The Magic of Undergraduate Education

by Donna C. Llewellyn, Ph.D.
donna.llewellyn@cetl.gatech.edu

There is something magical about the moment when a teacher realizes that she or he has connected a student with new knowledge. It is that “light bulb” moment of engagement and understanding that keeps most faculty enthusiastic about teaching. This issue of The Classroom explores different ways that Georgia Tech faculty are keeping that magic alive.

In a very literal interpretation of this theme, Dr. Joyce Weinsheimer describes how mathematics faculty member, Dr. Matthew Baker, uses magic to teach his students mathematical principles. Matt uses mental arithmetic, card tricks, and even a Rubik’s cube to teach difficult concepts and processes.

An interview with three faculty from different units (Dr. Leavey from Biology, Dr. Swann from Industrial and Systems Engineering, and Dr. Comfort from Modern Languages) investigates how learning is made more relevant by partnering their courses with the community. These applications range from service learning to internships to capstone design projects; but all share the goal of engaging the students by having them apply the rigorous academic content to solve real local problems. In a future issue we will explore how some faculty are going farther a field to find these applications in international settings.

Georgia Tech has launched T-Square – an online collaborative platform to keep those light bulbs of engagement on even when you are not meeting face-to-face with your students. Clay Fenlason writes about this move and how it fits with the strategic desire of GT to create its own destiny and to build its own environment.

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Some people view mathematics as a lonely discipline, but Associate Professor Matthew Baker’s vision of mathematics is highly people-oriented. What he finds most exciting about mathematics is sharing it with others—and share it he does in a wide range of courses for undergraduates and graduate students alike. Since arriving at Georgia Tech in Fall 2004, Dr. Baker has taught Math 1512: Honors Calculus II at the freshman level, Math 3012: Applied Combinatorics at the sophomore level, and Math 4150: Number Theory for juniors and seniors. He’s also taught the graduate algebra sequence (Math 6121/2: Algebra I/II), which serves as a gateway for Ph.D. level study in mathematics, and Math 8803: Algebraic Number Theory, a graduate-level topics course.

A quote from the chair of his department perhaps best captures the quality of Matt’s teaching:

“I’ve been a mathematics professor for almost 40 years and have served as department chair five times at three different universities. Matt Baker is hands-down the absolute best, most effective and most inspiring teacher of undergraduates I’ve ever seen. And he is quickly showing here at Georgia Tech that he is equally talented in working with graduate students. ”

What is it about Matt Baker’s teaching that captivates his students and impresses his colleagues? What does this winner of the 2007 CETL/BP Junior Faculty Teaching Excellence Award do that students find so engaging? Here are some elements of Baker’s approach that are producing great results as he connects with Georgia Tech students.

Generating Enthusiasm

Matt Baker wants students to share his enthusiasm for mathematics—and he works to intrigue them with its possibilities. For example, when he teaches his undergraduate course on Number Theory, he introduces modular arithmetic (also known as “clock arithmetic”) through the “circle of fifths” in music theory. He then impresses the students with some lightning-fast mental calendar calculations (e.g. what day of the week was June 8, 1723?), and wraps up the lesson by teaching the students how to do the calculations themselves.

One student describes what it’s like to be in such a course:

“Dr. Baker can teach an intimidating subject without being intimidating himself.... His passion for the subject matter is contagious, and his enjoyment for teaching sparks an enjoyment for learning in his students. His patience and approachability encourage us to continue trying.”

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The Classroom

**Stimulating Thinking**

As a member of the International Brotherhood of Magicians and the Atlanta Society of Magicians, Baker knows how to communicate ideas in ways that challenge student thinking. He uses his talents as a magician to illustrate mathematical concepts and to help his students explore the mathematical principles behind what he’s doing. He performs card tricks based on modular arithmetic and rope tricks based on principles from topology; he also performs a mind-reading trick using colored gloves to illustrate a famous theorem of Leonhard Euler from graph theory. And of course, bringing magic into the classroom also keeps students alert.

“One day I was teaching Applied Combinatorics, and we were talking about how many ways you can color the faces of a cube using a certain number of colors. I brought in a Rubik’s cube, and I did a magic trick where I scrambled up the Rubik’s cube and threw it up in the air and it solved itself. Just to kind of wake up the students that were sleeping!”

**Balancing Intensity with Casualness**

When students comment on Matt Baker’s teaching in their evaluations at end of the term, they often note that the material was “tough” and “complex”—but they then go on to say that “the course was really enjoyable and Professor Baker taught me a lot.” Students highlight how Baker “shows up for every lecture with a smile on his face” and that “he’s an absolute gem of a teacher—very cool, calm, and fun loving.” One student expressed appreciation “for Professor Baker’s humorous asides and analogies…. This may seem like a minor point to comment on or even notice, but the power of humor is not to be underestimated in the communication of ideas.

This was a great educational experience.”

What Matt Baker’s students are experiencing in his courses is no accident. Baker says that it’s important to bring a little lightness into the classroom—and in fact, humor is an essential component of his teaching:

“I try hard to be funny in class and to sprinkle potentially boring parts of my lectures with humor. I also try very hard to maintain a balance in class between a casual atmosphere and a focused one. I try to cover a lot of material efficiently and in great depth, while at the same time relieving the intensity every so often with humorous asides, stream-of-consciousness musings, and playful bantering with the students. In this way, the students are constantly being challenged and intellectually stimulated, but (hopefully) they aren’t too intimidated to ask questions.

**Making Connections**

Matt Baker believes that connecting with students on an emotional and personal level is important too. “In the modern era of online universities and virtual diplomas,” states Baker, “it is important for students to know that a human professor can provide things that a digital one cannot, such as emotional understanding. A small bit of extra encouragement or a solid piece of advice from a trusted mentor can make an enormous difference.
in a student’s performance, sense of confidence, and career decisions.”

Carrying out this philosophy means that Matt Baker’s teaching extends beyond the classroom. He has served as a teacher, mentor, and coordinator for the School of Mathematics’ Research Experience for Undergraduates program, an NSF initiative. He is a talented research mathematician who has made important contributions to the field of number theory and publishes in some of the most prestigious journals—and he involves his students in the process. For example, Baker’s undergraduate students Adam Tart and Dragos Ilas performed extensive computer-based calculations in order to experimentally verify some graph-theoretic conjectures which Baker had made in two of his research papers. (To see a sample of the Java applet which Adam Tart wrote to illustrate the main theorem from the paper “Riemann-Roch and Abel-Jacobi Theory on a Finite Graph” that Baker co-authored with Serguei Norine, go to http://www.adamtart.com/game/GraphGame.html)

Such connections are truly valued by Matt Baker’s students. One undergraduate notes: “Dr. Baker is willing to go the extra mile, time and again. Not satisfied with simply lecturing and grading his students, he cares about how they are doing, whether they are learning, and how much they are enjoying the course. Furthermore, Dr. Baker has been there to advise me, to do research with me, to help me with my work and school decisions, and even to advise one of my extracurricular activities. He is a teacher and mentor in the truest sense of the word.”

As we consider the many approaches to teaching at Georgia Tech that are making an impact on this campus, Matt Baker’s is one that is definitely worth noting. His students applaud his genuine enthusiasm for both teaching and research, his “talent for simplifying advanced topics,” his “patience and ability to confront a point of confusion by explaining from multiple angles,” his ability to make learning fun, and his sincerity as a teacher and a mentor. As one undergraduate math major notes, “Without a guide, someone to have confidence in you, falling behind and losing a sense of the greater picture of mathematics is relatively easy.” Students appreciate that Baker “takes that extra bit of time after the end-of-class whistle blows to make sure we are intellectually stimulated and satisfied.”

In the world of mathematics where students often find the process of learning complex and intimidating, Matthew Baker is truly working magic. He inspires, teaches, and connects with students as few are able to do in one of higher education’s most challenging fields—and in doing so, he is definitely making a difference for students at Georgia Tech.

“It is important for students to know that a human professor can provide things that a digital one cannot, such as emotional understanding. A small bit of extra encouragement or a solid piece of advice from a trusted mentor can make an enormous difference in a student’s performance, sense of confidence, and career decisions.”

Matt Baker

If you’d like to contribute to these “snapshots” we’re creating of good teaching at Georgia Tech, please contact Dr. Joyce Weinsheimer, Associate Director of CETL for Faculty Development, at joyce.weinsheimer@cetl.gatech.edu.
Many educators are choosing to connect their students with experiences outside the classroom in order to enhance their learning. This interview highlights what three Georgia Tech faculty are doing to link students with the community in order to take learning to a new level.

Two of the courses are new to the campus and one has been available to students for quite awhile: Dr. Jennifer Leavey piloted her “Biology Internship” during the summer and is offering it again this fall. Dr. Kelly Comfort’s class on “Service/Learning in the Hispanic Community” is the second phase of an initiative that began last spring when she and five students co-founded the club “GLASSS” (Gringos y Latinos: Atlanta’s Spanish Service Society). Now SPAN 4813 allows students to reflect on their work in the Hispanic community in a more systematic way and to combine their volunteer experience with structured learning about Latino issues and concerns. Dr. Julie Swann teaches ISyE 4106, a senior design course with a long history that has involved many ISyE faculty in its conception, design, and ongoing revision.

Q: Each of you has chosen to teach a course that connects students with the community. What’s the purpose of this experience?

**Jennifer Leavey:** The goal of Biology 2803A is to expose students to a variety of biological problems in the context of a non-profit organization. Currently we have students interning at the Georgia Aquarium, and we hope to expand the program to other Atlanta area institutions as well. We hope that our students will leave the experience feeling that they have contributed to the community through volunteer work while broadening their definition of what it means to be a biologist in society.

**Julie Swann:** The purpose of ISyE 4106 is to provide seniors with a system design experience that is similar to professional practice in Industrial and Systems Engineering. Students may choose projects that benefit for-profit firms in the community, or they may choose to work with non-profit community organizations.

By the end of their semester in the community, our students can define and scope a problem, identify and analyze the factors relevant to it, and apply appropriate methodologies and computational tools needed to generate and evaluate alternative solutions. Our students also learn to communicate effectively in a professional team setting as they increase their understanding of business and engineering practices.
Kelly Comfort: SPAN 4813 is an upper-division Spanish course that engages students in the issues and concerns of the Latino population in the US in general and Atlanta in particular. The course connects students with the community in order to expand their knowledge of the Hispanic immigrant experience and to give them first-hand experience of Hispanic cultures. In addition, the course gives students a chance to practice their Spanish in real-life authentic settings—this occurs throughout the semester as they dedicate 30 hours to an individually-designed service project in the Latino community.

Q: So one of the essential components of each of your courses is an expanded classroom. Students interact with both you and members of the community. How does this help achieve your course goals?

Jennifer Leavey: By having our students volunteer at a facility that offers interaction with the public, they are able to learn first hand what misconceptions people harbor about aquatic environments and organisms. Hopefully this will motivate students to learn more about these topics and will also give them a chance to pass what they learn along to the community.

Julie Swann: Many students in our senior design course choose to work on projects that directly benefit the community—this includes working with hospitals, the Atlanta Food Bank, the Centers for Disease Control and Prevention, the City of Atlanta, Hands On Atlanta, and MedShare International. From this experience students see that there are a range of areas where industrial engineering tools can be applied and have an impact. Then too, we find that working in community partnerships contributes to students’ ethics education—students can clearly see the societal impacts of their work.

We believe that students who are exposed to applying engineering to community organizations (or learning about it from their peers’ applications) may also be more likely to work in those areas after graduating from Georgia Tech. So partnering with the community helps us ensure that the engineering education we provide has a widespread impact.

Kelly Comfort: SPAN 4813 facilitates students’ contact with a specific sector of the local Hispanic population and allows them to connect with a variety of perspectives regarding issues such as immigration, identity, acculturation. Students choose projects based on their personal interests and individual schedules.

So how are students partnering with the community this term? Several are involved in the “After School Homework Help and Soccer Program” at Buckhead Creek Apartments; the students provide one hour of homework help and two hours of soccer practice each afternoon to Hispanic children who would likely be unsupervised after school. Another group of students works with children at Woodward Elementary School, where 95% of the population is Hispanic and needs assistance with English language acquisition. A few students serve as bilingual volunteers who assist Hispanic patients and their families at Children’s Healthcare of Atlanta. Some students work with Hispanic senior citizens and help them with personal needs and tasks. Others provide assistance to Latinos through the Latin American Association’s Employment Services and Special Events Department. One student provides language tutoring and conversation practice to Hispanic adults participating in DeKalb Tech’s ESL classes. Another participant helps Hispanic high school students at Cross Keys High School with college preparation and applications. Numerous students are also planning to assist with the Latino Youth Leadership Conference, which will be held on Georgia Tech’s campus in late October.

Through their connections with members of the Hispanic community during 30-hour continued next page
volunteer projects, SPAN 4813 students have ample opportunities to take their Spanish language skills beyond the classroom setting and to converse with native speakers in a variety of contexts.

**Q: To qualify for academic credit, a course must provide a rigorous academic challenge. What challenges do students encounter in your course? How do you engage students in planned and purposeful learning related to their experience in the community?**

Jennifer Leavey: This has been the biggest challenge for our course. When working with another institution (in our case the aquarium), it is difficult to control what kind of academic experience our students have there. Currently the internship coordinator at the aquarium is based in the volunteer services department, and so our internship program largely consists of volunteering. In addition, our students prepare several progress reports throughout the semester in which they summarize their activities, reflect on the relevance of those activities to biology and public service, and (most importantly) set goals for the remainder of the internship experience. I find that having the students regularly set goals encourages them to take ownership of their internship experience, and they therefore take responsibility for their success in the course.

Julie Swann: Our situation is a little different. Many students find our ISyE senior design course the most challenging course in the curriculum. They must synthesize what they have learned in the classroom over a period of several years and use it to solve a complex problem. They must also be able to take the problem with their engineering solution and explain their results to people who may have very diverse backgrounds and experiences.

To help make all this possible, each student receives guidance from a primary faculty advisor as well as from additional faculty who provide feedback on the specific project. Our students also receive coaching from one or more advisors in the community organization with whom they are working; this helps ensure both their personal success and their success on the project.

Kelly Comfort: In SPAN 4813, I require students to complete a variety of academic assignments in Spanish. First, they write a detailed proposal that outlines their individual volunteer project and the goals and expectations for this part of the class. Second, they work in groups to lead one class section on an assigned topic (immigration laws and opinions, motivations and obstacles to immigration, concepts of Latino identity, concepts of home and homeland, or images and stereotypes of Latinos) as it relates to “texts” of a certain genre (media, literature, or film). Third, they document the volunteer project through the completion of a creative documentary. Fourth, they complete a cultural analysis project in which they investigate a topic of their choice in relation to the Hispanic community members with whom they have contact. Finally, they write ten weekly reflections that require them to evaluate the ongoing success of their volunteer project and to make meaningful connections between the personal experiences and academic study portions of the class.

**Q: We cannot assume that student involvement in the community automatically results in learning. How do you encourage ongoing meaningful reflection throughout the course?**

Jennifer Leavey: We encourage reflective thinking primarily through the preparation of three graded progress reports during the semester. Then students complete an anonymous survey at the end of the course where they further reflect on the impact of their service on the community and how the experience has colored their view of biology.

Julie Swann: Students provide feedback on the projects each week to their faculty advisors as well as provide periodic reports to their advisors.
sors in the organization. Students also reflect on knowledge they have gained from other courses and link it to the engineering applications in this course.

**Kelly Comfort:** I encourage meaningful, ongoing reflection throughout the course by posting weekly reflection questions on T-Square. Students have to complete the written reflections by 10:00 am each Monday, and this deadline allows me to read the reflections before the class meets each Tuesday morning and to incorporate provocative and relevant comments into our class discussions. Although the posted reflection questions are different each week, they always solicit commentary on how the volunteer project is going and ask students to consider the ways in which that week’s class themes relate to their observations and conversations in the community. I grade these cultural reflections in terms of content and depth as well as Spanish language use.

**Q:** Firsthand experiences in a rigorous learning setting can help students develop the necessary skills for full lifelong participation in a democratic society. How does your course help students develop social and civic competencies—or perhaps prepare students for lives of active citizenship?

**Jennifer Leavey:** I think it is an eye-opening experience for many of our students to see how volunteering in their field can have a direct impact on the public. It is a common theme in our students’ reports that they learn as the public learns and that they feel good about sharing what they know with the public.

**Kelly Comfort:** Although the development of civic responsibility is not an explicitly stated goal of the class, it is an inevitable and desirable result. Students complete end-of-the-project self-evaluations in which I ask them to comment on changes in personal and social growth and on advancements in cultural and linguistic competence. I look for changes in self-esteem, self-direction, self-reliance, and self worth. I also track increases in students’ sense of civic and social responsibility, sense of belonging to a greater community, and sense of appreciation for a diversity of cultures. Additionally, I require participants to highlight (in their weekly reflections and final documentary projects) the differences they have made in the lives of others as well as their long-term goals for their project and the community members they’ve served. In these responses, students often express a desire for continued, lifelong service.

**Q.** Tell me a little about your experience as a teacher. What prompted you to use a teaching method that involves partnering with the community? What do you find challenging about this approach—and what do you find rewarding?

**Jennifer Leavey:** I was approached by the aquarium to begin an internship program, so that’s what got me started. Sometimes the students and I find it challenging to work with the aquarium’s time line in the context of an academic semester, but it is rewarding to hear the students say that they learned a great deal about aquatic biology and that they feel that they contributed to the community through this experience. Also, this program strengthens the ties between Georgia Tech and the Georgia Aquarium—which is a real benefit to everyone involved.

**Julie Swann:** The senior design course has a long history in ISyE, and there are many faculty involved in its conception, design, and ongoing revision. The challenges are significant, as students must apply a variety of tools encompassing years of education to a problem, and the problems are not always clearly defined at the beginning. I choose to participate in teaching of this course because I think it is one of the most rewarding that we offer—it is rewarding to our students, to us as faculty members, and to external organizations. I especially enjoy when we are able to solve a com-

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Eight Principles of Good Practice for Experiential Learning

Regardless of the experiential learning activity, both the experience and the learning are fundamental. The National Society for Experiential Education (NSEE), a nonprofit association of educators, businesses, and community leaders, highlights the following standards of good practice for experiential learning (for a full description, see http://www.nsee.org/about_us.htm).

Intention
All parties must be clear from the outset why experience is the chosen approach to the learning that is to take place and to the knowledge that will be demonstrated, applied or result from it.

Preparedness and Planning
Participants must ensure that they enter the experience with sufficient foundation to support a successful experience. They must also focus from the earliest stages of experience on the identified intentions, adhering to them as goals, objectives and activities are defined.

Authenticity
The experience must have a real world context and/or be useful and meaningful in reference to an applied setting or situation. This means that it should be designed in concert with those who will be affected by or use it, or in response to a real situation.

Reflection
Reflection is the element that transforms simple experience to a learning experience. For knowledge to be discovered and internalized the learner must test assumptions and hypotheses about the outcomes of decisions and actions taken, then weigh the outcomes against past learning and future implications.

Orientation and Training
For the full value of the experience to be accessible to the learner, and the learning facilitator(s), and any involved organizational partners, it is essential that all be prepared with important background information about each other and about the context and environment in which the experience will operate.

Monitoring and Continuous Improvement
Any learning activity will be dynamic and changing, and the parties involved all bear responsibility for ensuring that the experience, as it is in process, continues to provide the richest learning possible. It is important that there be a feedback loop related to learning intentions and quality objectives and that the structure of the experience be sufficiently flexible to permit change in response to what that feedback suggests.

Assessment and Evaluation
Outcomes and processes should be systematically documented with regard to initial intentions and quality outcomes. Assessment is a means to develop and refine the specific learning goals and quality objectives identified during the planning stages of the experience, while evaluation provides comprehensive data about the experiential process as a whole and whether it has met the intentions.

Acknowledgment
Recognition of learning and impact occur throughout the experience by way of the reflective and monitoring processes and through reporting, documentation and sharing of accomplishments. All parties to the experience should be included in the recognition of progress and accomplishment.
plex problem that a firm or organization did not have the resources or expertise to solve.

**Kelly Comfort:** I began volunteering at an early age, but my first experience serving the Hispanic community came in college when I worked as an AmeriCorps volunteer during my junior year at UNC. Together with two other AmeriCorps members, I started an English as a Second Language (ESL) school for non-native English speakers. Although our first class meeting had only two students, the school eventually grew to service over 100 Spanish-speakers in the Chapel Hill/Carrboro, NC area. As a college student of Spanish at the time, I appreciated the chance to practice Spanish before and after class, and I soon began a conversation exchange program that paired UNC students of Spanish with my ESL students. I also volunteered at the local Women’s Center, the Hargrave Reading Center, and the Interfaith Homeless Shelter and continued to provide services to the growing Hispanic population.

Although my service experiences were not integrated into a “service-learning” experience, I was familiar with this model of combining class content with community involvement. While working as a study abroad director for the School for International Training in Granada, Spain, I required my students to conduct service projects at local schools and organizations so as to strengthen their community ties and improve their linguistic skills.

Starting Gringos y Latinos: Atlanta’s Spanish Service Society (GLASSS) with interested Georgia Tech students last semester was the vital first step to later offering this service-learning class. Thanks to the GLASSS founding members and student participants, we have a strong community presence and numerous contacts within the Hispanic sector of Atlanta. Nonetheless, there are still many challenges to teaching this type of class. Students’ diverse schedules and the fact that some students do not have cars make community placements somewhat tricky. This class demands a lot of time, commitment, and self-initiative from students, but I am hopeful that they will find that it was worth it in the end!

**Q: What responses to this course design are you getting from students? from your community partner(s)?**

**Jennifer Leavey:** Many of our students wish they had more behind-the-scenes experiences during their internship, but they almost all enjoy the experience and plan to continue volunteering at the aquarium. The aquarium coordinators have commented that many of our students are very committed and capable volunteers and they hope we will continue the program.

**Julie Swann:** When Students are taking ISyE 4106, they say it is one of the hardest courses that they have had. However, we find that after they graduate and enter the workforce, they emphasize that it was the most important and useful courses that they took. Once employed, our former students often lead their company in identifying projects for senior design. In fact, these alumni may even serve as the company advisor on the project for the next group of students.

There is a long history of results from this class, with millions of dollars saved every year, and significant positive impact on people’s lives. The success is further evidenced by the fact that organizations become regular, repeat customers—they come back time and time again to request senior design projects.

**Kelly Comfort:** Although I definitely sense that my students consider this course to be very demanding in terms of their time and commitment, my initial sense is that they also find it to be a rewarding and valuable experience. The students’ work for the Latin American Association, Woodward Elementary, and Children’s Healthcare of Atlanta has been continually praised by members of those organizations, and I am sure the new vol-

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While CETL is recognized as a place where faculty and teaching assistants who are interested in being excellent teachers go to find support, community, and professional development, many people at Georgia Tech may be surprised to learn that the Center also offers a number of academic courses for both undergraduate and graduate students. Our courses support several important GT strategic goals: facilitating the success of our teaching assistants, providing a first step of a route for those students who wish to pursue a career in K-12 education, partnering with local high schools, and promoting the professional development of our graduate students.

For TAs, there are separate courses for undergraduate and graduate students. Each covers the same basic material with some customization for the particular audience. These classes, CETL 2000 and 8000, introduce students to the procedural information and practical skills needed to be an effective undergraduate teaching assistant. There are sections taught within each of the units within the College of Sciences where the largest number of TAs with recitation and/or laboratory responsibility work.

CETL 4001/2, Principles of Learning and Teaching, focuses on the knowledge and skills necessary for effective classroom instruction and management including: educational psychology, instructional design, and delivery techniques. These courses are restricted to students who have at least junior status and a GPA of 2.75. The goal is to prepare students to enter a certification program for 6-12 teaching.

The STEP program partners Georgia Tech students with metro-area high schools. Selected undergraduates and graduate students work as STEP interns/fellows in local high schools. This is a competitive program that requires an application and interview. There are two courses offered that support graduate STEP fellows. CETL 8711, Student and Teacher Enhancement Partnership Summer Training, prepares fellows to teach class modules in a high school setting. CETL 8712 is an academic year seminar that provides follow-up training and communication with the participants in the program.

Graduate Students play a number of important roles on the GT campus. Many engage in instructional duties in their disciplines, others work in outreach programs like STEP, and all graduate students are important researchers who need excellent communication skills. Therefore, CETL provides graduate students a number of opportunities for additional professional development beyond the courses already mentioned.

CETL 8721, Academic Writing for Graduate Students, focuses on academic-specific discourse. Through examination of writing samples, practice, and working in small groups, students learn techniques for enhancing proposal, thesis, and dissertation preparation as well as methods for evaluating writing as future instructors and thesis

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In addition to our current course offerings, plans are underway to develop additional courses to help prepare graduate students interested in an academic career; check back with CETL for these courses in the future.

Please visit http://cetl.gatech.edu and click on the Courses Link for more information about applying for permits and admission into all CETL courses.

The Magic of Undergraduate Education continued from page 1

We are interested in hearing from you about the different ways that you are using T-Square in your work.

In the spirit of helping to connect students with new knowledge, Dr. Karen Head reports on the variety of undergraduate and graduate courses offered by CETL. A number of these courses are designed to prepare students to create their own kinds of classroom magic.

Finally, our book review this month is about doing classroom inquiry research. This provides a process for those faculty who are doing something innovative in their courses to start to investigate and analyze the effectiveness of their work. Dr. Tris Utschig is available to consult with anyone who wishes to start their own inquiry project. With this kind of investigation, one can help to spread the magic to other Georgia Tech faculty!

Partnering with the Community continued from page 9

unteers projects will prove equally beneficial.

Julie Swann: As I consider our work here at Georgia Tech, I think involvement with the community, including for-profit firms and non-profit organizations, is extremely important. In our case, it exposes students to real problems, and it helps ensure that Georgia Tech is graduating good “practicing engineers” who can have a positive impact on the community. I think our senior design program is truly a highlight of the degree we offer, and other opportunities to work with community organizations have been similarly well-received.
Technologists have a habit of drawing up a new system for every problem: there’s a system for handling the logistical details of running courses ("Course Management System"), for example, while a "Learning Management System" aims to go deeper and provide mechanisms to actually support the learning process. Both rational notions, but a little time spent in the real world has revealed clumsy limitations in implementation; rigid systems prove to be poor participants in a networked world.

Enter T-Square, which marks the beginning of Georgia Tech’s attempt to forge a platform flexible enough to encompass the needs of the traditional LMS while still providing support for the rich array of ad hoc collaborations that comprise academic life, research included. T-Square will aim to be not so much a system as a collaboration environment that can be integrated with other parts of peoples’ digital lives. It is based on an open source product called “Sakai,” jointly developed by a global consortium of over 100 of the best universities in the world, Georgia Tech among them. The Sakai community represents nothing less than higher ed working to control its own destiny in this space, rather than lean on a third-party vendor one step removed from our needs and experience.

Our goal is to put “end users” in the driver’s seat, and we are establishing a priorities committee of faculty and students to help us move toward that end. While it’s essential that the academic side of the house establish these priorities, it’s equally important that students and faculty engage in the development itself-- and so we plan to use the freedom of open source to incorporate projects and initiatives from around the Georgia Tech community.

We’re at the beginning of a long road. T-Square is not yet what we want it to be, nor will it be in the near future: we are embarking upon an ongoing development project. We will reach the first milestone in January when WebCT is decommissioned, but we have to look ahead further than that. If T-Square merely replaces WebCT, if it becomes just one more LMS product serving a minority of needs, it will have failed. With your help – your constructive feedback, your participation in focused efforts to flesh out coherent requirements, or even your own development projects – we can achieve the comprehensive relevance to academic life at Georgia Tech that constitutes success. We look forward to working with you to make this happen.

To learn more about the roadmap, driving vision, and people behind the initiative, visit http://info.t-square.
Annotated Bibliography Selections

by Tristan T. Utschig, PhD
Assistant Director for the Scholarship and Assessment of Teaching and Learning
tris.utschig@cetl.gatech.edu

Assessment in Cycles of Improvement: Faculty Designs for Essential Learning Outcomes
Miller, Ross
Association of American Colleges and Universities, 2007
Information: www.aacu.org

Quickly learn what other institutions are doing to systematically assess and improve student learning outcomes regarding big-picture, institution-wide goals.

This monograph begins with a short introduction describing the movement to systematically assess learning outcomes in higher education over the past two decades, then introduces “The Essential Learning Outcomes” defined by the AAC&U, and finally provides twelve example descriptions of how specific institutions have addressed these learning outcomes in two page summaries. The “essential” learning outcomes are geared towards a liberal education under the general categories of: knowledge of human cultures and the physical and natural world, intellectual and practical skills, personal and social responsibility, and integrative learning. As such, these outcomes apply most directly to general education but several (mathematical knowledge and appreciation, quantitative literacy, information literacy, communication, teamwork and problem solving) address issues central to technical fields as well. Each description is set up to describe assessment as a cyclic process and is divided into the following sections: goals, fostering achievement of the goals, assessing the outcome, and improvements resulting from the assessment data. These descriptions are generally broad and qualitative in nature, but some do contain specifics that may be helpful for an institution looking to follow a similar path. Most are accomplished through sets of courses developed specially to address the outcomes, but several contain specific ideas that be incorporated into existing curricula without burdensome redesign such as the written communication at Carleton College and lifelong learning at San Jose State University.

The CETL Library is located in the CETL Conference Room, Ground Floor of the Administration Building, Room 17. Contact Clint Lyle at 404 894 4474 or clint.lyle@cetl.gatech.edu for access.
**Assessment in Cycles of Improvement: Faculty Designs for Essential Learning Outcomes**  
Miller, Ross  
Association of American Colleges and Universities, 2007  
Information: www.aacu.org

Gain deep insight about student learning in your classroom through learning how to conduct a quality inquiry project about your course that can result in both beneficial course changes and publishable scholarly work.

This practical book contains three main parts: a thirty page summary guide describing the mechanics of how to plan, implement, and interpret a classroom inquiry project; nine case studies of classroom inquiry projects conducted by faculty across a number of disciplines and arranged in order of complexity and sophistication; and a general discussion giving advice about how to begin a journey towards scholarly teaching utilizing the methods described in the book. The introductory section of the book describes a nine step process for conducting a classroom inquiry project but gives quality recommendations about which aspects of the process to focus on for those just starting to think about performing a classroom inquiry project. The case studies provide many useful specifics that help one to understand the classroom inquiry process and are presented by the faculty members who actually conducted the projects along with commentary from the authors. Each case study is organized using the following structure: overview, highlights, activities and tools used, about the course, development of the inquiry, putting the issue into context, inquiry hypothesis, investigative plan, interpreting and evaluating findings, final reflection, and postscript. This format gives the reader a thorough understanding of each project and provides enough detail such that the reader might easily adapt many aspects of the case studies to use in their own inquiry project.

**Enhancing Scholarly Work on Teaching and Learning: Professional Literature That Makes a Difference**  
Weimer, Maryellen  
Jossey-Bass, 2006  

Understand how your interests might fit into the spectrum of scholarly work on teaching and learning as presented in different forms and venues and learn about exemplary work and scholarly publications from many disciplines.

This book first summarizes and classifies previously published scholarly work on teaching and learning. This previous work is organized into two main areas (each with sub-areas): wisdom-of-practice (personal accounts of change, recommended-practices reports, recommended-content reports, personal narratives), and research scholarship (quantitative investigations, qualitative studies, descriptive research). Each area is described in detail and its viability and credibility are discussed. Numerous broadly applicable exemplars and the standards for quality work on which they rest are discussed for each area. The latter half of the book then sets out to discuss how scholarly work on teaching and learning can be incorporated as a credible and viable component of the work of scholars within traditional disciplines. This discussion is grounded in the reality of current practice and includes practical advice for both faculty and academic leaders who might contribute to the development of scholarly work on teaching and learning in the future. Finally, the appendices, reference list, and name and subject indices at the end of the book contain valuable information for those looking to further explore specific areas.
## Spring 2008 Events

**FACULTY DEVELOPMENT SEMINARS**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>January 27-28</td>
<td>GTREET: Perspectives on Learning, Teaching, and the Brain</td>
</tr>
<tr>
<td></td>
<td>Chris Jernstedt, Professor of Psychological and Brain Sciences, Dartmouth College</td>
</tr>
<tr>
<td>February 21</td>
<td>Looking at Learning: How You Fit into the Assessment Picture at Tech</td>
</tr>
<tr>
<td></td>
<td>Tris Utshig, CETL &amp; Jonathan Gordan, Office of Assessment</td>
</tr>
<tr>
<td>March 11</td>
<td>Celebrating Teaching Day</td>
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**OTHER EVENTS**

<table>
<thead>
<tr>
<th>Date</th>
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<tbody>
<tr>
<td>March 25</td>
<td>Outstanding Teaching Assistant Awards Banquet</td>
</tr>
<tr>
<td>April 10</td>
<td>Faculty/Staff Honors Luncheon</td>
</tr>
<tr>
<td>April 17</td>
<td>Student Honors Luncheon</td>
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For more information on these and other events, please visit the CETL website at [www.cetl.gatech.edu](http://www.cetl.gatech.edu) and click on News and Events.