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**HUMAN  
SCIENCES**

Winter 2012-2013

# Matters

**TRANSFORMING  
EDUCATION**



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digital age

Cultivating research-  
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*Pamela White, dean of the College of Human Sciences, congratulates Holly Buck, a 2012 graduate in elementary education selected as University Marshal for the commencement ceremony. The university-wide initiative Moving Students Forward will help more College of Human Sciences students achieve their dreams. Photo by Wyeth Lynch.*

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Dear Alumni and Friends,

Education is a crucial part of expanding human potential and improving people's lives. From nutritional counseling to financial literacy programs, the College of Human Sciences is devoted to advancing knowledge and skills across a wide range of disciplines.

Our newest academic unit, the School of Education, is already transforming how we approach teaching and learning in an increasingly complex world. Whether conducting award-winning research or serving their communities, School of Education students, faculty and staff members, and alumni are responding to 21st century challenges and remapping what education can achieve.

They're developing new technologies, promoting high-quality educational programs in literacy and STEM (science, technology, engineering, and math), and fostering leadership and civic engagement. They're also advocating for students' needs at the White House, creating educational tools for cancer patients, and building grassroots connections with schools across the U.S. and the globe. The School of Education is off to a promising start, and we've established an ambitious vision for its long-term future.

To expand all our students' opportunities for learning, we hope you will consider participating in Moving Students Forward, Iowa State University's five-year effort to raise \$150 million for student support. Scholarships not only enable young people to attend Iowa State, but they also help students excel in the classroom and participate in activities that build skills, character, and confidence. Although the College of Human Sciences awards over \$800,000 in annual scholarships, we are able to reach only 10 percent of our students. Moving Students Forward seeks to raise that number substantially.

Through this initiative, the college seeks new gifts for scholarships, international learning experiences, diversity enhancement, and graduate fellowships.

Thank you for considering support for our great students in the College of Human Sciences. For more information on how to contribute, please visit [www.foundation.iastate.edu](http://www.foundation.iastate.edu).

Best wishes,

Pamela J. White  
Dean



*Ralph E. Reynolds, the inaugural director of the School of Education, is working toward a bold vision for the school's future. Photo by Bob Elbert, Iowa State University News Service.*

## School of Education sets ambitious long-term goals

By Sarah Burke

When Ralph E. Reynolds became inaugural director of the Iowa State University School of Education on July 1, he began working toward a bold, innovative vision for the school's future.

"Our goal is to expand the school's prominence and influence, entering the national rankings within three to five years," Reynolds said.

At the undergraduate level, Reynolds said that the School of Education "strives to create the best teachers anywhere. We want their skills and leadership to reflect well on Iowa State."

To support this mission, Reynolds plans to cultivate a distinctive "brand" for Iowa State teachers, emphasizing three main areas of expertise: science, technology, engineering, and math (STEM) education; literacy and reading education; and the social contexts of education – a nuanced understanding of difference, diversity, and their impact on student achievement.

At the graduate and faculty level, the school has established four key areas

for research – the three listed above and Pre-K-20 education, leadership, and policy.

To support its STEM focus, the school's faculty plans to work with university extension staff to combine outreach efforts with academic inquiry, exploring best practices in STEM education and teacher preparation. This partnership will support governmental initiatives to improve STEM education, opportunity, and advancement throughout Iowa.

"Taking the resources of our university to our youngest citizens – both rural and urban – is critically important," said Cathann Kress, vice president for Iowa State University Extension and Outreach. "Our collaborative outreach will focus on Iowa communities and will be coordinated with our K-12 youth outreach and 4-H youth development staff."

Reynolds also has long-term plans to establish a literacy research focus at Iowa State, responding to new challenges facing Iowa classrooms.

"With Iowa's adoption of the Common Core State Standards, this is an

### On the cover:

Sixth grade students at Gilbert Middle School gather around an iPad to explore a digital text. Their language arts teacher, Samantha Kelley, partnered with Amy Hutchison, an assistant professor in the School of Education, to implement these devices effectively for digital and print-based literacy learning. Photo by Wyeth Lynch.

This issue highlights the School of Education's innovative research, programs, and community outreach efforts linked to four signature areas of expertise – science, technology, engineering, and math (STEM) education; literacy and reading education; social contexts of education; and Pre-K-20 education, leadership, and policy.

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*The School of Education executive team discusses strategies for reaching their short- and long-term goals. Photo by Wyeth Lynch.*

*Continued from page 3*

exciting time to be researching and rethinking the ways we teach literacy and critical thinking across content areas,” said Donald Bear, a professor in the School of Education.

As Iowa’s classroom demographics continue to change, the School of Education will also investigate how social contexts of education impact achievement for diverse student populations.

“The school’s reorganization brings faculty from previously separate departments together, allowing for collaboration on social contexts issues,” said Katherine Richardson Bruna, an associate professor in the School of Education.

Jeff Brooks, also an associate professor in the School of Education, said that

the Pre-K-20 education, leadership, and policy team will explore issues related to student achievement; leadership development; and ensuring that students, faculty, and other educational professionals are able to promote and practice excellence and equity.

“We are working to provide an infrastructure that both supports our talented leadership and policy scholars – both students and faculty – and that makes their work more accessible to policymakers and the public,” Brooks said.

Robert Reason, an associate professor in the School of Education, also noted the importance of supportive, knowledgeable grant enhancement staff.

“We will be building upon the existing strength within the school to create a one-stop shop for faculty members to find support for their research and grant activities,” Reason said.

As the School of Education works toward its vision, Reynolds views its wide-ranging goals as mutually enhancing.

“By building on our traditional strength in teaching,” Reynolds said, “we can enhance the caliber of our programs, the influence of our research, the quality of our students’ educational experiences, and alumni impact on the school system and public policy – ultimately transforming the whole educational landscape.”

## Science Bound builds minority interest in STEM

*By Scott Schrage*

As Iowa State’s first black student, famed alumnus George Washington Carver pioneered research in the field of botany even as he blazed a path for future generations of minority students to attend the university.

Since 1990, an Iowa State program called Science Bound has carried forth this legacy by identifying minority students with aptitudes in science and math, sparking their interest in the

fields, and offering a route to higher education. Students who complete the program’s curriculum, which runs from eighth grade through their senior year of high school, receive full scholarships to Iowa State upon deciding to major in a technical field. To earn those scholarships, students must participate in at least 75 percent of the program’s activities – which range from science fairs to math workshops to job shadowing – while maintaining a 3.0 grade point average each semester.

Connie Hargrave, an associate professor in Iowa State’s School of Education and director of Science Bound since 2006,

has helped the program expand to more than 20 schools throughout Des Moines, Denison, and Marshalltown. According to Hargrave, 372 pre-college students currently participate in Science Bound, while 65 of the program’s graduates currently attend Iowa State.

“The university should be proud of itself for fulfilling its land-grant mission in an area where there’s so much need,” said Hargrave. “Students who might not have thought they could excel in [science, technology, engineering and math] are doing just that.”





*Heather Edwards, a Symbi graduate fellow, demonstrates how to extract DNA from fruit at Harding Middle School in Des Moines. Photo courtesy of Symbi.*

## Symbi brings expert scientists to Iowa classrooms

By Sarah Burke

Des Moines students are making biodiesel, extracting DNA from fruit, testing water quality at Gray's Lake, and designing their own experiments to answer intriguing questions about the world – all with guidance from resident scientists and engineers.

The National Science Foundation's (NSF) Graduate STEM Fellows in K-12 Education (GK-12) program answers a challenge President Obama posed to the nation's scientists in 2009 to "spend time in the classroom."

Symbi – Iowa's only GK-12 program – trains Iowa State University graduate student scientists to collaborate with middle and high school teachers. Now entering its third year of operation, Symbi is funded by a five-year NSF grant and housed in Iowa State's Center for Biorenewable Chemicals.

"Symbi allows for exciting collaborations between the College of Human Sciences and the College of Engineering," said Mari Kemis, assistant director of Iowa State's Research Institute for Studies in Education. "Together, we can teach fellows how to share their research with the public, provide resources and professional development for classroom teachers, and grow Iowa's economy by sparking young people's interest in STEM fields."

Denise Crawford, director of Iowa State's Center for Technology in Learning and Teaching, coordinates Symbi's professional development for graduate fellows. After completing a training workshop in May, the fellows visit classrooms one day each week the following school year, partnering with

teachers to deliver hands-on learning opportunities – from building electric motors to collecting data on turtles.

Throughout the experience, graduate fellows meet with Crawford biweekly to develop new teaching skills and strategies.

"The graduate fellows are expert scientists, used to working in a research laboratory and communicating with other specialists," Crawford said. "Our goal is to help them translate their research to a classroom setting and make science engaging for an audience of young students."

Kemis, who oversees program evaluation for Symbi, surveys students, fellows, and classroom teachers at the beginning and end of the school year to track the program's impact on each group.

"At the beginning of the program, students think engineers are car mechanics, or train operators. After working with fellows in the classroom, they have a better idea of what professional scientists and engineers do, and they express greater interest in pursuing those fields," Kemis said.

Classroom teachers also benefit from hosting graduate fellows. Symbi's grant funding helps provide schools with scientific equipment, access to iPads, and lesson plans educators can replicate in subsequent years.

Amy Kissell, a science teacher at Brody Middle School in Des Moines, said, "The professional development I have received and collaboration time I have had with my fellow has led to one of my best years in the classroom."



Ankeny High School students take algebra assessments developed by associate professor Anne Foegen and her research team. Photo by Wyeth Lynch.

## Federal grant sends algebra assessment to local districts

By Jessica Lown

If “ $x + 9$ ” equals “ $18 - 2x$ ,” what is the value of “ $x$ ”?

Every day, high school students across the country struggle to solve problems such as these and to grasp the basic concepts of algebra. The National Assessment of Educational Progress (NAEP) revealed in 2009 that only 34 percent of eighth graders achieved proficiency in mathematics. For high school seniors, that number dropped to 26 percent.

“The results are alarming. But it’s a wake-up call for how we teach and how we assess,” said Anne Foegen, an associate professor in the Iowa State University School of Education.

Since 2004, Foegen and a team of researchers have worked to create, test, and distribute assessment tools designed to help mathematics teachers more clearly measure whether students are meeting goals for learning basic algebra concepts. The progress monitoring assessments consist of five- to seven-minute tasks, administered frequently throughout the school year. Once the scores are evaluated, algebra teachers create a graph to visually depict a student’s progress.

Foegen said, “These scores are indicators, the academic equivalent of height and weight measurements for babies.”

In the current phase of research, Foegen and her project partners are working to create a web-based system for algebra assessment distribution and training. Once complete, the website will also enable teachers to input scores and have their students’ progress graphs plotted out for them, whereas assessment results are currently graphed manually.

“Online training is very big right now,” said Candee Morrison, a special education teacher for the Ankeny School District. “I think that would be wonderful. Teachers could use it [online assessment training] as in-service.”

Morrison has been using Foegen’s algebra assessments in her classroom for nearly four years. Last year, she convinced her entire district to implement the assessments to track algebra progress for all seventh, eighth, and ninth graders. Despite initial objections over time constraints, Morrison says teachers are now giving positive feedback.

“It’s very powerful. When we go through the item analysis, we can say to the student, ‘This is the concept you’re missing, and so that’s why we’re going to practice that area today,’” she said.

Parents and students also benefit from reviewing the assessment graphs, said Morrison. “Talk about self-esteem! What a booster. When the student can see progress, it’s a huge motivator.”

Including Ankeny, educators in six Iowa school districts or area education agencies have received the in-person algebra assessment training, as have teachers in 18 other states.

Jeannette Olson, one of Foegen’s research partners and program coordinator for the project, has worked closely with algebra educators, teaching them how to properly administer the assessments and interpret scores. She said teachers are eager to have access to such tools, which “specifically address the algebra skills and concepts being taught in their classes. There just haven’t been progress monitoring assessments for mathematics at the secondary level.”

Once the online training site is complete, Foegen and Olson hope access to the assessment training and tools will grow exponentially.

Foegen said, “We are excited that our work, which has been supported with funding from the U.S. Department of Education’s Institute of Education Sciences, is making an impact in algebra classes and providing teachers with assessment tools they value.”

Olson said, “We want to make sure that more students succeed in algebra. That’s the bottom line. Because if you can succeed in algebra, it opens so many more doors for you, so many more careers.”





Kaylee Vanness (elementary education, '11) completed her international student teaching assignment in Norway. Contributed photo.

## Student teachers broaden geographic, cultural horizons

By Sarah Burke

While most Iowa State University student teachers complete requirements locally, sites outside of central Iowa are gaining popularity.

International opportunities are available in Indonesia, Italy, New Zealand, Norway, Puerto Rico, and Spain; with new sites developing in Poland and Turkey. In the U.S., Iowa State partners with schools in Cedar Rapids, Chicago, Omaha, and Houston. For national sites, Iowa State looks for urban districts containing a broad spectrum of schools, from under-resourced buildings to high-performing charter schools specializing in science or fine art.

Clinical experiences coordinator Ann Pierce said, "If students are going outside of central Iowa, we want them to have an experience they can't have anywhere else."

The School of Education applies the same philosophy to its international model. Unlike other universities, Iowa State does not place student teachers on military bases overseas.

"There are so many positive aspects to teaching American students in a

DOD [Department of Defense] school, but we prefer to fully immerse our student teachers in the local culture," said Hina Patel, director of teacher education services.

At each international site, one faculty member from Iowa State oversees student teachers, performs a site visit, and builds relationships with local educators and administrators.

"We believe in grassroots connections and strong Iowa State supervision for our students, and that's the core of what makes us different," Pierce said, noting that other universities coordinate student teaching through private agencies, providing less support from faculty at home.

Pierce also stressed that participants need not be savvy travelers or speak another language to student teach internationally. Several layers of support allow them to succeed – extensive pre-departure preparation, strong supervision from home faculty, and close-knit cohorts of fellow student teachers from Iowa State.

"Once they get past their initial discomfort, it's a transformative

## Trpkosh impacts music education in Indonesia

By Sarah Burke

As an international student teacher, Joe Trpkosh made such an impact on Sampoerna Academy in Palembang, Indonesia that the principal asked him to stay as a full-time music teacher – a challenge Trpkosh accepted with enthusiasm.

"Staying in Indonesia was a huge leap of faith for me," Trpkosh said. From January to July 2012, he developed innovative music curricula and supplemental English conversation programs – all for a salary of \$300 per month.

"Joe is unquestionably a service-minded educator," said Hina Patel, director of teacher education services. "He was teaching music in a school that had limited sheet music, instruments, and funding, but he used his creativity to come up with engaging lesson plans."

In the diverse, industrial region surrounding Palembang, education is an opportunity rather than a right. All students at Sampoerna Academy are socioeconomically disadvantaged English language learners selected for their academic promise, leadership qualities, and motivation to learn.

experience," Pierce said. "They soar, they feel strong, and they feel like they've accomplished something. It's very empowering for a student."

# Bear to expand capacity, resources of Duffelmeyer Reading Clinic

By Jessica Lown

Donald Bear, a newly hired professor in the School of Education, has big plans for the Fred Duffelmeyer Reading Improvement Clinic.

"In terms of growth, we'd like to expand the schedule to include the fall, expand the diagnostic services, and make ISU a place for a master's in literacy education. For educators interested in research and literacy leadership, we plan to expand our doctoral program," said Bear. "We have a dynamic literacy faculty in the School of Education with varied interests including new and digital literacies, reading and writing in second languages, reading difficulties, and intervention. I am pleased to be a part of the team."

In operation for several decades, the reading clinic functions as a learning center for both educators and children who struggle with reading. Graduate students or current teachers acquiring a reading endorsement take several courses in the School of Education designed to supply the clinic with tutors. In this arrangement, the tutors gain practical experience in literacy development while the children benefit from highly specialized lesson plans reviewed by Bear and Iowa State's doctoral students, as well as other exceptional literacy leaders who serve as mentors in the clinic.

"Rarely do you have a chance to take such a close look at your students. And rarely do you have someone



*A young student looks on as a graduate student tutor in the Duffelmeyer Reading Clinic reads aloud. Photo by Kara Cipolloni.*

supporting you every step along the way and thinking with you about what you're doing. And then, you're having the opportunity to work with someone who is struggling, and all the social dimensions that come with learning difficulties," Bear said.

For Megan Mahoney, an elementary education graduate ('12) taking the course for her reading endorsement, the class has helped her think more deeply about which teaching strategies best address each situation she encounters.

"I enjoy the one-on-one interaction with my tutee," Mahoney said. "We started by assessing each of our students to find out where they're at in their reading. From there, we work with our tutees to help them improve. I see my tutee's love for reading coming through. She's grown so much in such a short time."

Seeing even more children grow and increase their reading skills is exactly what Bear envisions for the clinic. In addition to the spring and summer clinics, he wants to expand and offer

the reading clinic in the fall. Bear is also looking at changing the tutoring dynamic, so each tutor will work with small groups of students.

Bear commented, "It has been one-on-one in the past, and it will continue in that way to some extent. However, I want to broaden it to small groups of two or three, for three reasons: One, you get the student interaction and that makes it fun. Two, we can serve more children. And three, it's like what will happen in the regular classroom."

Bear is also excited about expanding the School of Education's master's program to offer a specialization in literacy and further disseminating the reading clinic's tutoring model.

"What we find is our literacy specialists who graduate from our certificate program use this model to open tutoring programs in their schools. Often, literacy specialists are asked to establish a tutoring program and so they can use this model," said Bear. "We export what we do in our tutorials to school districts around the country."

**The Human Sciences Career Services office has discontinued its credential file service for teacher education graduates and will destroy old credential files.**

**For more information, visit [www.hs.iastate.edu/credentials](http://www.hs.iastate.edu/credentials).**





*Brittany Kuntz (left), a senior in elementary education, collaborates on classroom technology integration with Justin Morton, an Iowa State alumnus (elementary education, '98) and sixth grade math teacher at Roland-Story Middle School. Contributed photo.*

## Future educators implement technology in public schools

By Scott Schrage

From Wi-Fi and wikis to Tumblr and Twitter, K-12 students have clearly embraced the digital age. Iowa State now offers its own students – and future educators – the chance to help local teachers do the same.

When the Roland-Story School District decided to adopt a “one-to-one” policy – providing a laptop or tablet for every student – administrators contacted Denise Crawford, director of Iowa State’s Center for Technology in Learning and Teaching, to help with implementation.

Last fall, five Iowa State teacher education students began collectively providing 40 hours of weekly technology support, to ensure that Roland-Story teachers and students could best utilize roughly 1,000 new MacBook Air laptops and iPads. The internship coincides with the Iowa State students’ pursuit of a learning technologies minor in the School of Education.

Derek Robison, a senior in elementary education, said the internship has

provided practical insights that traditional curriculum cannot.

“If the Internet were to go down, how do I fix it? How do I manage devices in terms of restrictions? This experience is showing me the technical side of technology in schools,” Robison observed. Crawford agreed – and believes the newly forged partnership between Iowa State and Roland-Story will benefit both.

“We’re not only preparing teachers for what to do with these technologies in the classroom, but now we also have a group of students who can... alleviate some of this workload on our technology professionals in schools,” she said.

Even as technology’s profile continues to rise, Robison noted that he and his fellow interns have remained focused on its ultimate purpose.

“The most enjoyable part of the experience for me,” Robison said, “is working with the kids.”

## Hutchison uses iPads for digital literacy

By Scott Schrage

Amy Hutchison has read the proverbial writing on the wall while watching it migrate rapidly from the page to the screen. Now, she’s partnering with schools to study the interplay between digitization and student literacy.

An assistant professor in the School of Education, Hutchison began collaborating with Samantha Kelley, a sixth grade language arts teacher from Gilbert Middle School, in spring 2012. The pair has since developed strategies for introducing Apple iPads to enhance Kelley’s language arts curriculum. Hutchison noted that such tablets offer new accommodations – including access to graphics, audio, and video – that simultaneously demand “new literacies” of students who use them.

“Students need to understand how to read and gain meaning from these kinds of [digital] texts, as well as how to effectively create them,” Hutchison said.

Hutchison has begun evaluating the benefits and limitations of the iPad by comparing it against computers and print-based materials. She said early returns suggest that the intuitive nature of the iPad appeals to schools – and spells promise for its capacity to support literacy.

Kelley, meanwhile, said the experience has shown her that instruction need not go by the book.

“Working with Dr. Hutchison gave me the confidence I needed to utilize technology in my classroom,” Kelley said. “The students loved being the pioneers, and I loved learning alongside them.”

## Soltanshahi discusses immigration reform at White House

By Scott Schrage

As a native Iranian who advises Iowa State's international students, Ali Soltanshahi knows the rigors and rewards of immigration better than most – yet learned even more during a summer visit to the White House.

Soltanshahi, who is pursuing his master's in student affairs while working at Iowa State's International Students and Scholars Office, attended a White House briefing on immigration reform in June. Featuring officials from the U.S. Departments of Homeland Security, Labor, Commerce, and Justice, the briefing informed Soltanshahi about the government's plans to meet the immigration challenges of the 21st century. He also contributed to a dialogue on engaging immigrants in civic roles that allow them to maintain their cultural identities.

Soltanshahi received the invitation after presenting at a conference of the National Association for Foreign Student Advisors (NAFSA), which he serves as a public policy representative and member of a grassroots leadership program. While there, Soltanshahi proposed ideas for helping international students better assimilate to their new communities. He developed those ideas in a class taught by School of Education professor Nancy Evans, who coordinates the master's program in student affairs.

"There is not much research...on international students, scholars, and their dependents," said

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*Ralph E. Reynolds (left), director of the School of Education, meets keynote speaker Rob Denson, president of Des Moines Area Community College, at the College of Human Sciences fall graduation ceremony. Iowa State's Community College Leadership Program has cultivated nine of the state's current community college presidents, including Denson. Photo by Wyeth Lynch.*

## Program cultivates community college leaders

By Scott Schrage

Though Iowa State stands as one of the nation's oldest land-grant universities, Larry Ebbers has spent more than two decades helping it earn another distinction: Community College Central.

A University Professor of higher education, Ebbers directs Iowa State's Community College Leadership Program (CCLP), which has cultivated nine of Iowa's current community college presidents and roughly two-thirds of those colleges' administrators. The program identifies potential leaders by collaborating directly with community colleges, which view CCLP as an important part of their succession planning, Ebbers said.

In addition to academic tracks that culminate in a certificate, master's degree, and doctorate, CCLP houses two leadership enterprises: the Leadership Institute for a New Century (LINC) and the Community College Leadership Initiative Consortium (CLIC).

LINC fosters the advancement of Iowa's women and minorities from entry- and mid-level positions to administrative roles, with more than

60 percent of its graduates earning promotions. Ebbers observed that LINC has evolved in tandem with the "changing face of Iowa and the nation," citing the institute's co-sponsorship of the Iowa Latino/a Education Initiative Conference in October of 2012.

As LINC has helped promote oft-overlooked demographics to upper-echelon positions, CLIC has ensured that administrators grasp the opportunities and challenges arising from the rapidly shifting community college landscape. CLIC participants, in turn, have helped shape the consortium itself.

"We talk about the curriculum with them...because one of the things we stress is [translating] theory to practice," said Ebbers, noting that this collaboration has also cemented Iowa State as the state's top destination for community college transfer students.

"We're very close with our students in the leadership programs, and they have a very positive image of Iowa State," he said. "I think it's become a wonderful partnership for both sides."





*Dale Niederhauser and his colleagues developed ThinkSpace to analyze how students approach problem solving individually and in groups. Photo by Wyeth Lynch.*

## Niederhauser examines student problem-solving patterns

By Jessica Lown

When problems crop up in everyday life, the solution can rarely be found in the back of a textbook or manual.

“In real life, that’s not how problems are constituted,” said Dale Niederhauser, an associate professor in the Iowa State University School of Education. “There is a compelling logic behind encouraging real-world problem solving in university coursework.”

For nearly seven years, Niederhauser and several Iowa State colleagues have been studying the nature of problem solving. Their goal is to examine the ways in which students approach problem solving, how they frame and structure problems, and ultimately how they arrive at a solution. Niederhauser’s team developed specialty software called ThinkSpace to aid researchers in gathering data and investigating these questions.

ThinkSpace can be used to present education majors with a fictional

scenario in which a struggling elementary school student may need literacy support. The problem solver must then determine an appropriate remediation strategy based on test scores, parental interviews, and previous teacher evaluations.

Based on the choices made by problem solvers throughout their ThinkSpace exercises, Niederhauser maps out decision-making patterns that lead to successful solutions. In particular, he measures the length of time problem solvers expend scrutinizing the original problem and subsequent data, reviewing information, and remapping previous decisions.

Niederhauser’s research shows that students who achieve greater problem-solving success better evaluate and prioritize the resources presented to them. However, the associate professor is careful not to characterize individuals as good or bad problem solvers.

Niederhauser said, “The reasons why students do what they do is very idiosyncratic and very personal.” Instead, he chooses to characterize test subjects as more effective or less effective at problem solving in certain contexts.

“Some students may have more background knowledge while others may have more applied experience. Real-world problems in fields like physics are different from real-world problems in fields like agronomy and sociology,” Niederhauser said.

Now, Niederhauser and his colleagues are working to promote the use of ThinkSpace in educational settings across Iowa and the country, to increase the pool of students they can observe, expand the nature of problems presented through the software, and in turn measure successful critical thinking patterns in various contexts.

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**Soltanshahi, who attended high school and college in France after fleeing the Iran-Iraq War as a child. “Through my work and graduate program at ISU, I have started developing sensitivity to issues that affect international education, [including] an outdated immigration system that is more than 60 years old.”**

**As he continues learning and working to inform improvements of that system, Soltanshahi noted that his life, work, and classroom experiences have revealed an important lesson.**

**“I truly think that all people want the same things in life: health, happiness, prosperity, and freedom [to become] who they want to be.”**



## Lifelong educators support scholarship for future teachers

By Jessica Lown

Gary and Jannes Weede have fond memories of their involvement at Iowa State University. While teaching and studying in the Ames area throughout the 1960s, the couple created strong ties with students, faculty, and community residents.

"It was a closely knit group, and we were diligent workers. I think people appreciated that," said Jannes Weede.

The lifelong educators recently endowed a scholarship for elementary education majors at Iowa State, motivated by their Cyclone pride and personal experiences working and saving money to pay for their education.

Gary Weede said, "If we can assist students who have financial need, as well as documented academic achievement, then we're happy to do that."

The Weede scholarship is intended for students with financial need who are attempting to support themselves while studying education. Through their generosity, the Weedes hope not only to assist students in meeting the rising costs of higher education, but also to inspire a sense of leadership and philanthropy in the recipients.

In addition to the scholarship in the School of Education, the Weedes fund an endowed scholarship in agricultural and biosystems engineering at Iowa State, as well as two similar scholarships at Illinois State University.



Robert Reason talks to students about the value of civic engagement in higher education.  
Photo by Kara Cipolloni.

## Reason gauges student responsibility

By Dana Woolley

A quotation inscribed inside the west entrance of the Memorial Union reads, "We come to college not alone to prepare to make a living, but to learn to live a life." Robert Reason, an associate professor in the School of Education, takes that message to heart.

Reason's current research centers on the Personal and Social Responsibility Inventory (PSRI) – an online survey that assesses how well colleges and universities are supporting students' development of civic and democratic outcomes.

Reason's research focuses on the students' development of personal and social responsibility, which he defines with five key dimensions – striving for excellence, cultivating academic integrity, contributing to a larger community, taking seriously the perspective of others, and developing competence in ethical and moral reasoning and action. These parameters are measured in the PSRI – a project supported by the Association of American Colleges and Universities.

Iowa State University also plays an integral part in the project's success.

"The PSRI couldn't have gotten started at a school that wasn't a land-grant university... Iowa State was founded with the mission to educate citizens of the state. This work with the PSRI honors the commitment ISU has to the state of Iowa and our nation," Reason said.

PSRI research also functions as an outreach effort to help colleges and universities refine their strategies.

"The survey provides institutions with actionable data and shows them what they're doing well and what they need to improve," Reason said. Almost 40 colleges and universities have participated in the PSRI so far, with interest growing each year.

"The goal," Reason said, "is for students to leave here understanding how they can make a difference, and how they can make their community better. And that it's not just a two-hour commitment a couple times a year – it's a lifestyle."



# Iowa State teachers will help students face history, shape the future

By Sarah Burke

History is all about choices. Thanks to a generous gift from Debra Engel (psychology, '73), Iowa State University will prepare teachers who can help students learn from the past to make humane, compassionate decisions for a better future.

Katherine Richardson Bruna and Nana Osei-Kofi, both associate professors, will collaborate with other School of Education faculty members to

bullying. By analyzing these historical moments and issues, students learn to question the morality of individual and group decisions, recognizing that their own words and actions as citizens make a difference, Richardson Bruna explained.

Richardson Bruna and Osei-Kofi are working with their colleagues to incorporate Facing History materials into Iowa State education courses for



*Katherine Richardson Bruna (left) and Nana Osei-Kofi are working with their colleagues to infuse Iowa State's teacher education programs with resources from Facing History and Ourselves. Photo by Wyeth Lynch.*

infuse Iowa State's teacher education programs with rich materials and teaching strategies from Facing History and Ourselves, a professional development organization.

Facing History provides educators with resources – including books, video clips, podcasts, and lesson plans – that encourage students to explore identity, belonging, and “us vs. them” mentalities that create prejudice and conflict between social groups.

Founded in 1976, Facing History has expanded beyond its initial focus on the Holocaust to include the U.S. civil rights movement, immigration, and LGBTQ (lesbian, gay, bisexual, transgender, and questioning)

the spring 2013 semester. With the approaches they learn from Facing History, future Iowa State educators at all levels will learn how to empower students to become “upstanders” – people who fight against bigotry and injustice – rather than bystanders.

“Understanding the social contexts of education will become a signature focus for Iowa State's School of Education,” said Richardson Bruna. “Our graduates should have knowledge of important historical moments, skill to facilitate difficult conversational journeys, and the disposition to develop civic engagement in their students.”

## Student group advocates for educational diversity

By Scott Schrage

The 36 members of ISU Leaders in Education and Diversity (ILEAD) not only represent the next generation of educators – they also reflect the increasingly diverse classrooms they will soon teach.

Founded in fall 2010, ILEAD prepares future teachers of color by providing professional development experiences, networking opportunities, and a forum to discuss changing classroom demographics.

ILEAD members connect with administrators from the Ames School District and teachers nationwide to ask questions, receive tips on landing jobs, and learn what to expect when they do.

“Although my professors have been wonderful, I felt like I needed to enrich the instruction I was receiving in my classes to prepare me to teach in diverse school settings,” said Crystal Matelski, ILEAD's current president and a senior in elementary education. “The goal is to place students at the door of opportunity, help them confidently navigate their own professional objectives, and become change agents for the benefit of students. I believe ILEAD does that.”

Matelski also believes the organization is helping to address the evolving needs of schools throughout Iowa and the United States.

“Iowa is becoming more diverse, [yet] the populations of teachers in classrooms are not reflecting that diversity,” Matelski said. “ILEAD's existence shows that there are students who are aware of this changing landscape and want to become better, more effective teachers for all students.”



## Lowe sparks children's interest in science

By Sarah Burke

If you see fire or hear an explosion at the Science Center of Iowa (SCI), don't panic. It's probably Catherine Lowe performing an educational demonstration.

Lowe graduated from Iowa State University in 2011 with a degree in elementary education and now serves as SCI's education coordinator. She develops interactive science programs for schools and youth groups, creates lesson plans for educators based on SCI exhibits and activities, and ensures that current programming connects to state and national education standards.

"When I chose elementary education, I always assumed that I would be a classroom teacher," she said. "I had no idea that a job like this even existed."

SCI first hired Lowe as a program presenter and promoted her to education coordinator after eight months. Recently, she also appeared on Iowa Public Television's "Connections to Science," a video series targeted to elementary and middle school youths.

"I love everything about this job," she said. "Not only do I get to share my love of science with kids and adults of all ages, but every single day I learn something new. Plus, I get to light things on fire. How cool is that?"



What should I know about cancer?

Information about cancer in general.

What should I know about radiation therapy?

Ana-Paula Correia's graduate students created an educational website for cancer patients, working across professional lines to create and publish meaningful content. Contributed photo.

## Correia teaches art of educational entrepreneurship

By Jessica Lown

Ana-Paula Correia, an associate professor of curriculum and instructional technology in the Iowa State University School of Education, views the future of education through an entrepreneurial lens.

"I believe that is the trend that is coming down the road. Educators will become entrepreneurs in education, or edupreneurs," said Correia.

Correia has structured one of her graduate courses as a miniature consulting firm to conceptualize and design an educational product for a client. For the spring 2012 semester, the graduate students chose to work with Dr. Shane Hopkins, a radiation oncology specialist from the Mary Greeley Medical Center, who requested an educational tool for cancer patients.

"When patients have a new diagnosis, they're overwhelmed with new information," said Hopkins.

For nearly four months, graduate students Tony Leisen, Rebecca O'Connell, and Ruslan Suvorov collaborated with Hopkins and Eric Andren, an Iowa State undergraduate programmer and designer, to develop an educational website for patients to learn about potential treatment options, like radiation therapy. The students worked across

professional lines to create and publish meaningful content.

Hopkins said, "I forget, and I do bust out the doctor lingo probably excessively. But that's exactly their expertise. The students ask follow-up questions and ask me to put it in a different turn of phrase so it's easier for people to understand when they don't have a medical background."

At the end of the semester, the website was launched and presented to Mary Greeley's oncology staff.

Hopkins said, "It's a beautiful product and we're in the process of trying to work that into our daily flow in terms of having patients referred there."

The entrepreneurial experiment and final product far exceeded expectations. Correia's students glimpsed a career path outside the traditional K-12 system, in e-textbook production, educational applications, and educational software.

"We are doing something that is not traditional," said Correia. "But I truly believe that education is going to branch out and become a more entrepreneurial activity. I don't see many K-12 educators involved in software development, but they should be, because they are experts on how people learn."



# Iowa State recognized nationally for preparing science teachers

By Lynn Campbell

Iowa State University will receive national recognition for its strength in preparing science teachers who use best practices to improve student learning.

“We have a program here worth paying attention to,” said Michael Clough, an associate professor in the Iowa State School of Education who co-authored a study that will be published by a prestigious journal and receive a national award. “We know how to prepare highly effective teachers.”

The study is about the “nature of science” – understanding what science is and how it works, so it’s more interesting. It helps people better understand biological evolution, global climate change, and other science ideas. It also helps them know whether to trust scientific-sounding information.

“On a personal level, it’s being able to decode whether or not medical research is valid when making a personal decision about health, like should I take this particular pill for weight loss,” explained co-author Ben Herman, a former Iowa State Ph.D. student who’s now an assistant professor at the University of South Florida.

Incorporating the nature of science into the classroom is widely cited as an important part of students’ education in science. It’s considered a best practice by policymakers pushing for education reform. Yet Clough said few teachers nationwide have effectively implemented the practice.

The study by Herman, Clough, and Joanne Olson, who is also an associate professor in the Iowa State School of Education, found that 12 out of 13 graduates of Iowa State’s secondary science teacher education



*Michael Clough and Joanne Olson, associate professors in the ISU School of Education, co-authored a study that will be published by Science Education and will receive a national award. Photo by Wyeth Lynch.*

program implemented nature of science instruction in their teaching, two to five years after completing the program. The success rate stands in stark contrast to results of earlier studies.

The study will be published by the journal *Science Education* in 2013 and will in January receive an award at a meeting of the Association for Science Teacher Education (ASTE) in Charleston, S.C.

“It was a very strong paper in the category of Implications of Research for Educational Practice and stood out above all others submitted for the award,” said Judy Morrison, an associate professor at Washington State University who is board chairwoman of the ASTE Awards Committee.

The study stemmed from a dissertation Herman wrote under the guidance of Clough and Olson. It involved extensive classroom observation, interviews, and analysis of artifacts, such as tests. The authors also created an instrument to standardize such classroom observations.

“People who come out of the program do implement nature of science,” Herman said. “The study outlines what

that looks like and how to measure it. It may attract more graduate students to do follow-up research in that area.”

Olson said results also provide insight into teacher education programs and what is necessary to prepare teachers to teach the nature of science well.

Science, technology, engineering and mathematics (STEM) is a focus of education reform. It’s also a signature area for Iowa State University, the College of Human Sciences, and the School of Education. Iowa State’s program for aspiring science teachers stands out because it offers six courses in science education, including one about the nature of science. That’s far more than what most other colleges offer.

“Not all teacher education programs are of the poor quality that the policymakers are accusing them of being,” Olson said. “Effective teacher education makes a difference.”

Olson was recently elected president of ASTE. She will become president-elect in January, and will assume the presidency a year later. Her election to that position, which was unrelated to the study, brings additional recognition to Iowa State.

## Learning community educates, empowers future teachers

By Sarah Burke

In the School of Education, incoming freshmen don't just learn the theory behind teaching. They join Preparing Tomorrow's Teachers (PT2) – a learning community that offers professional preparation and hands-on experience.

Required for elementary education majors but open to anyone interested in teaching, PT2 supports students as they acclimate to college life. In the fall, participants form study groups, connect with sophomore peer mentors, and take Curriculum and Instruction (CI) 218, focusing on academic skills, on-campus resources, the teacher education curriculum, and professionalism.

"It's sometimes daunting for freshmen to come to a major university like Iowa State," said Chuck Achter, a lecturer in the School of Education who teaches CI 218. "This learning community helps students...find out whether teaching is their true vocation."

In the spring, students take CI 280N with Hina Patel, exploring poverty in the classroom.

"I don't just want to teach students about socioeconomic challenges in the abstract; I want to give them a constructive outlet to impact the lives of children and community members," said Patel, the director of teacher education services.

In addition to texts and activities related to poverty, the class incorporates 24 hours of rich clinical experience, placing students in elementary schools to support teachers and young learners. Students also serve food at local free meal programs and learn about other resources, like homeless liaisons, that can help struggling children and families.

Instead of overwhelming these aspiring educators, Patel wants to inspire them to consider teaching in districts with limited resources, and she believes their Iowa State education will prepare them well.



*Freshmen in Preparing Tomorrow's Teachers attend a group dinner. This learning community helps students connect with peers, learn about the teaching profession, and gain hands-on experience in the classroom. Contributed photo.*

"With creativity and imagination, they can become effective leaders and make a significant difference in students' lives," Patel said.

For Chantel Lischer, a sophomore peer mentor, participation in PT2 was a transformative experience.

"It totally changed my goals and reasoning for being a teacher," Lischer said. "I want to help [children] become the best version of themselves they can be."