faculty designing and implementing mobile learning in a 2010-2011 course. Mobile learning, or mLearning, takes advantage of new technologies by creating assignments and projects undertaken with mobile devices, including iPhones, iPod Touch devices, Blackberries, and SMS-capable phones. Mobile learning pedagogies generate opportunities for student learning well beyond the classroom, and enlist an increasingly present technology in support of deeper learning. Applicants should indicate that they are seeking one of the slots dedicated to mobile learning.

For more information, including the application site, please visit http://cte.umd.edu/sti

Please direct questions about the institute to CTE Assistant Director Dave Eubanks (eubankd@umd.edu)

dent Conference Grants that will cover the costs of attending the conference, including registration and accommodation. Priority for these grants will be given to students who have submitted a conference abstract and/or participate in one of CTE’s graduate student programs or in departmental initiatives in teaching and learning. To apply for a Lilly-East Conference Grant, click here (deadline April 2, 2010). For further information on CTE’s Lilly-East Conference Grants, contact the Graduate Coordinator at x 4-1283.

2010 Departmental Excellence & Innovation in Undergraduate Teaching Award
Nominations Due April 22

Sponsored by the Lilly-CTE Teaching Fellows, the Center for Teaching Excellence, and the Office of Undergraduate Studies

The Departmental Excellence and Innovation in Undergraduate Teaching Award honors a department’s commitment to and accomplishments in improving undergraduate education.

Since 1995 the Departmental Excellence and Innovation in Undergraduate Teaching Award has recognized notable improvements and accomplishments in undergraduate education by departments, programs or faculty groups. Applications should highlight a current initiative or programmatic or curricular improvement that have made a positive impact on student learning and the quality of undergraduate education in the last two to three years. The application letter should specifically describe how the department addressed a problem and how the initiative or improvement was the result of a combined effort of those in or across the units. The efforts of individual members of a unit are not eligible for Departmental Excellence and Innovation in Undergraduate Teaching Awards.

The Office of Undergraduate Studies provides a $5,000 award and the designee is added to the Departmental Excellence and Innovation in Undergraduate Teaching Award plaque, to be displayed for the award year by the recipient. Any campus department, program, or interdepartmental program can apply for the award.

Applicants should submit two letters to the Center for Teaching Excellence award application website (see below). The first letter should describe the project or initiative—which must extend beyond an individual course or academic year—and how it has improved undergraduate learning. A second letter, from the appropriate unit head (chair or dean), should describe the unit’s support for the initiative or improvement. Each letter should be no longer than two pages. Complete details, lists of previous recipients, and application site are available at http://www.cte.umd.edu/programs/faculty/lilly/teachingaward/.
Nomination of Distinguished Teaching Assistants
Nominations Due April 16 - Ceremony held May 12

The Center for Teaching Excellence, the Dean for Undergraduate Studies, and the Dean of the Graduate School recognize outstanding graduate teaching assistants at the annual Distinguished Teaching Assistant Ceremony. We ask that each program/department identify the top 10 percent of their graduate teaching assistants for their exemplary contribution to undergraduate teaching and learning and submit their names to the Center for Teaching Excellence. These Distinguished Teaching Assistants will be presented a certificate recognizing their contributions to undergraduate education at Maryland during the 2009-2010 Distinguished Teaching Assistant Ceremony. The ceremony will be held at the Riggs Alumni Center on May 12, 2010 from 3:30-5:00 p.m.

As this award is meant to honor exemplary teaching assistants, we request that you limit the number of awardees to the top 10 percent of all teaching assistants in your unit. Awardees are selected by their departments based on positive student evaluations, classroom observations, and/or noted contributions to the teaching culture within the unit. Specific selection criteria are at the discretion of the individual unit.

Please submit the names of the teaching assistants you have selected as Distinguished Teaching Assistants electronically via the Center for Teaching Excellence website http://cte.umd.edu/grants/DTA/awardees/ no later than April 16, 2010. If another person in your unit has responsibility for selecting the unit’s nominees, please forward this information to him or her. If you have any questions about the recognition process, please contact us at x4-1283 or cte@umd.edu.

We hope you will take advantage of this opportunity to recognize outstanding graduate teaching assistants in your unit. Thank you for your continuing support.

Lilly Conference on College and University Teaching
College Park, June 3-5

Lilly Conferences have provided professional opportunities for the presentation of the Scholarship of Teaching and Learning for over 25 years. Participants come from a multitude of disciplines from throughout the United States and from abroad.

The overarching theme for Lilly 2010 is Evidence-Based Teaching and Learning. This theme was chosen to reflect that approaches to teaching and learning should be based on scholarly activity. As disciplinary approaches use scholarly work to investigate and advance knowledge, pedagogical innovation should also advance by building on the work of others. The Lilly Conference on College and University Teaching – East will bring together faculty from a variety of disciplines and at various stages of their academic careers to share new advances in teaching and learning.

The Lilly Conference on College and University Teaching - East has been in Newark, Delaware over the past 4 years is being moved this year to the greater Washington D.C., area of College Park, Maryland. It will be held June 3 – 5, 2010, and include 3 days of stimulating workshops and sessions presented by college and university instructors from throughout the United States.

Join many of your colleagues from University of Maryland who will be attending and presenting at this year’s conference.

http://lillyconferences.com/dc/default.shtml
The Student Honor Council encourages instructors to include the following information in course syllabi:

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit http://www.shc.umd.edu. To further exhibit your commitment to academic integrity, remember to sign the Honor Pledge on all examinations and assignments: “I pledge on my honor that I have not given or received any unauthorized assistance on this examination (assignment).”