

CEHD | College of Education + Human Development

# connect

FALL 2008

**CULTIVATING  
STEM EDUCATION**

Plus 2007-08 Donor Report

UNIVERSITY OF MINNESOTA  
**Driven to Discover<sup>SM</sup>**

Dear friends,



**ON SEPTEMBER 1**, at the request of Provost Tom Sullivan, I assumed the position of interim dean in the College of Education and Human Development. Let me first say that it is a privilege to work in this new role with the faculty, staff, and students of this college. Going forward, I plan to focus on four issues outlined by Provost Sullivan: the budget, fund-raising, recruitment and retention of excellent faculty, and faculty and staff morale. I also intend to further increase the diversity of our faculty, staff, and students and improve communication with inside and outside audiences.

We wish former Dean Darlyne Bailey well as she takes a half-time leave to cope with serious medical issues in her family. For the other 50 percent of her appointment, she will accept additional responsibilities in her role as assistant to University President Robert Bruininks.

I am excited to carry forward the college's dedication to healthy human development across the lifespan, including the critical examination of a pipeline that leads from early childhood to a successful adulthood. One area of particular focus by University educators is science, technology, engineering, and math, also known as STEM, where career demand exceeds qualified college graduates. Understanding the complex issues of our times—climate change, energy sources, food safety—requires a general science literacy that recent assessments show to be lacking.

Our faculty members are collaborating with government, business, community leaders, and K–12 educators to develop a pipeline of STEM majors and future professionals. This requires building student interest by integrating science and math concepts throughout the curriculum, as at Mahtomedi High School (see “The Science of Shakespeare,” p. 10), where CEHD faculty are developing curricula in concert with district educators including the superintendent—an alumnus.

Letting students shape curriculum is another way to spark curiosity. This inquiry-based learning, featured in the story “Inquiring Minds” (p. 18), is a cornerstone of CEHD's educator preparation programs as well as ongoing professional development programs, such as the Austin Teacher Partnership (p. 25) and summer Microscopy Camps (p. 18). Both model the college's dedication to pedagogy, content knowledge, and teacher development. A similar multifaceted approach begins at the undergraduate level with PhysTEC (p. 22), a partnership with the Institute of Technology that encourages physics majors to pursue teaching.

In fact, most of the programs featured in this issue involve collaboration across the University, as well as across the community. Interdisciplinary collaboration is integral to successful STEM education and a strategy that our college is uniquely qualified to advance.

Sincerely,

A handwritten signature in black ink that reads "Jean H. Quam". The signature is fluid and cursive.

Jean Quam, *interim dean*

## connect

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Photo of Jean Quam by Greg Helgeson.

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COLLEGE OF EDUCATION  
+ HUMAN DEVELOPMENT

UNIVERSITY OF MINNESOTA

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**on the cover:** Students at Northrop Urban Environmental School learn science out in the world. *photo by Leo Kim*

The College of Education and Human Development is a world leader in discovering, creating, sharing, and applying principles and practices of multiculturalism and multidisciplinary scholarship to advance teaching and learning and to enhance the psychological, physical, and social development of children, youth, and adults across the lifespan in families, organizations, and communities.

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## Zambia delegation explores disabilities advocacy in Minnesota

**IN MARCH NINE DELEGATES** from Zambia traveled to the Twin Cities for an intensive two-week training program in disability advocacy and support. Together they learned local best practices in advocacy, policies, and services for those with disabilities through a series of seminars and on-site visits. Program content was modeled on the college's certificate in disability policy and services.

**Amy Hewitt**, training and project director within the Institute on Community Integration (ICI), which cosponsored the visit, and disabilities advocate Sandy Beddor first visited Zambia in January to identify partners in the Twin Cities and Zambia Disability Connection, as the collaboration is called. They brought together a team of individuals from across the country, among them a parent advocate, a government official, and several religious workers.



**Amy Hewitt from ICI visited a school in Zambia as part of an ongoing exchange with the disability-support community.**

Participants were impressed by how well people with disabilities are integrated into American society. "The choices given to people with disabilities to do what they can to contribute to their communities is wonderful," noted one delegate. In Zambia, disabilities are often seen as the result of curses or bad fortune.

The Twin Cities and Zambia Disability Connection continued this August when two delegation members and several ICI staff members traveled to South Africa for the Thirteenth World Congress of the International

Association for the Scientific Study of Intellectual Disabilities. The Twin Cities team then went to Zambia for 10 days to conduct further inclusiveness training, working with local educators, families, and religious workers.

For more information about the project visit [twincitieszambiadisabilityconnection.blogspot.com](http://twincitieszambiadisabilityconnection.blogspot.com). The ongoing exchange is cosponsored by Arc Greater Twin Cities, Fraser, Opportunity Partners, and St. David's Child Development and Family Services.



**A member of the Zambian delegation enjoys his first snow.**

# A fruitful legislative session

BY RICHARD WASSEN

**FOR THE FIRST TIME**, more Minnesota legislators identify “education” as their primary occupation than any other profession. Many were new to the legislature in 2008, and they used the opportunity to develop innovative approaches to policy and fiscal issues that affect Minnesota schools and human service organizations. They tried multidisciplinary approaches that combine education and human development perspectives (e.g., discussing solutions to childhood obesity in both the education and public health committees and bringing the two committees together). Members also increased their awareness of Minnesota’s rapidly evolving multicultural population in an effort to create culturally relevant legislation.

The college is dedicated to building upon its legacy of assistance to legislators by improving how it “translates” research into policy. The role of college experts is to provide research-based input on relevant issues rather than to advocate.

This past session, legislators asked a number of CEHD faculty and staff to collaborate with work groups, comment on draft legislation, and testify at committee hearings. Highlights in 2008 included input on:

- + Changing the school “report card” system to include college preparation measures and student engagement indicators
- + Recommending new approaches to mental health services for all ages
- + Creating new strategies to address the achievement gap that use proven models to enhance student outcomes
- + Identifying new approaches for improved reading/literacy instruction, including a more in-depth definition of best practices
- + Forming a better system for early childhood education by adopting research-based practices
- + Increasing the supply of teachers of color through grants to support teacher preparation

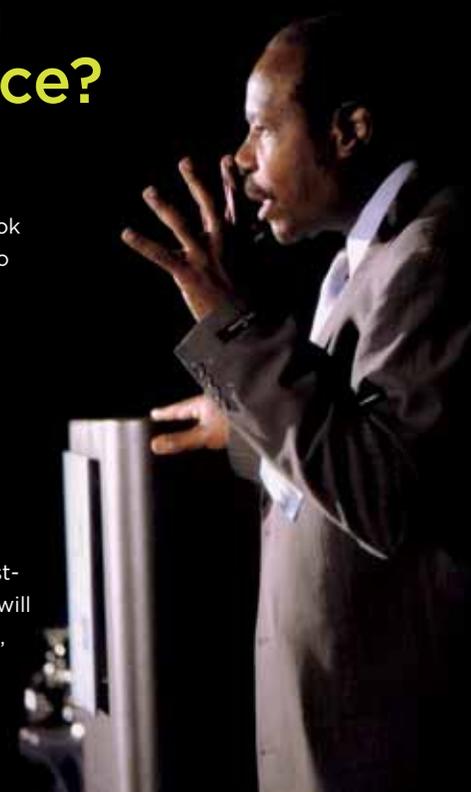
Summaries of legislation that was passed (or then vetoed by the governor) can be found at [education.state.mn.us/mde/Legislation/SessionSummaries](http://education.state.mn.us/mde/Legislation/SessionSummaries). Contact Richard Wassen, [r-wass@umn.edu](mailto:r-wass@umn.edu), external relations liaison in the Office of Research and Policy, with questions about the college’s interaction with policy makers.

## Can one person make a difference?

**THAT QUESTION**, which forms the basis of the college’s new First Year Inquiry course, is answered powerfully in Paul Rusesabagina’s book *An Ordinary Man*. This story of an individual who puts his life on the line to save neighbors and strangers caught in the middle of the Rwandan conflict will be read and discussed by all of the 430 or so incoming CEHD first-year students.

As part of the curriculum, developed by faculty in the Department of Postsecondary Teaching and Learning, the students will also have the rare opportunity to bring their inquiries to Rusesabagina. The author will speak to their first-year seminars on Nov. 3. Later that evening, he will present a public lecture in Northrop Auditorium, which is open to alumni and to the public.

For more information on Rusesabagina’s Nov. 3 lecture, please see [cehd.umn.edu/paul](http://cehd.umn.edu/paul).





## CEHD programs at home on Rochester campus

**ESTABLISHED IN 2006**, Rochester is the newest coordinate campus in the University of Minnesota system, and it is growing quickly with its own facility and a new chancellor, Stephen Lehmkuhle. CEHD is one of only a handful of colleges to offer courses on the Rochester campus, where the college has played a prominent role since the 1990s, when it was a branch of the Twin Cities campus. The Department of Educational Policy and Administration, the School of Social Work, and the Department of Work and Human Resource Education offer a range of traditional degree, certificate, and administrative licensure programs.

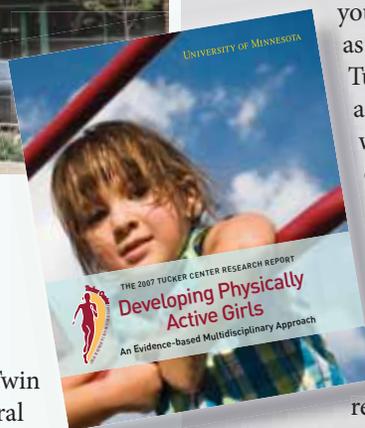
Megan Morrissey, director of the master of social work program in

Rochester and in the Twin Cities, sees many natural connections between her department's work and the southern Minnesota city. "Rochester has a growing community of new immigrants, among other unique populations, calling for the brokering and mediation services of social work," Morrissey says. "Rochester is also part of Olmstead County, a county that is exemplary in the state in terms of social services, particularly child welfare."

For further information on the UMR campus, visit [www.r.umn.edu](http://www.r.umn.edu).

## New Tucker Center report makes headlines

**THIS SPRING** the Tucker Center for Research on Girls & Women in Sport released *Physically Active Girls: An Evidence-based Multidisciplinary Approach*, which highlights the sociological, psychological, and physical factors that encourage exercise and good health among young females. Produced as an update to the original Tucker Center report, created a decade ago in conjunction with the President's Council on Physical Fitness & Sport, the new publication is meant to appeal to parents, coaches, and community members, as well as academics.



On April 22 some of the report's authors—including Tucker Center Associate Director **Nicole LaVoi** and **Diane Wiese-Bjornstal**, associate professor of kinesiology—provided an overview of key findings and recommendations to a standing-room-only audience at the University. Among the most important discoveries in the report is that gender remains the single most significant barrier to girls' participation in physical activity.

Since its release the publication has garnered attention from media outlets around the world including *U.S. News and World Report*, *Time Magazine*, Minnesota Public Radio, abcnews.com, and Bangkok, Thailand's *Thaindian News*.

To download a free copy of the report, visit [cehd.umn.edu/tuckercenter](http://cehd.umn.edu/tuckercenter).



# Customized reading solutions

## COLLEGE RESEARCHERS CONNECT COGNITIVE PROCESSES WITH LITERACY CHALLENGES

BY DIANE L. CORMANY & ANITRA BUDD

**READING MAY BE** the single most important skill for children to learn—a portal to the world of knowledge. Yet a 2007 report by the National Center for Education Statistics showed that 33 percent of fourth-grade students and 26 percent of eighth-grade students read below grade level.

The percentage of struggling readers has scarcely decreased over the last decade despite extensive research and interventions developed to address the trend. Educational psychology assistant professor **Kristen McMaster**, professor **Paul van den Broek** (now at the University of Leiden, Netherlands), and associate professor **David Rapp** (now at Northwestern University) set out to reverse this trend by developing interventions to address the specific cognitive challenges that can trip up struggling readers.

Although a number of interventions are commonly used to improve reading skills, it is difficult to match these approaches to the specific challenges faced by the reader. Further, relatively little is known about the cognitive processes that cause reading-comprehension problems.

“There’s an implicit connection between cognitive theory and reading research,” says McMaster. “However, there have been relatively few attempts to connect the science with the classroom—to develop interventions that are directly tied to cognitive theories.”

### Unique reading struggles

During the first year of the study, researchers created individual cognitive profiles of 270 students in grades four, seven, and nine who had a range of reading abilities. They administered two assessments of cognitive reading processes with the goal of comparing the profiles of struggling readers with those of students who measure average or above average in reading.

In one, researchers used an eye tracker—a head-mounted device that uses video and specialized software—to monitor eye movement as the subject read on a computer screen. In the other assessment—a “think-aloud” approach in which readers would offer a verbal commentary about the text as they read—two distinct camps of struggling readers emerged:

“**Elaborators**” made inferences based on what they read, just as

average or good readers do. Those with reading challenges, however, often drew on information that was irrelevant or unrelated.

The second group, “**paraphrasers**,” would repeat back text, sometimes word for word, indicating that they may not be making connections with the larger meaning.

Such a focus on comprehension at the intermediate level is vital for students to advance in math, science, social studies and other concepts as they progress through upper grades, says Jim Angermeyr (’88, Ph.D.), director of research and evaluation for Bloomington Public Schools, where McMaster has conducted much of her research. Formal reading education typically ends in sixth or seventh grade, he explains, but a new set of comprehension strategies are needed to tackle nonfiction at the secondary level.

### Tailored interventions

The researchers used the cognitive profiles to develop and test specific reading interventions. Custom-tailored questioning, delivered via peer-assisted learning, was designed to prompt the kind of text processing



**Different reading challenges demand customized interventions, CEHD researchers discovered.**

that had proven problematic for the individual. By pairing a stronger reader with one who was struggling, the team was able to engage both students and to provide more dedicated time than a teacher could give students on an individual basis.

Elementary, middle, and high school educators served as consultants and collaborators to evaluate how the various interventions worked and to assist in developing an intervention tool-kit. In the process the team confirmed that different interventions helped different students. The “elaborators” seemed to respond better to specific, causal questions about the text (i.e., “How did what happened in school earlier in the day affect how the girl feels right now?”), rather than more generic inquiries. On the other hand, the “paraphrasers” were able to recall more of the text in response to broader queries (i.e., “How does what you just read relate to what you’ve

learned in the text so far?”) teachers was Jan Burda (’88, M.Ed.), whose fourth-grade class at Westwood Intermediate in Spring Lake Park Independent School District 16 included gifted students, some who had been identified as having ADHD or other challenges, and some right in the middle.

She says the ones who struggled with reading benefited in particular from the questioning approach. “The children on the low spectrum, I saw they were able to break down the stories and find the little details,” she says, adding that the approach helped some of the students who have attention challenges to focus on the reading.

There is one student who stands out most in Burda’s mind, though—a girl who entered the fourth grade reading more slowly and with slower comprehension than her grade level. Through a combination of the peer-assisted questioning and

other reading-skills development methods, she showed marked improvement over the year.

“The fact that the subgroups appear to respond differently is compelling,” McMaster says.

### **Classroom payoff**

Among the participating

“Her parents had nothing but rave reviews,” Burda comments. “I, too, thought she definitely showed growth, and it was just a delight to see.”

During the following year, Burda switched to fifth grade, where she used techniques she had learned through the research with McMaster, including breaking text into more manageable chunks and asking review questions along the way. She also retained many of the students who had been part of the research and noticed that some continued to improve in reading, including the same little girl.

“Just seeing the smiles of this little girl, seeing her be able to understand and to comprehend,” Burda recalls. “I get goose bumps just thinking of it.”

McMaster, van den Broek, and Rapp are disseminating their findings and applying for additional funding to research the specific conditions that affect the efficacy of each intervention, for example duration and frequency. They also hope to develop a simple way for teachers to identify each student’s reading profile without dedicating the time for extensive individual cognitive testing.

### **For more information**

Kristen McMaster, 612-624-1859, [mcmas004@umn.edu](mailto:mcmas004@umn.edu)

# THE Science OF Shakespeare

STEM INTEGRATION TAKES CENTER STAGE THROUGH A  
NOVEL PROGRAM AT MAHTOMEDI SCHOOLS BY J. TROUT LOWEN

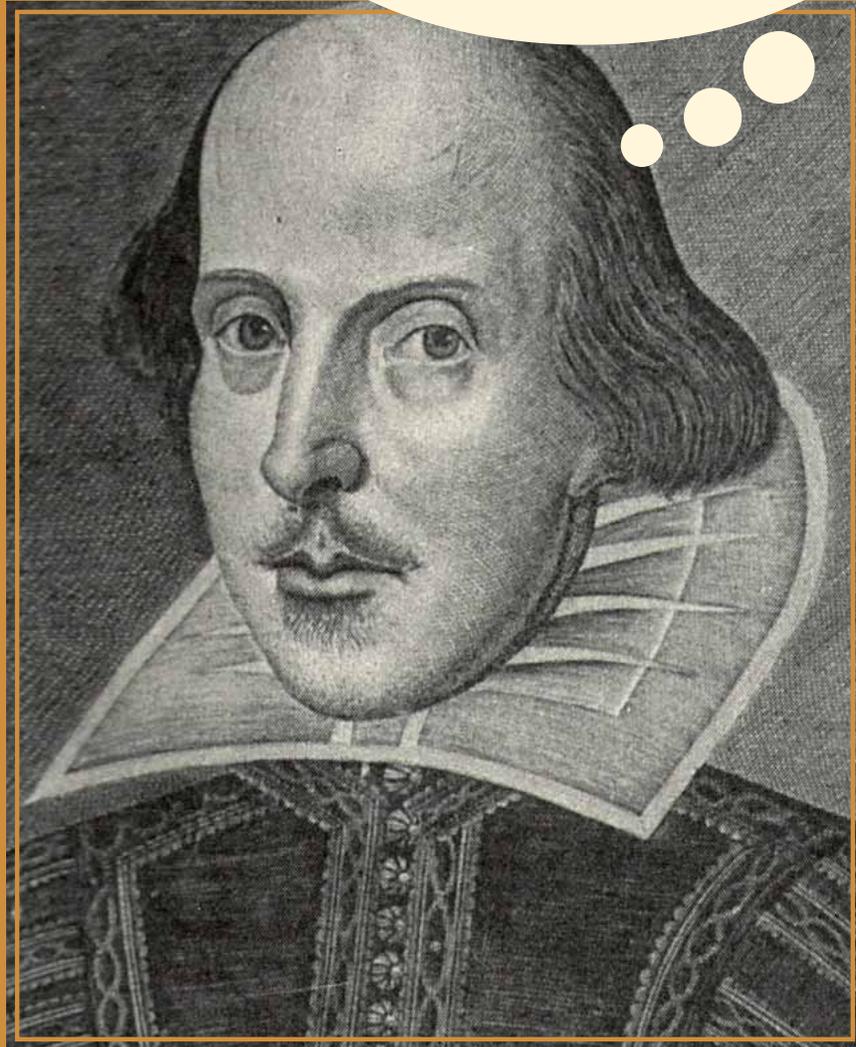
**MOST MIDDLE AND HIGH SCHOOL STUDENTS** learn science in science class and math in math class. Technology is taught mainly in the context of computers. Engineering, if it's taught at all, is yet another independent discipline.

Such is the siloed nature of traditional secondary education.

But what if engineering—and its problem-solving processes—could be incorporated into the curriculum for math, science, and technology? And why not incorporate it into English and physical education lessons, too? Would students learn more? Be more engaged? Would they take more science, math, and technology courses?

Educators at Mahtomedi Public Schools are getting at those questions through the district's new Engineering Leadership Program. Working with Tamara Moore, assistant professor of math education, and Gillian Roehrig, associate professor of science education in the Department of Curriculum and Instruction, the district is developing new curriculum that will promote STEM (science, technology, engineering, and mathematics) instruction for all students.

$$E=mc^2$$





The reasons for rethinking engineering and science education are many. Over the past decade the number of college students who major in STEM fields and pursue related careers has declined significantly. Only 40 percent of high school graduates are ready for college-level math and science classes, according to a recent report by national college admissions testing firm ACT. A recent international survey found U.S. high school science and math scores lag those of other highly developed countries.

Roehrig says there are two major issues that worry people about these statistics. “The first is an issue of general science literacy,” she explains. “The second is a pipeline issue. We aren’t preparing enough students in science, technology, engineering, and math to fill jobs in teaching and industry.”

This pipeline issue is a serious one, says Karen Klinzing, assistant commissioner of the Minnesota Department of Education. “Only 10.8 percent of middle school students have expressed an interest in pursuing a career in science or math, yet 90 percent of job growth is in these areas.”

Mahtomedi is bucking the state and national trend by focusing its curriculum on rigorous state science standards and through the Engineering Leadership Program. The district had the highest science proficiency levels in the state, according to recent results released by the Minnesota Department of Education. While average proficiency, measured at the fifth- and eighth-grade and high school levels, hovered around 40 percent for Minnesota as a whole, Mahtomedi averaged 71 percent.

## Engineering interest

Mahtomedi began considering an engineering technology program in 2005–06, starting with a pre-packaged curriculum before deciding to pursue a more customized approach, says Mahtomedi Superintendent Mark Wolak (Ed.D. ’99). Instead of creating a program that would likely only attract students already interested in engineering, Mahtomedi decided to embed relevant skills across the curriculum. Last year the district asked volunteers to help

develop new integrated approaches, and 25 middle and high school teachers responded.

Moore describes engineering as a way of thinking rather than just a discipline, which means it lends itself to an integrated curriculum. For example, she says, students in a physical education class may learn how a joint moves, and instructors can easily expand the discussion to include the biomedical aspects of engineering and artificial joints.

When engineering is taught in a real-world context, students gain a sense of how relevant concepts come into play in a wide variety of fields and careers, explains Moore.



**Led by physics teacher Scot Hovan, Mahtomedi students measure trajectory and velocity using eggs and rubber bands.**



To get at the communication aspects of engineering, some Mahtomedi students read Shakespeare's *Julius Caesar* in English class and then participate in a modern-day boardroom strategy discussion about the climactic battle scene.

This approach means getting out of curriculum silos and making teaching and learning more interdisciplinary, says Wolak. "Those are very powerful philosophical changes in a public school," he adds. "Many high schools today continue to be lecture-oriented. What we're saying is we want to be inquiry-based; we want to be interdisciplinary, and we want to be helping students do problem-solving as a way of strengthening their learning."

Mahtomedi students also participate in model eliciting activities (MEAs)—real world, client-driven problems that require generalized, open-ended solutions that can be applied to different or changing circumstances.

"Most problem-solving prompts ask you to solve the problem at hand, and they require an answer," says Moore, whose research focuses on engineering-related modeling using realistic situations and open-ended questions. "This is different because this is a solution to a class of problems, and therefore it needs to be very explicit in how to solve a set of problems so that someone else can implement the solution."

### **Funding STEM's future**

Mahtomedi has created an advisory group of academics from local universities and colleges and a second advisory group comprised of local business people has helped secure grants and other funding for curriculum development and teacher training. 3M is one significant supporter of the Engineering Leadership Program, donating \$66,000 in cash and equipment in 2007. Science, math, and economics education is one of the company's biggest funding priorities, says Barbara Kaufmann, manager of education giving at the 3M Foundation.

**A student uses the engineering technology concepts learned in her Mahtomedi eighth-grade class to build a scale model of a student-designed home.**

“These are disciplines that will serve students well if they go into engineering, or if they go into marketing and work for a high-tech company like 3M,” she adds.

3M is also funding two CEHD graduate student fellows who will help Moore and Roehrig replicate the Engineering

**We want to be inquiry-based; we want to be interdisciplinary, and we want to help students do problem-solving as a way of strengthening their learning.**

— MARK WOLAK, SUPERINTENDENT

Leadership Program in North St. Paul schools.

Mahtomedi has dedicated \$100,000 for ongoing program development. Assistant professor Moore will spend the fall semester at Mahtomedi and work with assistant principal Kathe Nickleby—who directs the engineering program—to assess what teachers will need to implement the new curriculum and to evaluate the process and outcomes for teachers and students alike.

The district will continue to track the program’s impact on students beyond graduation. “We will be assessing the number of students interested in STEM in ninth grade, the number who take STEM classes, who graduate and go into STEM education in postsecondary, and then the number who actually get jobs in STEM fields,” says Nickleby. Eventually, she says, all Mahtomedi students in grades 6 through 12 will be exposed to STEM concepts in all classes.

Moore hopes that Mahtomedi’s Engineering Leadership Program will yield a curriculum that other schools can use to increase student interest in STEM.

“In some respects, this is my model eliciting activity,” she says. ●

*Additional reporting by Kate Hopper*

## Model eliciting activities

**A MODEL ELICITING ACTIVITY** (MEA) is meant to solve a client-driven problem in a replicable way. Students are given a reading activity—maybe in memo form—that sets up the reason for solving the problem, says Tamara Moore, assistant professor of math education. Then they are given two to three hours to design a sequence and a generalized solution that can be applied not only to the specific problem but also to a class of similar problems.

One example of an MEA that can be used for students from sixth grade through college asks students to determine a way to measure the roughness of material at the nanoscale—the minuscule measurement used in nanotechnology—to help extend the life of a part used in hip replacements. Students are told the part is currently made out of gold, but it wears out every 10 years, and that another company is looking at making the part from diamond, but diamond is rough.

“The problem has many dimensions,” Moore says, “big mathematical ideas in terms of scaling, in terms of sampling; it has a lot of statistical undertones in it. It’s a really rich problem, but it puts you in a very socially relevant context because students can see the need. ‘Wow, someone’s going to have to have one less surgery in their lives.’”

Model eliciting activities have helped improve retention in STEM fields, particularly among women and minority students, as Moore has discovered through her research with undergraduate engineering students.

“The study we did at the freshman level—which is really not that different than K–12—found the retention level went up even with the white males once we started using [MEAs],” she says. “So we’re interested in putting model eliciting activities in a K–12 setting, particularly the secondary setting, to encourage students to go into a STEM discipline. Are they more likely to stay if they choose to do that?” ●

# Tradition and innovation

## A PARTNERSHIP BETWEEN THE COLLEGE AND THE ANISHINAABE TRIBE USES TRIBAL KNOWLEDGE TO IMPART KEY STEM CONCEPTS

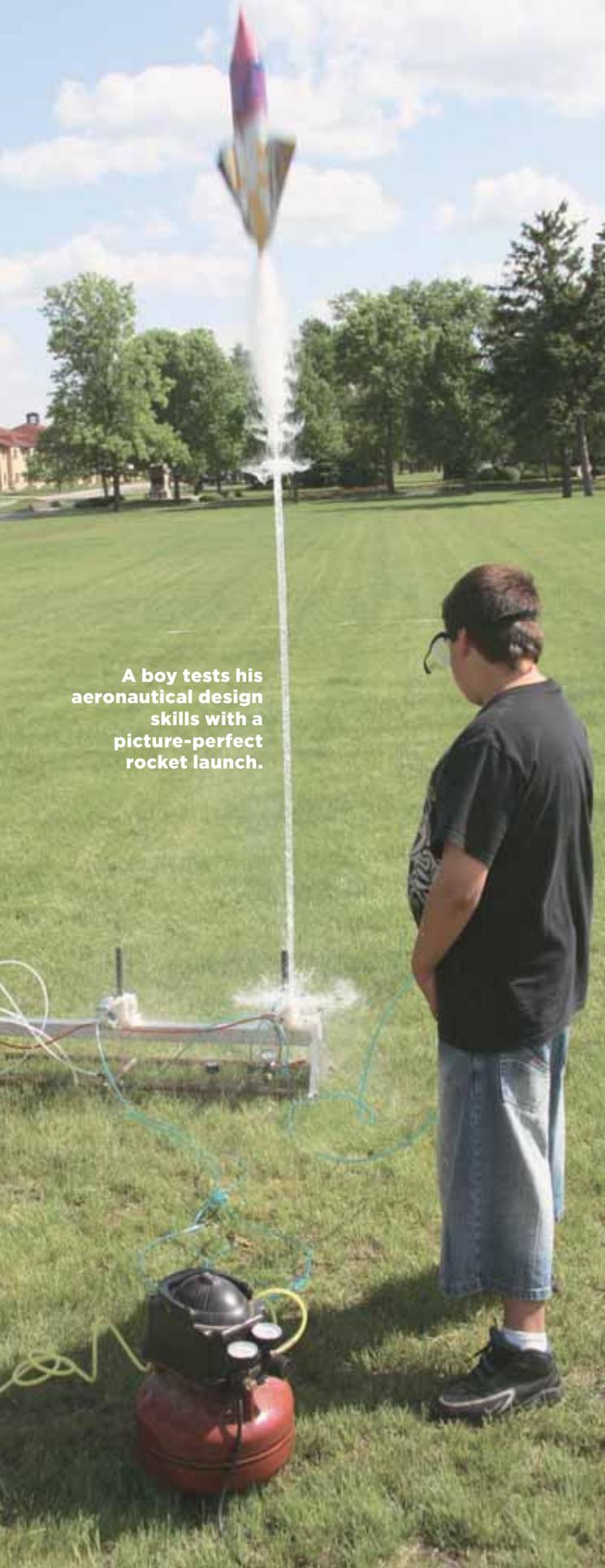
**WHAT CAN BUILDING BIRCH BARK CANOES** teach about geometry or tapping maple trees convey about chemistry? Quite a bit, as it turns out. Associate professor Gillian Roehrig and assistant professor Tamara Moore from the Department of Curriculum and Instruction; Stephan Carlson, professor and Extension educator with the College of Food, Agricultural, and Natural Resource Sciences; and faculty from the Institute of Technology, in collaboration with White Earth Tribal College, are utilizing such traditional Native American knowledge to engage students on the White Earth Reservation in northwestern Minnesota.

The Reach for the Sky (RFTS) program, funded by the National Science Foundation, strives to make STEM more culturally relevant to the Anishinaabe youth. Tribal elders share their knowledge while University researchers develop related curriculum to teach key concepts about science and math. Students also learn engineering through activities such as bike design and solar- and wind-energy production.

As part of the program, this summer 65 middle school students from four White Earth schools came to the Twin Cities campus, where they toured the Bell Museum of Natural History and a number of high-tech labs. Some



**Some of the White Earth students took part in the Starbase program at the Minnesota Air National Guard Base, where they learned to engineer craft for Mars exploration.**



**A boy tests his aeronautical design skills with a picture-perfect rocket launch.**

The Reach for the Sky program strives to make science, technology, engineering, and math more culturally relevant to the Anishinaabe youth.

also participated in the Starbase program at the Minnesota Air National Guard base, which taught students about engineering star craft for Mars exploration and other related science. Participants also built hovercrafts and rockets and tested their aeronautical design skills with a launch.

Back at Circle of Life School on the reservation, the students designed bikes and other equipment to be used in a race at the end of the five-week program. The racers were given a list of tasks to be accomplished and beginning and ending points for each of the designated stops. Team members had to determine the order in which to finish the tasks and which team member would ride at what time.

“This is a systems-engineering optimization problem,” Moore explains. Practice scenarios leading up to the race helped students prepare for the big day.

Reach for the Sky will continue this fall as an after-school program with topics related to bridge design (tied to the I35W bridge collapse and rebuild) and snow snakes, which are traditional Native American children’s sleds. During summer 2009, the program will continue with a focus on renewable energy sources including water and wind.

“Developing these student’s STEM skills will have consequences beyond the classroom,” says Roehrig. “These efforts will help build a skilled work force prepared for tomorrow’s challenges.”

Moore, Roehrig, and Carlson will also provide professional development to teachers in the participating White Earth schools. ●

*Adapted from “Head of the Class,” by Andria Peters, originally published in Research 2007 by the Office of the Vice President for Research.*



# Inquiring minds

## ONGOING TEACHER DEVELOPMENT SUPPORTS BEST PRACTICES

BY KATE HOPPER

**MINNESOTA IS A LEADER IN SCIENCE AND MATH EDUCATION** in the United States, according to the National Assessment of Education Progress. In an increasingly competitive global market, however, leading the nation is no longer enough. A recent international survey by the Program for International Student Assessment shows U.S. science and math scores have fallen far behind many other highly developed countries—a concern to educators and business leaders alike.

In 2006, Minnesota Governor Tim Pawlenty highlighted these concerns, calling for increased rigor in science and math. He announced the launch of a collaboration between government, business, and education to help students succeed in STEM studies and to double the number of college graduates with related degrees by 2015. Recent science and math assessments are disheartening, though. Only about 40 percent of fifth- and eighth-grade and high school students met state science standards established in 2004, now under review.

So what can individual educators do to change this trend? According to Gillian Roehrig, associate professor of science education in the Department of Curriculum and Instruction and a member of the state's Science Standards Revision Committee, student success in math and science depends on effective teachers and hands-on, inquiry-based learning.

“Students aren't blank slates,” says Roehrig. “Inquiry-based learning is a student-centered approach to teaching that gives students the opportunity to put their prior knowledge to work building and testing hypotheses.”

This approach helps students develop abstract, conceptual thinking and problem-solving skills, and research shows that it works. “Students are more engaged,” says Roehrig,

“and when they are more engaged, they learn better.”

When science curricula are based on student ideas and curiosity, the students develop a sense of ownership around the content and concepts, explains science education instructor Leslie Flynn, also from the Department of Curriculum and Instruction. “It's important to empower students to answer questions for themselves,” she explains. “It becomes part of them.”

### Teachers model curriculum

An inquiry-based approach drives Microscopy Camp, an annual professional development opportunity for Twin Cities secondary science teachers led by Flynn and chemistry professor Lee Penn. Participants are asked what they need to learn about matter and nanotechnology to answer their students' own questions. These inquiries drive the content of the intensive 40-hour, weeklong course, where teachers have access to high-resolution transmission electron microscopes, atomic force microscopes, and other sophisticated equipment capable of viewing particles at the nanoscale.

After hands-on labs in the University's Characterization Facility, the participants are given time to reflect individually on how they might use the content in their classrooms, then exchange ideas as a group. The curriculum piece is what sets Microscopy Camp apart from other professional development opportunities led by scientists, which can be more like attending a science lecture, says Flynn.

“It had a great balance of hands-on activities, including synthesis of gold nanoparticles and ferrofluid (tiny magnetic particles suspended in liquid—a process used in targeted tumor treatment), expert lectures and demos, and group discussions,” exclaims Peter Grul, a physics teacher at



Washburn High School who is pursuing his M.Ed. at the college. “I left with genuine new knowledge for myself and very usable curriculum for my class.”

When camp wrapped up on July 18, each educator was sent home with a flash drive filled with images from the high-powered microscopes they used and an assignment to write curricula based on what she or he learned. Flynn is providing feedback on the curriculum and will spend the next year visiting each participant in the classroom to provide support as they implement what they learned about matter and about teaching science.

“The reason follow-up is so crucial to professional development is it can be scary to teachers to let students drive content,” Flynn says, explaining that the teacher may not know much about some of the newer technologies or other areas of student interest. “However, that portrays the correct nature of science,” she continues. “Science is not knowing the answers, and you search with colleagues for an answer.”

### **Real-world solutions**

Teachers who participated in Microscopy Camp hailed from across the scientific disciplines—from life sciences to chemistry and physics. Nanotechnology is encouraging this kind of interdisciplinary exchange, explains Flynn, as physicists share their knowledge of atoms, for example, with biologists examining cells as they search for a cure for cancer.

Showing how science can help solve such critical questions—How do we address climate change? What is a better source of fuel, nuclear power or oil from offshore drilling?— helps students see how the discipline applies to their day-to-day life, Flynn says. Students can view subjects such as physics, mathematics, or computer class as boring because they don’t see how individual concepts relate to the important questions in their lives. “They don’t see the relevance to big, global issues,” she says. “We need to incorporate ideas that are fun and exciting and at the same time demonstrate the power of connecting ideas from several disciplines to answer complex questions.”

**Northrop second-graders visited Lake Nokomis to learn more about fish habitat, runoff, and water quality, plus fishing essentials such as casting.**

Demonstrating the relevance of science in the day-to-day world can also spark interest among students from populations that have been underrepresented in STEM-related fields, Flynn continues.

Pointing out science at work in the world is what educators do every day at Northrop Urban Environmental School, an elementary school in Minneapolis. Northrop offers an integrated curriculum that emphasizes the environment and utilizes neighborhood resources such as Minnehaha Creek, Lake Nokomis, and Lake Hiawatha for hands-on learning activities.

“Science begins when a child lies down in the grass and wonders about the ants on the ground or the way the clouds split in the sky,” says Northrop Principal Kathleen Alvig (B.S. ’71, M.S. ’72, Ph.D. ’99). “We’re trying to build scientists from the moment they notice science.” Alvig was named the 2008 Science and Mathematics Elementary and Middle Level Principal of the Year by the Science Museum of Minnesota and the Minnesota Elementary School Principals’ Association.

### Retaining excellent educators

Northrop’s curriculum reflects its principal’s belief that students must be able to do science, mathematics, reading, and writing simultaneously. Beyond the curriculum, however, Alvig knows that science achievement comes from good teacher practices. “I work with excellent teachers who are as excited about math and science as I am,” she says. Weekly professional development meetings foster opportunities to share ideas and have real conversations about teaching.

Such teacher support and ongoing professional development is vital for retaining science teachers, as Roehrig has found through her research into teacher induction programs. “Beginning teachers are still learning,” says Roehrig. “It takes four or five years to become a master teacher, yet 50 percent of science teachers leave the profession before their fifth year. That means we have a lot of inexperienced teachers in the classroom, and this affects student achievement.”

Roehrig is collaborating with Julie Luft from Arizona State University on a five-year study that focuses on how different types of mentoring and induction programs influence beginning science teacher development. In the National Science Foundation-funded study of 115



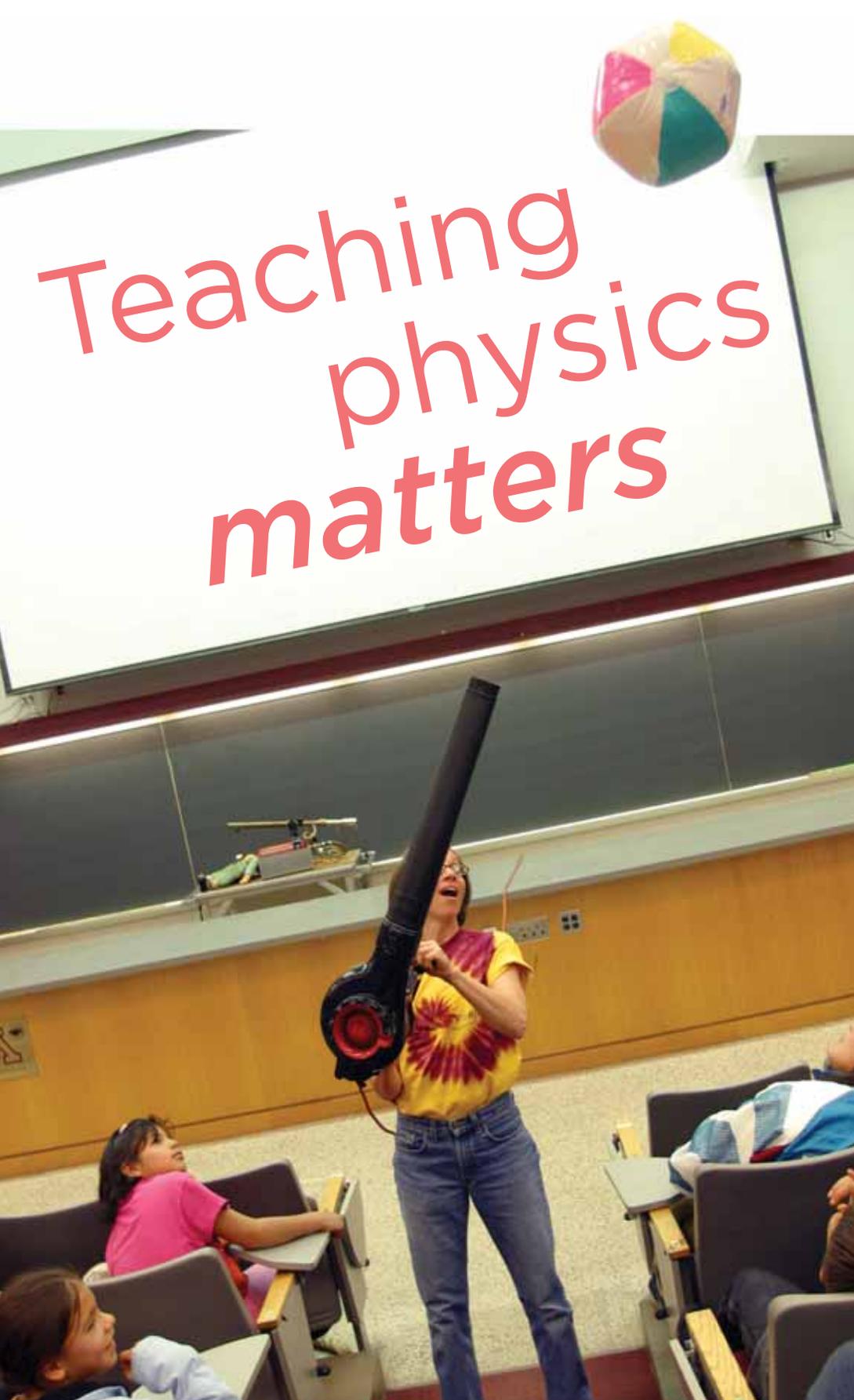
**Northrop Urban Environmental Principal Kathleen Alvig inspires student interest through hands-on learning.**

teachers, they found those who report the highest job satisfaction and most often use inquiry-based teaching methods are ones who had significant practicum and student teaching experiences and six or more credits of science-methods coursework in their teacher preparation programs. At the University of Minnesota, budding science teachers earn 11 such credits and spend a semester student teaching in a middle school and one in a high school.

Continuing science-specific support is also vital to new teachers’ success. At the college this support is provided via an online mentoring program that pairs new teachers with experienced teachers based on grade level and subject matter. “Teachers who feel good about their jobs and are supported in their work are much more likely to stay put,” says Roehrig.

And that experience ultimately leads to more engaged students. “It’s easy to feel as if you are being baptized by fire when you begin teaching,” comments alumnus Jon Anderson (B.S. ’86, M.Ed. ’92), a physics teacher at Centennial High School in Circle Pines with 23 years under his belt. “You may know your subject matter, but presenting it in a way that interests and makes sense to students is different,” he says. “It takes time. Like in any professional field, teachers need ongoing professional development.” ●

# Teaching physics matters



**THOUGH TEACHING PHYSICS** may not (quite) be rocket science, not all physics educators are created equal. Nor are they created in adequate numbers.

According to Theodore Hodapp, director of education and diversity for the American Physical Society (APS), only 1,200 new physics teachers enter the national pool annually. Of those, a mere 400 have a college major or minor in physics. To help avert a critical shortage of qualified physics teachers, APS banded with the American Association of Physics Teachers and the American Institute of Physics to create the Physics Teacher Education Coalition, or PhysTEC. Through partnerships with six colleges and universities nationwide, including the University of Minnesota (an additional six have completed their grants), the program encourages undergraduates to become high school physics teachers and supports early-career educators with training and mentoring.

The University of Minnesota garnered a three-year PhysTEC grant in August 2007, joining the pedagogical expertise of the

**Alumna Nancy Bresnahan applies her passion for teaching and physics as teacher-in-residence for PhysTEC and member of the visiting performance troupe Physics Force, shown at left.**

# MULTIDISCIPLINARY PROGRAM CROSSES COLLEGES TO ENCOURAGE PHYSICS STUDENTS TO TEACH

BY BRIGITT MARTIN

College of Education and Human Development with the content expertise of the Institute of Technology's (IT) School of Physics and Astronomy. Though the program is housed in IT, the value placed on preparing students in how to teach, as well as what to teach, is a hallmark of CEHD's science education program.

"The physics department values research, but PhysTEC will help reform the culture to add a healthy respect for teaching as a possible career path," says Nancy Bresnahan (M.Ed. '91), a veteran physics teacher of 26 years. Bresnahan was hired from the Hopkins school district to serve as a teacher-in-residence—one of the key components of PhysTEC—for the 2007–2008 school year. Teachers-in-residence, sometimes known as master teachers, create connections between university physics departments, colleges of education, and K–12 systems. Bresnahan also taught physics to CEHD students in the elementary education program.

Leon Hsu, associate professor in the Department of Postsecondary Teaching and Learning, notes that being well-versed in science and comfortable in the classroom don't always go hand in hand. "One of the stumbling blocks to [teacher] recruitment is that many people view teaching as an art and not a science. That can be daunting for science students," he says. Hsu is a co-investigator on the PhysTEC grant, along with science education associate professor Fred Finley (curriculum and instruction), and three physics faculty members, including principal investigator professor Cynthia Cattell.

## Building future teachers

To date, the University's PhysTEC program has focused on recruiting physics students into teaching through outreach efforts that include the Physics Force troupe, led by Cattell and other physics professors, which travels to K–12 schools teaching students about science through slapstick and prop comedy. The Physics Force team also includes Bresnahan and a number of other CEHD alumni.

The main method of recruitment, however, involves PhysTEC's learning assistants sub-program, which Bresnahan coordinates. Of the 13 students that participated in PhysTEC last year, 10 freshmen and sophomores were hired as paid learning assistants to support undergraduate physics classes this fall.

Nationally, an average of 15 percent of learning assistants have chosen to become physics teachers, according to Bresnahan. Statistics from APS's PhysTEC Office show that institutions participating in the program have at least doubled the number of physics teachers that were educated over the course of the three years of funding.

"Every problem needs a variety of solutions," Bresnahan notes. "That said, PhysTEC in one year has called attention to the importance of physics teaching."

## The future of PhysTEC

Next year, the learning assistants will be required to declare a major in physics, says Bresnahan. They must also enroll in CEHD's DirecTrack to Teaching program, which exposes undergraduates to the culture and experience of teaching, and may ultimately speed their licensure process. Finley, an experienced science education professor, is investigating how DirecTrack and PhysTEC can align to support the development of physics educators.

And finally, the PhysTEC team is working to create programs to help reduce the high attrition rates among high school physics teachers—in Minnesota, about 58 percent leave within their first five years of teaching, according to the North Central Educational Research Laboratory. To address this critical shortage, incoming teacher-in-residence Jon Anderson (B.S. '86, M.Ed. '92) will develop a physics-teacher mentoring program. Anderson is an award-winning physics teacher at Centennial High School, Circle Pines, and a member of Physics Force.

"Students are more likely to be interested in teaching as a career if good teaching and best practices are modeled," says Cattell. ●

## Setting the standard

Curriculum and instruction lecturer **Terry Wyberg** spent the summer writing curriculum for new Math and Science Teacher Academies, which will bring middle school teachers up to speed on new algebra requirements. Supported by a \$1.5M grant from the State of Minnesota, the academies are being delivered in partnership with Hamline University, Normandale Community College, and Twin Cities school districts.

Over the course of the 2008–09 school year, more than 500 metro-area teachers will learn how to teach Algebra I at the middle school level; the course was previously taught in high school. Meetings throughout the year will give teachers the chance to use what they learn in the classroom and reflect as a group. The academies will integrate pedagogy as well, connecting what research shows about how younger children learn algebra with how teachers communicate with their students.

Wyberg is collaborating with Tamara Moore (curriculum and instruction), and Brian Lindaman from the University's School of Mathematics on the academies. They have received additional funding for a module related to elementary STEM education and hope to include secondary science as well.

## Connecting science with life

Assistant professor **Bhaskar Upadhyay** (curriculum and instruction) is working with immigrant parents and students, particularly from Hmong communities,

to increase participation in science through the Linking Food and the Environment (LiFE) curriculum. The curriculum encourages lower income families and marginalized groups to draw connections between science and technology and their home and community experiences.

Upadhyay hopes to identify student experiences that offer sources of knowledge for teaching science and study how teachers integrate those experiences into the classroom.

## Supporting teacher practice

**Misty Sato**, assistant professor of science education, is helping teachers improve ongoing student assessments and define instructional practices that support this approach. While research has demonstrated that student outcomes improve when teachers apply formative assessment strategies—adapting their teaching to learner response and feedback—studies also show that most teachers do not really comprehend the relevant strategies.

“Assessing student understanding is one of the most important jobs that teachers do,” Sato explains, “and they do it hundreds of times every day, not just at test time.”

As part of Sato's research, ten high school science teachers are integrating formative assessment into their teaching and sharing their experiences in person and online as members of the research team. Sato is examining regulated learning environments and collaborative inquiry while using her research on formative assessments to guide teacher inquiries and to analyze changes in their teaching practice.

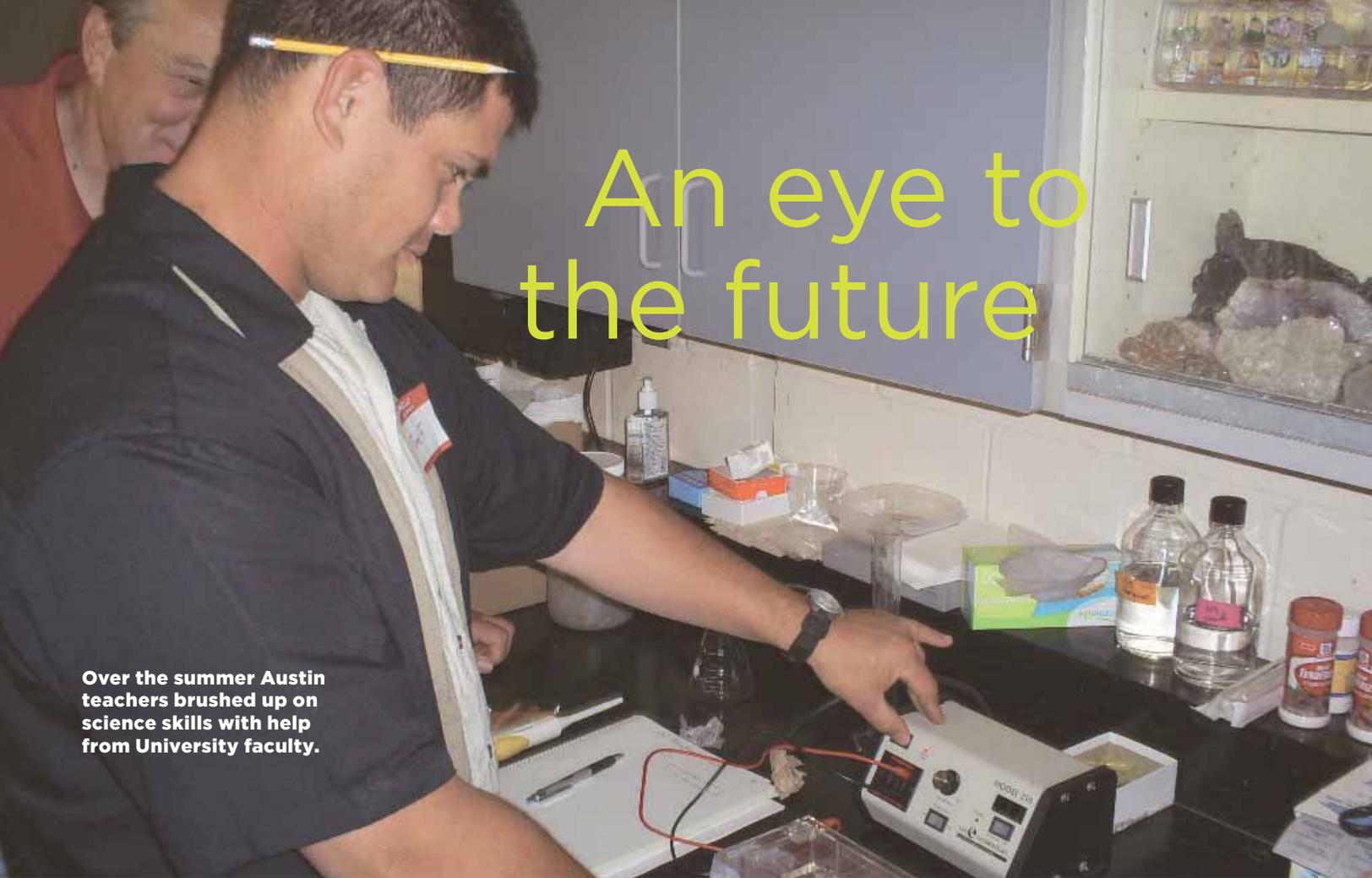
## Preparing students with disabilities

Students with disabilities are less likely to gain the high school-level opportunities and experiences they need to stay current with technology. As a result, they often enter adulthood with limited employment options.

The Institute on Community Integration (ICI) has partnered with Minnesota's Pathways to Employment Project to promote careers in technology for more than 75 Minnesota youth through the High School/High Tech project (HS/HT). This national network gives young people with disabilities access to experiences and resources that may lead to technology-related jobs and ensures they have the supports they need to succeed as adults.

“I can see that the students really enjoy the curriculum, most of which is in work readiness, financial literacy, and adult living,” says ICI's **Joe Timmons**, the state coordinator for HS/HT along with **Ann Mavis**, also from ICI. “Because many students with disabilities spend so much time on remedial academics, HS/HT activities provide developmental opportunities essential for transition-age youth in work and social settings.”

Among other tasks, Timmons and Mavis have been developing curricula and strengthening community supports in a number of local school districts. They are also working with partners including Medtronic and Unity Hospital on e-mentoring and other activities to provide an entrée to work experiences for youth with disabilities. ●



# An eye to the future

Over the summer Austin teachers brushed up on science skills with help from University faculty.

## BUSINESSES DEVELOP TOMORROW'S TECHNOLOGY LEADERS THROUGH K-12 PROGRAMS BY ANDREW TELLIJOHN

**AUSTIN, MINNESOTA, IS SYNONYMOUS** with Hormel Foods and the iconic Spam. The 116-year-old company's headquarters, flagship manufacturing plant, research and development facility, and the Spam Museum all are located within the southern Minnesota town's borders. With about six percent of the town's workforce in its employ, Hormel clearly has a stake in the educational future of Austin's youth.

One year ago the Hormel Foundation announced an unprecedented grant for Austin Public Schools—\$2.8 million to advance science and math proficiency. Of that, \$1.3 million is dedicated to professional development for teachers, which has been designed and coordinated by the College of Education and Human Development.

The foundation earmarked the money for teacher development and specified that the University of Minnesota

lead the program, but it didn't dictate the structure, explained Dick Nunneley, coordinator of graduate studies in the Department of Educational Policy and Administration, adding, "We didn't have a blueprint."

In the end, he and a team from the University, in collaboration with Austin educators, developed a tri-fold approach focusing on content, pedagogy, and systems change via teacher collaboration. The multifaceted effort, coordinated by Julie Kalnin (educational policy and administration), joins experts from the Departments of Educational Policy and Administration and Curriculum and Instruction with faculty from the College of Biological Sciences, the Institute of Technology, and others.

"One of the best ways to increase achievement among our students is to develop teachers in both content

knowledge and pedagogy,” explains John Alberts (M.Ed. ’99), director of educational services for Austin schools, who prepared for his principal licensure at CEHD.

Nearly one-third of Austin Public School teachers—94 in all—representing preK through secondary levels is enrolled in the program. The secondary teachers will pursue certificates or masters of education in science or math. PreK and elementary educators are pursuing interdisciplinary masters degrees in education that include a literacy strand integrated with a math or a science strand. Their tuition and fees are covered entirely by the Hormel Foundation grant, and classes are held in Austin. The foundation also funded improvements to Austin high school science labs with a \$1.5 million grant.

Hormel is one of a number of leading Minnesota companies that are partnering with educators to emphasize the importance of science, technology, engineering, and

math (STEM) education. Innovative leaders such as 3M and Best Buy have committed both financial and human resources to the effort. They, and other companies like them, know that the success of their business rides on educating future employees with strong STEM backgrounds and that strong schools attract top employees.

3M is supporting the college’s efforts to develop leading K–12 STEM educators by funding two CEHD graduate fellows who will help bring best practices for integrating STEM into selected North St. Paul-area middle schools. The 3M Foundation also subsidizes larger efforts to incorporate STEM into the curricula in these districts and supports the Engineering Leadership Program at Mahtomedi Public Schools, where CEHD professors Tamara Moore and Gillian Roehrig are helping the district develop a framework for such STEM integration (see “The Science of Shakespeare,” p. 10).

3M employees also volunteer as tutors in St. Paul High Schools, helping raise participating students’ test scores significantly. In another program, eligible students from the district can take classes at the company’s Maplewood laboratories, where they work a full-time summer job as well.

Such hands-on experiences help students understand how science relates to their interests and their lives, as alumnus Steve Brehmer (M.Ed. ’96), who teaches A.P. physics at Rochester Mayo High School, has discovered. “They know science has a place in life,” Brehmer says. “Until you make it real in some way it’s hard to see where that’s going to be.”

### The greater good

There’s a civic element to these business commitments as well. The future of individual students and of society as a whole may just ride on technological and engineering innovations. Take for example the challenge of climate change, which requires an understanding of basic science and of the principles of engineering and technology that may help address the challenge. Through the college’s GoNorth! Program, sponsored by Best Buy, K–12 students from Texas to Australia collaborate on solutions to climate change, led by Aaron Doering, Bonnie Westby-Huebner Endowed Chair of Education and Technology and an assistant professor of learning technologies. Doering and others teach from their base camp on annual Arctic



expeditions, using a curriculum tied to authentic adventures and an online learning environment.

“We’re truly letting students have the discourse about the issues that are at hand and letting them come up with solutions and possibilities to the situations that we raise,” he says.

GoNorth! wouldn’t be as valuable without the strong support of Richfield-based Best Buy, says Doering. When businesses step to the plate they help not only with funds, but also in creating the vision and providing the expertise necessary for putting together such projects.

“We need to constantly build the relationships that have begun and hopefully will continue so that you have academics and businesses working together on a common good,” Doering says. “That common good is the future of our children. We can do that successfully if we work together.”

### The real payoff

Though Austin teachers just started taking classes with the college in January, their students are already reaping the benefits. This fall a yearlong class that blends physics with engineering concepts in industrial technology will be offered for the first time. Though the class is an elective that must be taken on top of a required life science class, 60 seventh-grade students are enrolled.

The new class is team taught by the industrial arts teacher and a middle-school science teacher who is taking part in the Hormel-funded classes. It’s the type of collaboration that the University partnership fosters, explains Alberts, who is pursuing a Ph.D. in educational policy and administration at the college. During the school year, Kalnin teaches classes to support such collaboration, as well as teacher leadership and school change.

“STEM by its very nature, if done well, should be a collaborative effort,” says Alberts, adding that by creating the systems and structures that support cooperation, he also hopes to effect school and systems improvement.

This summer, the Austin teachers focused on specific content areas, including elementary level literacy for English language learners, taught by curriculum and instruction assistant professor Lori Helman, and science courses led by faculty from the College of Biological Sciences.

The teachers’ improved knowledge and pedagogy



will be reflected in a new pre-Advanced Placement biology course for tenth graders at Austin High School. A chemistry elective will be offered at the eighth-grade level in 2009 to help build excitement early for the high school advanced science classes, says Alberts.

With nearly all of the Austin public middle school and high school math and science teachers involved in teacher development, he says, “rigor and knowledge across the board increase.” A handful of private school teachers are also participating.

### The next generation

Other companies and organizations are supporting STEM with an eye to the next generation. Among a number of related initiatives, the Minnesota High Tech Association (MHTA) is collaborating with college faculty members on cross-functional courses for the Mahtomedi program. Mark Klein, chair of MHTA’s K-12 Committee and vice president of consulting for Accelare Inc., says if the program proves successful, the organization will consider expanding such programs into other schools.

“Businesses need to be more proactive in engaging with educators to envision the future,” says Klein. ●

## APPOINTED

**Ann Edgerton**, *director, University of Minnesota Child Care Center*

Edgerton joins us from Monterey Peninsula College, where she was an instructor in infant/toddler development and childcare center administration. She previously directed the Child Development Center at California State University, Monterey Bay.

## RETIRED

**Mary Berg**, *University of Minnesota Child Care Center; 26 years at the University*

Berg served in administrative roles in the University of Minnesota Child Care Center and was highly involved in the Civil Service Committee, once as its chair and, most recently, as chair of the search sub-committee.

**Harold Grotevant**, *professor, family social science; 18 years*

Grotevant joined the Department of Family Social Science in 1990 and was its chair from 1990–1995 and from 2001–2003. He received an Award for Outstanding Contributions to Graduate and Professional Education from the University's Alumni Association and a McFarland Outstanding Teaching Award from the College of Human Ecology. Grotevant leads the Minnesota/Texas Adoption Research Project.

**Theodore Lewis**, *professor, work and human resource education; 18 years*

Lewis designed the undergraduate degree in technology education, along with the Technology and Ethics course. He was a past program officer at the National Science Foundation, past editor of the *Journal of Vocational Education Research*, and is past president of the

National Association of Industrial and Technical Teacher Education.

**Jerry McClelland**, *professor, curriculum and instruction; 28 years at the University*

Jerry McClelland was a core faculty member for the family, youth, and community program. Her publication credits include *College Teaching* and the *Journal of Research in Rural Education*.

## HONORED

Assistant professor **Shonda Craft** (family social science) is a 2008 winner of the University President's Faculty Multicultural Research Award.

Professor **Sandra Christenson** (educational psychology) received the Minnesota School Psychologists Association 2007-08 Ysseldyke Best Practices Award.

Postdoctoral associate **Christine Greenhow** (curriculum and instruction) received the University's Outstanding Postdoctoral Scholar Award.

Associate professor **Leon Hsu** (postsecondary teaching and learning) received a 2008 Morse-Alumni Undergraduate Teaching Award from the University.

Associate Dean **David R. Johnson** received a 2008 President's Award for Outstanding Service.

**Carol Leitschuh**, research associate and lecturer in the School of Kinesiology, received a Fulbright Award for 2009 to teach and conduct research in the Czech Republic.

Professor **Scott McConnell** (educational psychology) was named the 2008-09 Fesler-Lampert Chair in Urban and Regional Affairs in recognition of his work in early childhood development.

Assistant professor **Bic Ngo** (curriculum and instruction) was named one of the University's Interdisciplinary Graduate Faculty Teaching Fellows for 2008-10.

Associate professor **Frank Symons** (educational psychology) was among the University's 2007-08 Minnesota Futures Grant Program awardees.

## IN MEMORIAM

**Sarabeth Barnes**, *professor emeritus, General College, died January 28 at age 84*

Barnes taught at both Hamline University and the University of Minnesota, joining the faculty here in 1970. She retired from the former General College in 1985.

**Harvey Carlson**, *adviser, TRiO program, died June 29 at age 57*

Carlson began his long association with the former General College in 1991 as a 40-plus year-old freshman. He went on to complete his master's in counseling and student personnel psychology and his doctoral coursework in higher education through the Department of Educational Policy and Administration. Carlson was a highly regarded academic adviser and career instructor, most recently with the TRiO program.

**Gerhard Neubeck**, *professor emeritus, Family Social Science, died January 28 at age 89*

In the 1960s Neubeck taught the first college course on human sexuality, which garnered national media attention. He was the first to use group sessions for marriage therapy and also was the first to pen a book about extramarital affairs. In 1972 he joined the Department of Family Social Science; he retired in 1986.



## connecting with emeriti faculty

# Gary McLean: globe-trotting “retiree”

BY ANITRA BUDD

**THIS PROFESSOR EMERITUS** isn't one to let his passport gather dust. Since retiring last year from the Department of Work and Human Resource Education Gary McLean has

continued to travel to locations from France to Taiwan, advising international organizations on their human resource practices. He also serves as principal of McLean Global Consulting, which he operates with two of his grown children who are also human resource development (HRD) consultants.

Additionally, he has worked on two books, one on cross-cultural approaches to HRD and one on using organizational development to drive social development. “I’m a very efficient worker,” McLean says, by way of explaining his frenetic lifestyle. “I type 120 words a minute, and I’m a multitasker. As a professor I always had anywhere from four to seven articles going at a time. I draw energy from this pace.”

McLean also continues to advise and mentor graduate students from around the world, a job the Morse Alumni Distinguished Teaching Professor relishes. His dedication to teaching is so strong, in fact, that he agreed to continue working with Ph.D. students in the college even after his departure. “My number one commitment is to my students, who have also been the number one priority in my entire career. I’m down to advising 22 doctoral students at the University, which of course doesn’t include my advisees in other parts of the country.”

McLean’s passion for guiding students, particularly those from other countries, is longstanding. During his 38-year tenure in CEHD, McLean held monthly potlucks for HRD doctoral students in his home. He also had a standing practice of hosting international students at Thanksgiving

every year. “Anyone who had no place to go for Thanksgiving could always come over to our house, which sometimes meant throwing Thanksgiving for 50 people at a time!”

Through a partnership with one of his former international students, Ahmad Ajarimah (Ph.D. ’98), McLean helped bring the college’s M.Ed. program in human resource development to Ajarimah’s home country of Saudi Arabia. The satellite program graduated its first class of 24 students in May 2007, with McLean on hand to toast their achievement.

Ajarimah reflects fondly on his adviser and friend: “Gary was the prime mover behind the ... excellent partnership that evolved between the University of Minnesota on one hand and the Arabian Society for Human Resource Management and Saudi Aramco on the other hand. All of the people who’ve met him in our business, including his students,” he continues, “have been touched by his kindness, dedication, [and] understanding of global perspectives.”

But lest you think McLean is all work and no play, the globetrotting consultant is taking time out for relaxation when his new position as senior professor and executive director of international HRD programs at Texas A&M University allows. “My wife accompanies me on most of my trips now,” he notes. “We’re doing lots more vacationing together.” ●

## Thanks for the memories

Faculty and alumni from the human resource development program have initiated a graduate fellowship in Gary McLean’s honor.

“We wanted to let him know that people within the HRD profession understand and admire his contributions to the field,” says Lou Quast (Ph.D., ’03), a former mentee of McLean. “Creating a graduate fellowship in his name is consistent with his values of encouraging scholarship and helping the next generation of students.”

Alumni will match the first \$10,000 toward an initial \$25,000 goal. The University of Minnesota will also match income from the fellowship.

You may contribute online at [giving.umn.edu](http://giving.umn.edu) or by sending a check to: College of Education and Human Development, 48 McNeal Hall, 1985 Buford Avenue, St. Paul, MN 55108. Clearly designate that your gift is for the Gary N. McLean Legacy Fellowship. You may also contact Richard Burbach at 612-625-4546 or [rburbach@umn.edu](mailto:rburbach@umn.edu) for more information.

# teaching+learningtogether

A photograph of two men in suits standing in front of a modern building complex. The man on the left is wearing a tan suit jacket over a green shirt and a patterned tie. The man on the right is wearing a dark suit jacket over a blue shirt and a patterned tie. They are both smiling. The background shows a large, modern building with a curved facade and a plaza area.

## ALUMS FOLLOW PARALLEL PATHS TO VERY DIFFERENT SCHOOLS

BY JESSICA ROYER OCKEN

**SEKOU ROBERTSON AND BRYAN JACKSON** met at summer orientation before their first year at the University of Minnesota. In the 10 years since, their education and career paths have intertwined while their friendship has grown. They credit their camaraderie and the College of Education and Human Development with getting them where they are today. But when they met, neither would have imagined ending up in the classroom.

Robertson started college studying computers, but found his niche in education after volunteering as a tutor. He transferred to CEHD during his sophomore year.

Jackson chose Minnesota for its architecture program. After discovering that he enjoyed teaching complex concepts to children—a requirement in one of his architecture classes—he decided to teach a summer class on the science behind architecture. He still recalls his lesson on “cookie tectonics,” using graham crackers and whipped cream to explain plate tectonics. Soon he joined Robertson in CEHD. “It was hard at first,” he says. “But it was definitely my calling.” Education classes helped broaden Jackson’s perspective from the structured approach he took in architecture. (“Even now I’m drawn to linear design,” he

**Alumni Bryan Jackson (left) and Sekou Robertson reflect on their hometown of Chicago.**

says. “All my ties are stripes.” “I began to understand that education is driven by the teacher but supported by the student,” Jackson explains. “My creativity grew immensely.”

After graduating in 2002 with their bachelors in elementary education foundations, the friends set off for New York and Columbia University’s Teachers College, where future CEHD Dean Darlyne Bailey was academic dean at the time. Their University of Minnesota experiences had prepared them well for the rigors of graduate school, they recall. “Coming in, I knew teaching, child psychology, how to write a lesson plan, how to assess students,” says Robertson.

They also brought with them an understanding of the difference between a teacher and an educator. “A teacher can show you how to ride a bike,” says Jackson. “But an educator instills the value of knowing how to do it when you leave the classroom.”

After completing Columbia’s two-year M.A. program for elementary education in just nine months, both Jackson and Robertson ended up teaching in Chicago—though in very different schools. Jackson teaches third grade at The Latin School, a venerable independent school on the Near North Side. “We have high-profile parents and students, and it’s very different from what I was used to growing up in an urban environment and student teaching in urban schools.”

Yet his skills still apply, and his responsibilities have increased steadily over his four years there. “Being an independent school, [we’re] built around teacher-leaders. A lot of what I do involves curriculum development, nurturing, coaching, and being involved in the Diversity Initiative [a program that ensures classroom curriculum, books, and materials provide a variety of perspectives].”

Robertson had always intended to return to his native Chicago, and he chose LEARN (Lawndale Educational and Regional Network), a Chicago Public Schools-affiliated charter school on the South Side. “There’s a shortage of male teachers, and a deeper shortage of African-American teachers—especially black male teachers in elementary schools,” he says. “I’ve been there five years, and I’m still the only certified black teacher, so I’m an anomaly.”

Though he started in the classroom, over time Robertson advanced to the role of assistant principal

in charge of instruction, where he helps determine curriculum. “The administration recognized my brilliance,” he says with a sly smile.

Although their schools are different, Robertson and Jackson support and advise one another. One challenge they share is the need to gain their students’ trust. Robertson’s students come predominantly from low-income families, where siblings or extended family, rather than parents, may be the primary caregivers. “There’s a craving that students have [for trust and stability]. They want to know if you’re going to be there tomorrow.”

Although Jackson’s students are from the opposite end of the financial spectrum, many don’t spend much time with their parents either. “At my school parents may be traveling to Europe, Spain, China, and kids are raised by nannies,” he says. “How do I instill the value of trust in them if their parents are absent?”

The support the friends offer one another is not limited to discussion. Both have spent time at the other’s school. “Sekou interacts with students in a way that [helps them] feel they can be successful,” says Jackson. “When I went into his classroom, all the kids looked me in the eye and shook my hand, same as my kids in my classroom, and I thought, ‘This is a sign of Sekou.’”

In chatting with one of the students, Jackson casually showed him how to tuck the tail of his tie into the tag on the back. Since that day, Robertson reports, Dwayne has not once failed to have his neckwear in perfect alignment. “I made it a teachable moment,” Jackson says. And then, exchanging a look, the two note in unison, “Minnesota.”

Last summer Robertson was able to help two LEARN students get into the High Jump program at The Latin School. To make sure they had the support they needed in this new environment, he rode his bike to the school and went to class with them. He also told them about his friend Mr. Jackson. “Kids know; good people know good people,” says Jackson. “We watch out for each other.”

When asked about a lesson to pass along, both Robertson and Jackson urge students of all ages to reach out and find opportunities for networking and connection—like they did. “No matter who these people are, you can learn something from them if you make yourself an absorber,” says Jackson. “Information is free.” ●



With the presidential election just around the corner, the buzz is building around who will be our country's new leader. Along with the election comes discussion about appointments to various important posts. All of these appointees are asked

to represent our country and to be goodwill ambassadors for the United States.

This past spring the U of M Alumni Association embarked on a new effort to enlist alumni to be ambassadors for the University. While not an appointed post, an alumni ambassador is an honorary position for which all University of Minnesota graduates are qualified.

How does being an ambassador work? You can volunteer to help students by being a mentor or a career resource. Talk to prospective students about your time at the University and encourage them to apply for admission. Connect with legislators and advocate for the University. Attend Saturday Scholars, march in the homecoming parade with your family, or attend a lecture or a concert. Support the University and our CEHD students through a gift to the annual fund. Join the UMAA.

The list is long and varied. And, if you don't live near campus, you can connect through UMAA geographic chapters, subscribe to e-newsletters, or check out [cehd.umn.edu](http://cehd.umn.edu).

If you already consider yourself an alumni ambassador, we salute you. And if you are an ambassador-in-waiting, don't wait any longer for the honor of serving as an "M-bassador."

Tex Ostvig, B.A. '96  
*president, College of Education and  
 Human Development Alumni Society*

### 1940s

**Virginia Holcomb Bennett Wells** (M.A. '42) passed away on May 2 in Salt Lake City. She was a French teacher, volunteer with Literacy Volunteers of America, taught English as a second language, and volunteered with autistic children.

**Ellen Meyer** (M.A. '43) died on April 29 in Sarasota, Fla. Meyer taught high school in a number of Northern Minnesota schools. She wrote the column "Tales from Tonka" in the *Wayzata Weekly News* and was a piano teacher and cellist.

**Margaret Virum** (B.S. '49) passed away. She was an award-winning teacher in Minneapolis schools who taught primarily first and second grade for nearly 50 years, then continued to volunteer for nine years after retirement. Virum was named one of CEHD's 100 Distinguished Alumni in 2006.

### 1950s

**Patricia Hoyt Neils** (B.S. '59) passed away May 7. She taught at Minneapolis Vocational School, Patrick Henry High School, and in the Wayzata School District. Neils was a member of the Robbinsdale School District #281 School Board.

### 1960s

**Stanley Sahlstrom** (Ph.D. '61) the "founding father" of the Crookston campus, passed away. He is remembered for his leadership, vision, and commitment to the Crookston community and campus. Sahlstrom was a past member of the University Board of Regents and was named one of CEHD's 100 Distinguished Alumni.



The new CEHD Alumni Board took office in June, including **Tex Ostvig (left)**, president, **Carol Mulligan**, vice president, and **Past President Randy Johnson** (not pictured, **Jon Oyanagi**, secretary/treasurer).

### 1970s

**Jim Holden** (M.A. '72) has written *Tennis in the Northland* (2008, Ingram, Baker & Taylor), a comprehensive 75-year history of boys' high school tennis in Minnesota. Holden is a retired English teacher and tennis coach of Northfield High School and professor emeritus of education at Gustavus Adolphus and St. Olaf colleges.

### 1980s

**Mary Endorf** (Ph.D. '87) will receive the University's Alumni Service Award for her volunteer service to the college and the University. The award will be presented at the October 29 UMAA Awards Celebration.

Don't forget to keep in touch! Send your news to Heather Peña, assistant alumni director, [hpena@umn.edu](mailto:hpena@umn.edu). Or keep the conversation going on our social networking page, [cehdconnect.ning.com](http://cehdconnect.ning.com). Also, don't miss out on receiving the *E-Connect* electronic newsletter filled with timely news and information about alumni activities and news, which replaces the *InterConnect* paper newsletter. Opt-in by going to: [cehd.umn.edu/alumni](http://cehd.umn.edu/alumni).



**JOIN US!**

For specific information on these events go to [cehd.umn.edu/alumni](http://cehd.umn.edu/alumni)

**Second Annual Wine Tasting Alumni Social  
St. Croix Vineyards, Stillwater**

**October 15, 5 p.m.**

**\$10 per person**

Tour the vineyard and taste Minnesota-made wine. A special invitation is extended to GOLD (graduates of the last decade) alumni. RSVP by Oct. 10.

**Second Annual CSPP Alumni Reception**

**October 23, 5:30-8 p.m.**

**Education Sciences Building**

Alumni of the counseling and student personnel psychology program are invited for networking and a presentation by professor John Romano on "Prevention science: Enhancing well-being and mental health across the life cycle." RSVP by Oct. 15 to Salina Renninger, [renni001@umn.edu](mailto:renni001@umn.edu).

**Women's Philanthropic Leadership Circle  
Fall Kickoff Event: Women on the court and  
in the classroom**

**October 27, 5:30-7:30 p.m.**

**Campus Club**

**Free and open to non-Circle members**

Panelists Maureen Weiss, co-director, and Nicole LaVoi, associate director, of the Tucker Center for Research on Girls and Women in Sport; Pam Borton, coach, U of M Women's Basketball Team; Ashley Ellis Milan, CEHD student athlete; and Lea Olsen, former player and tri-captain of the U of M women's basketball team, sideline reporter for the Minnesota Timberwolves, and in-arena host for Wolves Vision will discuss what it takes to be a successful female athlete and student.

RSVP by October 17 to 612-625-1310 or contact [sbeyer@umn.edu](mailto:sbeyer@umn.edu).

**University of Minnesota Homecoming:  
Marching into the Future**

**October 27-November 1**

**October 29**

**UMAA Awards Celebration**

**5-7:30 p.m.**

CEHD alumna Mary Endorf (Ph.D. '88) will be recognized with a University of Minnesota Alumni Service Award.

**November 1**

**Homecoming parade**

**9 a.m.**

**Minnesota Gophers vs. Northwestern**

**11:00 a.m.**

March with CEHD students, staff, faculty, alumni, and friends, socialize at Burton Hall after the parade, and cheer for the Gopher football team.

**Lecture by Paul Rusesabagina**

**November 3, 7:30 p.m.**

**Northrop Auditorium**

**Free and open to the public, no tickets required**

Join us for a special evening with Paul Rusesabagina, author of *An Ordinary Man*, which was the basis for the acclaimed 2004 film *Hotel Rwanda*.

Rusesabagina's public lecture complements the college's new First Year Experience. Discuss the book with other alums at [cehdconnect.ning.com](http://cehdconnect.ning.com).

**UMAA Minne-College**

**January 24**

**Naples, Florida**

**March 7**

**Scottsdale, Arizona**

Snowbirds and alumni who live in Florida and Arizona are invited to participate in a day of learning. Visit [alumni.umn.edu](http://alumni.umn.edu) for event details or call 1-800-UMALUMS.

**Deadline for CEHD Alumni Society Awards  
nominations**

**January 31**

Nominate alumni for the Gardner, Mork, Wilson, and early career awards. Go to [cehd.umn.edu/alumni](http://cehd.umn.edu/alumni) for criteria and nomination forms.

# Women working

## WPLC OFFERS A NETWORK OF EDUCATION AND SUPPORT

**“We are volcanoes. When we women offer our experience as our truth, as human truth, all the maps change. There are new mountains.”**

— Ursula LeGuin, author

**THESE WORDS**, initially delivered at a college commencement address, describe a transformational group of women in our own midst: The Women’s Philanthropic Leadership Circle (WPLC).

WPLC strives to raise the overall visibility of women leaders in education and human development and provides financial support to women in educational leadership positions. When it was founded in 2002, the circle was the only women-centered philanthropic group at the University.

Development officers in the college had discovered that married couples who had both attended the University tended to make donations to the husband’s college rather than the wife’s. “Despite the success of University-wide fundraising at the time, we observed that a disproportionate amount of those donations were going to other collegiate units,” explains Lynn Slifer, director of external relations in CEHD. WPLC was formed not only to raise money for grants and scholarships, but also to teach women about the importance of philanthropy and the impact of collaborating with other like-minded women.

In 2003 a similar women’s philanthropy group was founded in the former General College, and the circles joined three years later. Since their inception, the groups have raised a combined total of \$300,000 and given nearly \$90,000 in scholarships, program support, and research aid to promising faculty, staff, and students.

The circle holds an annual awards celebration to honor achievement and leadership by three groups: graduate students; CEHD staff with exceptional professional and community activities; and female junior faculty members, or Rising Stars, whose research, teaching, and outreach hold great future promise. Doctoral student Julia Conkel (educational psychology) used her financial award to present research at an international diversity conference, while Noriko

Ishihara (doctoral student, curriculum and instruction) used part of the funds for a data collection trip to Japan.

Founding WPLC member and chair of the group’s Steering Committee Andrea Hjelm (B.A., ’65) expresses enthusiasm about the group, which is echoed across the college. “It gives me great pleasure to be a part of a circle that is innovative in its intent,” she says. “I feel a sense of pride in watching our recipients receive and utilize the funds we present to them.”

One of the group’s hallmarks is its approach for distributing money for awards and scholarships. Members decide annually as a group where to direct their donations within the college. “Women tend to make charitable gifts that will reflect their values and to create change, and they want the charity to be accountable for the use of their money,” says Slifer. To that end, WPLC is highly intentional about making all financial decisions democratically.

Women join WPLC at one of several tiered levels starting at \$500 per year. Members meet several times each year to build relationships and to learn more about personal finance and philanthropy. Past WPLC workshops and seminars have touched on strategies for aging with vitality, differences in how men and women make financial decisions, and personal stories from women leaders on the “frontlines” of education.

To find out more about joining WPLC, visit [cehd.umn.edu/giving/circle](http://cehd.umn.edu/giving/circle) or contact Women’s Circle Coordinator Raleigh Kaminsky at 612-626-1601 or [kamin003@umn.edu](mailto:kamin003@umn.edu). ●

### 2007–08 award winners

#### GRADUATE SCHOLARSHIP RECIPIENTS

**Joletta Falknor**, curriculum and instruction

**Abigail Gadea**, social work and Humphrey Institute

**Jinous Kasravi**, educational policy and administration

**Nancy O’Brien**, educational policy and administration

**Chia-Chen Tu**, educational psychology

#### RISING STAR AWARD

**Tamara Moore**, curriculum and instruction

**Misty Sato**, curriculum and instruction

#### STAFF AWARD

**Venoreen Browne-Boatswain**, Student Services

# report to donors 2007-08

## Celebrating philanthropy

Private giving is critical to enhancing the University of Minnesota's teaching, research, and outreach. To recognize the important role donors play, the University of Minnesota established a University-wide donor recognition program. The Presidents Club recognizes those individuals and organizations whose lifetime giving totals \$25,000 or more, or who make future gifts of any amount.

The names listed in this roster are donors to the College of Education and Human Development and qualified for membership in the Presidents Club either before or during the fiscal year ended June 30, 2008. Also listed are donors to the Women's Philanthropic Leadership Circle and annual donors of \$1,000 or more. A complete donor list is available at [cehd.umn.edu/giving](http://cehd.umn.edu/giving).

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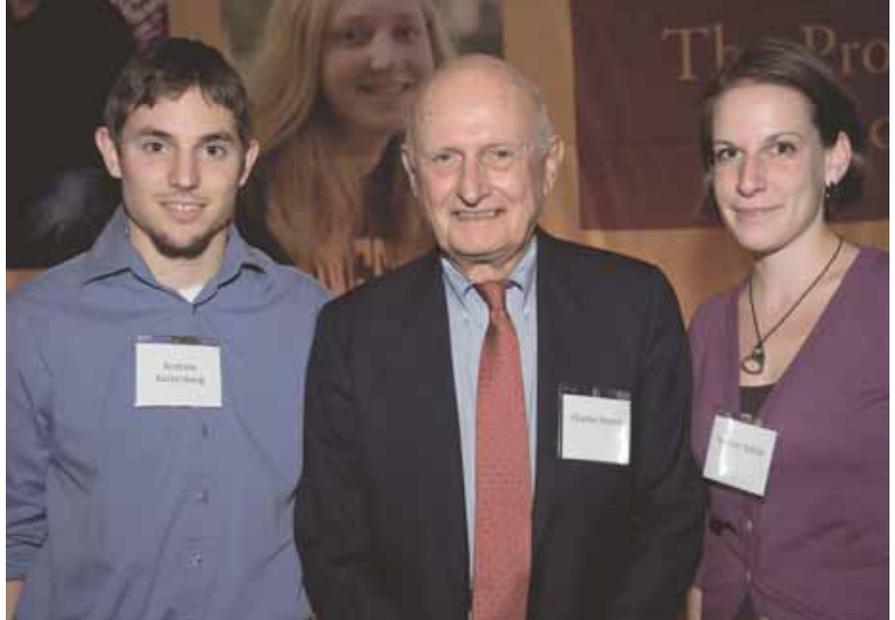
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Members and guests enjoy a Women's Circle reception at Eastcliff.

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**Noriko Gamblin**  
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## How to give in uncertain times

**THERE IS NO QUESTION** that we are facing challenging times—the subprime mortgage crisis, rising oil and gas prices, a faltering economy, and less money available for student loans. It can be difficult to think about making charitable gifts in times like these, but this is when places like the University and the College of Education and Human Development need your support more than ever.

There are a number of ways you can make a gift without making a dent in your monthly cash flow. Recently, an alumna made a generous estate gift through her will because she wanted to maintain her annual giving of \$1,000 a year to the Department of Family Social Science and felt that a major gift out of her current income would preclude that. Another donor established a large will bequest and then decided to set up a current scholarship—into which the bequest will eventually be added.

Estate gifts offer you a simple and, in some cases, a revocable way to give a future gift. Options include:

- + **WILL BEQUEST**—can be made in the form of property, a stated dollar amount, or a specified percentage of your estate
- + **RETIREMENT PLAN ASSETS**—can be designated to the college when you name the University of Minnesota Foundation to receive all or some portion of your account assets
- + **LIFE INSURANCE**—can be designated to the college by naming the University of Minnesota Foundation as an irrevocable beneficiary and/or owner of the policy.

If you would like more information on making an estate gift—and benefiting future students and faculty—please contact the CEHD development office at 612-625-1310.



Lynn Slifer, *director of external relations*

**SAMPLE LANGUAGE FOR WILL BEQUEST:** “I give, devise, and bequeath to the University of Minnesota Foundation, Minneapolis, Minnesota, 55455 [percentage of revenue, sum, or description of property], the principal and income of which shall be distributed by the Board of Trustees to the College of Education and Human Development for the purpose of [state purpose such as scholarships, unrestricted, program support, etc.]”

## New gifts and commitments

**Drs. J. Andrew Holey** and **Gary S. Whitford** have made a future gift of \$250,000 through their estate to create the Whitford Holey Fellowship.

A gift of \$154,000 from the estate of **Mollie Soell Weinberg** will benefit The Mollie and Meyer Weinberg Endowment for Child Development and Public Policy.

The **Irving Harris Foundation** has made a gift of \$100,000 for the Irving B. Harris Institute for Infancy Training.

**Jane H. McNamara** has made a future gift of \$100,000 through her estate to provide undergraduate scholarships for immigrant or foreign-born students.

The **3M Foundation** has made a gift of \$90,000 for science, technology, engineering, and mathematics (STEM) graduate fellowships.

**Floyd A. Tweten** has made a future gift of \$60,000 through his estate to benefit the School of Kinesiology.

**Karen Sternal** has made gifts of \$56,708 to benefit the I Have a Dream Scholarship program.

**Professor Mary E. Corcoran** has made a gift of \$50,000 to benefit the Educational Evaluation and Policy Studies Fellowship Fund.

**Jeanne Lupton** has pledged \$100,000 to create the Jeanne Traphagen Lupton Legacy Scholarship.

**Dr. Matthew Stark** has made a gift of \$50,000 to create the Dr. Matthew Stark Civil Rights and Civil Liberties Faculty and Student Award.

**Frank Braun** has made a gift of \$25,000 to benefit the CEHD Alumni Society Scholarship for Study Abroad.

**Karyn Gruenberg Goldstein** has made a future gift of \$25,000 through her estate to benefit the Jimmy and Karyn Goldstein Scholarship Fund.

**Thomas J. Libby** has made a future gift of \$25,000 through his estate to benefit the CEHD Art Education Endowed Fellowship Fund.

The **Mardag Foundation** has made a grant of \$25,000 for the Learning Dreams program.

# CE+HD

COLLEGE OF EDUCATION  
+ HUMAN DEVELOPMENT

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Institute of Child Development Director Nicki Crick, Emma Birkmaier Educational Leadership Professor, is researching relational aggression in young girls with the use of a single ice cream cone—for three girls. Or, she offers them a picture to be colored and three crayons, but only one color that will work. Crick observes if the kids share or if they physically or relationally bully one another. By understanding aggression, we may learn to curb it at an early age.

Watch Crick explain her research in detail at [discover.umn.edu/featuredDiscoveries/curbingAggression.php](http://discover.umn.edu/featuredDiscoveries/curbingAggression.php) and see her Driven to Discover television ad at [www.discover.umn.edu/viewCampaign/televisionCurbingAggression.php](http://www.discover.umn.edu/viewCampaign/televisionCurbingAggression.php).

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