Stanford Educator

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That Special Chemistry

Kevin Doyle's classroom at Aragon High School, in San Mateo, Calif., may smell of boiled cabbage, but it's all for a good cause. The veteran chemistry teacher has cooked up a vat of the purple vegetable. He is using its broth to dye paper coffee filters for a lesson on acids and bases.

When his students arrive at their lab stations, they find stacks of the dried filters and an array of common household products. A lanky 10th grader, wearing a San Francisco Giants T-shirt and safety goggles, takes a Q-tip and dips it into a beaker of clear shampoo. When he touches it to the filter paper, it leaves a white dot. So does the hydrogen peroxide. The vinegar and lemon juice leave pink dots. The glass cleaner leaves a green blob. A drop of bleach briefly turns green, and then white. The kids are impressed. They start to paint swirly patterns.

Teachers Becky Piscitelli and Sujata Jadhav try a new experiment.

"Make sure you look at the colors dry and wet," Doyle says, as he walks among his students. "Talk to each other about this; don't just wait for me to come around. Are these products acidic or alkaline? Can you rank them in ascending pH order? Don't think you have to make a claim for something you don't have evidence for."

Doyle is a highly qualified teacher, with a bachelor's degree in applied chemistry and a master's in materials science. He has been working at Aragon High School for 14 years. But it wasn't until last summer that he gained a deep understanding of how chemistry ought to be taught.

Doyle and two Aragon colleagues were among 24 Northern California educators invited to participate in an innovative Stanford professional development program called Chemistry EXperiments and EXperiences for High School Teachers, or ChemEX^2 for short. Developed by scholars at the Center

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Highlights of What's Inside

Schools Resegregate

The racial integration of students fostered through decades of legal action against intentional discrimination in public schools is eroding, particularly in the South.

That's the conclusion of recent research led by professor Sean Reardon. In a study far more extensive than any previous analysis, Reardon and three other Stanford researchers found that racial segregation increases, albeit gradually, when school districts are released from the oversight of court-ordered

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MOOC Analysis

Why do so many students start a massive open online course only to drop out? Why, and when, do they bypass certain elements of online classes? Why are they taking the classes to begin with?

Those and other questions prompted Emily Schneider, a doctoral student at the Graduate School of Education, to team up with two other Stanford graduate students to research student behavior in MOOCs. While the recent surge in these online courses has provided millions of students with access to lectures, online forums and other educational materials previously unavailable, it's been difficult so far to gauge the learning that is occurring via the Internet.

Emily Schneider

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Are AP Courses Worth the Effort?

Every May students nationwide take Advanced Placement tests in what is widely viewed as a big step toward enhancing their chances of going to a top-ranked college. But do AP courses — often considered the gold standard of secondary education — improve learning at high schools?

Senior Lecturer Denise Pope recently posted a white paper reviewing more than 20 studies of the effects of AP courses. While the findings aren't black and white, they suggest that educators, parents and students should think carefully about such classes. The new paper examines whether these courses — by providing a standardized curriculum for all schools, rich and poor, urban and rural — level the playing field and improve schools.

Pope is co-founder of Challenge Success, a nonprofit organization affiliated with the Graduate School of Education. Stanford News Service writer Brooke Donald talked with Pope about the paper.

Q: What prompted this review?

Pope: At Challenge Success, we work with public and private schools to increase student engagement and learning. We've noticed some private schools dropping AP courses and even some public schools. They say they're a real cause of stress for the kids and that the AP curriculum in some courses is too narrow. At some public schools, we were hearing that there was de facto tracking happening where advanced students were ending up put mostly in AP classes and lower level students in mostly remedial classes; there were limited options for average students. So between those two concerns we said, "Gosh, we really need to look into the research on the AP and is it really all it's cracked up to be."

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Q: Is it all that it's cracked up to be?

Pope: Students who take AP courses are more likely to succeed in college. But when you look into the research, it's hard to establish causation. It could be that kids who take APs come from better high schools, have better teachers or are more motivated. Few studies take these factors into account.

Q: Do AP courses affect school quality?

Denise Pope

Pope: If you look at some programs, especially ones where AP students and non-AP students are in the same class but the AP students have extra coursework, the school can benefit. But if you look at others, where AP students are basically in a school within a school — all the high achievers in one place — then you're not mixing it up with different kids. You're not letting kids learn from everyone. You're likely giving better resources to a fewer number of students, and the AP classes are often staffed by more experienced teachers. You could be creating more disparities in that kind of situation.

Q: Do AP courses level the playing field?

Pope: If you're in a rural school or a poor urban school, the argument is that at least having the common curriculum and rigor usually associated with an AP class helps to level the playing field. There are some programs that are doing a nice job using the APs as part of a comprehensive school improvement plan with more professional development for teachers and better services for students. But in many places, where they just plop in the AP program, it may not be helping. There's no indication that it levels the playing field. The College Board approves the curriculum and there's the common test at the end. But everything else is optional. If there aren't well-trained teachers and the students haven't been prepared well for the course, then kids won't benefit from the program.

Q: Are APs a waste of time for some kids?

Pope: If you're truly interested in the subject and there's a good teacher, then you're likely to have a good experience. But if you're pushed into it without good preparation and without a safety net at the school, then it may be more harmful than helpful. Colleges don't always accept the courses for college credits, so many students end up repeating the course in college anyway. And you run the risk of memorizing material for a test versus exploring it in an enriching way. Sometimes a high school's honors course is a better option for rigorous, enlightening studies. Frankly, many high-achieving students are really stressed out. They have a lot to do between extracurricular activities and homework and also trying to get the sleep they need. The extra tests, extra homework, on top of an already demanding schedule can be brutal. And a very low grade on your transcript from an AP course may hurt you more in the long run than not taking an AP in that subject at all. SE

Teachers for the Long Haul

STEP graduate Jessica Uy (right) teaches high school math in Sunnyvale.

In the field of education, the phrase "dropout rate" generally sends chills down the spine of any teacher, administrator or policy maker. But as educators are aware, it's not just students who skip out on the primary or secondary school experience. Roughly 40 percent or more of new teachers in the United States leave the classroom within the first five years of entering the profession.

The Stanford Teacher Education Program is proving that such a scenario need not be the case. A recent survey of graduates' professional pathways shows that nearly 80 percent of alumni-turned-teachers who have been out five years are still in the p rofession. Looking at graduates over the last 10 years, the survey reveals that approximately 75 percent are still teaching, and that of the other 25 percent, many remain in education in leadership roles.

"These are very high retention rates," said Ira Lit, who directs STEP Elementary and is co-author of the study. Rachel Lotan, director of STEP Secondary and the study's other author, added: "Our survey response rate was 90 percent, which is unheard of. We know not only that this study paints an accurate portrait of our alumni, but also that it reflects their level of commitment to Stanford."

The survey reveals graduates' commitment to something else, as well: providing quality instruction to the underserved. More than half of the graduates work in Title 1 schools — institutions in which at least 40 percent of students qualify for free lunch — suggesting that the majority of STEP teachers are working with low-income children. "Given that many of our graduates also work for independent schools that are not eligible for Title 1, the number of them serving such students is probably higher than the 57 percent of our study," said Lit. According to the National Center for Education Statistics, 47.5 percent of U.S. students are eligible for the Free and Reduced Lunch Program.

"STEP prides itself on preparing teachers to work with diverse learners and to create equitable and successful schools and classrooms," said Lotan. "We do so in part by attracting a diverse candidate pool — half are students of color and a significant number are first-generation college goers — while most teachers are white and middle class. This isn't a story of the privileged teaching the privileged."

The survey also shows that STEP has a nearly 100 percent job placement rate and that most graduates enjoy a high level of job satisfaction. More than 84 percent work in public schools and the same percentage work in California, mostly in the Bay Area. And 95 percent serve in leadership roles, ranging from sports coach to department chair to founder of a new school.

STEP is a 12-month program that integrates academic study of pedagogy, curriculum development and other education topics, with a well-supported, yearlong classroom placement. STEP's two divisions focus, respectively, on preparing elementary school teachers and secondary school teachers. Graduates of STEP Elementary receive a multiple-subject credential; graduates of STEP Secondary receive a single-subject credential in English, history-social science, mathematics, science or world languages. Typically about 95 students enroll each year.

Few other programs combine both the academic rigor — taught by tenure-line Stanford faculty who are leaders in their field — with clinical experience that includes direct supervision in class and mentorship by experienced teachers, program advisors and instructors. STEP has been cited by leading foundations as a model for other programs nationwide, and international educators regularly attend a weeklong seminar to learn about its approach.

"The study affirms that we are working to revitalize the teaching profession," said Lit.

The full report is available at http://stanford.io/YGBDJi. SE

Why GSE? Why Now?

Professor of Education David Labaree gave the following remarks at the Jan. 22 party celebrating the education school's changing its name to Stanford Graduate School of Education from Stanford University School of Education. An educational historian, he is the author of numerous prize-winning books, including The Trouble with Ed Schools.

You may be thinking the same thing I am: Why are we here? OK, we're changing our name, but why a party? We took the name, school of education, and added a word: graduate. What's the big deal?

As someone who has looked at the history of education schools, I thought I'd try to answer this question, which really has two parts: Why are we changing our name? And why are we doing it now?

On the surface at least, why we're doing it is easy. We're changing our name to bring it in line with the kind of institution that we really are. We're a graduate school of education. Enough said.

But a little background would help. Historically American ed schools have emerged in two forms. The large majority are in institutions that evolved out of normal schools, which over 100 years turned into teachers colleges, state colleges and eventually regional state universities. These ed schools tend to focus on the production of teachers, administrators and other school personnel. The majority of educators in the U.S. graduate from these places. Given their focus and the nature of the universities where they're located, they don't have the resources to deal with advanced graduate programs or do a lot of research. They usually call themselves schools or colleges of education.

On the other hand, a small number of ed schools came into existence through a different route. They were created around the turn of the 20th century within existing elite universities, and they have focused primarily on doing research and offering advanced graduate programs of study. Because of this focus, they typically engage in the preparation of teachers and administrators at a much smaller scale than the others.

The second is a pretty good description of the kind of institution we are; most of our peers call themselves GSEs, so it makes sense for us to do so. But why do so now? After all, we have been operating as a top-ranked graduate school of education for at least 50 years.

Therein lies a tale. The short version is that over the years operating a graduate school of education has proven to be a risky business. Ed schools within former normal schools have a long and stable history of growth and development. But research-oriented ed schools have periodically found themselves under threat.

Over the years operating a graduate school of education has proven to be a risky business.... Research-oriented ed schools have periodically found themselves under threat.

The problem is that the successful research-oriented ed school has to maintain a very tricky balance. It has to excel at the production of high-quality research and at the graduation of high-quality master's and doctoral students. At the same time, it needs to be playing an effective role as a professional school — closely connected to the educational professions, responding to the needs that arise from these professions and contributing to the development of educational policy. The kinds of things that professional schools traditionally do.

In practice this has not been easy to accomplish. After World War II, research universities responded to a huge surge in higher education enrollments by shoring up their distinctive character as the academic elite of the system. So they put pressure on schools to demonstrate that they had the academic chops to be part of such a university. The pressure was particularly strong on professional schools that had had a reputation for being academically weak, such as business and education. These schools dutifully shifted their emphasis in the desired direction — dropping undergraduate instruction, ramping up master's and doctoral programs, increasing research effort and establishing themselves as the academic peers of colleagues across campus.

But this effort threw things out of balance. Many such schools, including our own, became less professional schools of education than graduate schools of educational studies. They focused on high-level disciplinary research on education but with minimal investment in professional training and few connections with the field of practice. And, one after another, research-university presidents starting asking what value these ed schools added to the institution. "You're not really professional schools," they'd say. "Instead you're doing disciplinary research about education. But we already have people in the disciplines who do this work, and they're the real thing. So who needs you?"

One after another, elite ed schools started to receive the death sentence, or came close. In the '50s, Yale and Johns Hopkins eliminated their ed schools; in the '70s, this happened at Duke; in the '90s it happened at Chicago; in the 2000s it happened at Arizona State. In between in the '80s there was a series of skirmishes that threatened such schools across the country.

David Labaree explains the rationale for renaming the school.

Berkeley had a major battle, which eventually led to the preservation of the school, but it was a near thing. Michigan considered a major downsizing of its ed school, and here at Stanford there was talk of turning the school into a program. Like most of our peers, our own school of education was heavy on research but light on professional identity and involvement in practice.

Here and elsewhere, deans got the message. They have the job of looking around the neighborhood for signs of trouble. So we had a series of deans — Mike Atkin, Mike Smith, Rich Shavelson and Deborah Stipek — who had a clear mandate to restore the balance. This meant shoring up the school's professional mission and connections with practice while still maintaining excellence at producing research and PhD's.

Considering all that was going on, this would not have been an ideal time to announce to the world that we were a graduate school of education, since at that point we needed more than anything else to reassure the university and the world that we were a serious professional school. First we had to bring the mission back in balance.

Over the next several decades, the school moved to enhance its professional commitments. We reconstructed the secondary teacher education program, bringing in senior faculty to design and operate a model program that would build on research and enrich the profession. We brought in faculty who forged close relationships with schools, both as research sites and as places for professional intervention and service. We increased our effort in educational policy at both the state and national level. We set up a series of major centers focusing on issues of policy and practice. We added an elementary teacher education program. And we developed a close relationship with a local charter school. Overall these efforts have been enormously successful. This is now a school that has established a stable and credible balance of missions.

As a pragmatic matter, these were smart moves to make for an institution that wanted to survive on the high-wire perch of the elite ed school. Those of us who are associated with the school want it to do well for our own personal reasons. But what possible benefit does this kind of rebalancing effort offer for the educators and students in our public schools?

It turns out there is broad array of benefits for both schools and society. A rebalanced graduate school of education can facilitate a fruitful conversation across barriers that have long divided educational research and educational practice. It can provide empirical and theoretical grounding for the work of practitioners, while also serving as a resource for addressing the problems that arise from practice. It can offer lift for teachers and administrators who find themselves dragged down in the machinery of schooling, and it can offer ballast for university researchers who find themselves floating high above the fray. Both sides need each other, and a balanced GSE can bring them together.

This, then, is another answer to the question of why we're making a big deal about a change of name: because our newly rebalanced mission can make a real contribution to the field.

And what about why we're making the change now? I already gave the pragmatic answer: Such a move would have been risky. But in addition I think it's because at this point in history the querulous state of school reform means there is urgent need for a voice such as ours — which can insert the long view into a notoriously short-sighted conversation and also can keep the discourse intimately linked to teaching and learning in classrooms. We need an institution that can remind people of the higher historic purposes of education, while also lowering expectations that schools by themselves can solve our most urgent social problems.

And that is the kind of role that our school plays today. We produce research of the highest quality, which shapes the intellectual contours of our field; and we prepare educational researchers of the highest quality, who become some of the leading scholars of the next generation. At the same time, we educate model teachers and educational leaders, who go on to exert an impact on the world of practice; and we provide an informed and authoritative voice in the discourse of educational policy. Therefore now is a good time to declare ourselves as the Stanford Graduate School of Education, whose academic and professional commitments are as clearly balanced as they are clearly distinguished. SE

From Data to Action

Why do students in a local school district rack up so many absences? How can a community college improve student success? Clues may abound within academic records and family services or law enforcement case files. Yet solutions are elusive unless the people with a stake in solving a problem share what they know.

It takes time and trust, say the authors of *From Data to Action: A Community Approach to Improving Youth Outcomes* (Harvard Education Press, April 2013), but when data talk, people eventually listen. "Data are the engine of collaboration," said Milbrey McLaughlin, co-editor of *From Data to Action* alongside Rebecca London. "They ignite the conversation and focus partners on specific issues."

The book's title refers to a trajectory that really starts with building relationships over many months, even years, through the Youth Data Archive, a research tool of the John W. Gardner Center for Youth and Their Communities at Stanford's Graduate School of Education. The Gardner Center has long conducted high-quality actionable research in Northern California, and the YDA continues the tradition with a twist: It links longitudinal data gathered on individual youth across public and nonprofit agencies to tackle otherwise unanswerable questions. McLaughlin is the Gardner Center's founding director, and London is a senior research associate there.

From Data to Action reveals how the YDA model brings together practitioners and policy makers in education, health, child welfare and other sectors and encourages them to replace rhetoric with the common and dispassionate language of data. Once trust blooms, the partners slowly pull back from their own agendas and focus on youth as the common denominator. They look at the system functioning as a whole and rationally and effectively begin to collaborate to improve their communities.

With the YDA acting as an embedded, neutral partner, the team — emphasis on *team* — then moves from goal setting and data collecting to data linking and analysis. The YDA staff

In their new book, Milbrey McLaughlin and Rebecca London discuss how "actionable research" requires trust among partners.

RESEARCH TO HELP THE MISSION DISTRICT

The John W. Gardner Center for Youth and Their Communities announced in February that it was selected to play a key role in a major effort to break the cycle of poverty in San Francisco's Mission District. It was chosen to do the research and evaluation on the efforts to be launched under a new $30 million federal "Promise Neighborhood" grant.

This is the latest in a series of community projects for the Gardner Center, which has a long history of conducting actionable research in San Francisco, other Bay Area communities and beyond. It has, for example, worked with San Francisco Unified School District, City College of San Francisco and other groups and agencies involved in the Mission Promise Neighborhood initiative.

"The Gardner Center welcomes this opportunity to expand upon our work in San Francisco to strengthen conditions and experiences for children and families in the Mission," said Amy Gerstein, executive director of the Gardner Center. "We look forward to working with the Mission Promise Neighborhood team, as well as all of the partners on this essential project."

The $30 million grant was awarded by the U.S. Department of Education in December to San Francisco's Mission Economic Development Agency, which in turn brought in the Gardner Center as one of its partners. The grant will allow MEDA to build a continuum of community services that bridge local nonprofits and public and private partners to work with kids and families to break the cycle of poverty and ensure every child can reach his or her full potential, from cradle to college to career. SE

takes a dynamic, iterative research approach to help promote capacity building and surface new questions or concerns. The data feedback loop allows schools and community groups to respond quickly. "In a time when important research often sits on a shelf or takes years to trickle down to the ground, the YDA process is very appealing," said London, who oversees all YDA analyses. "It empowers agility."

Throughout the process, the findings belong to the partners with the local experience to decide how best to convert them to action. "The ability to drive and control a project all the way through means everything to community stakeholders," said Amy Gerstein, executive director of the Gardner Center, who along with associate director Kara Dukakis works shoulder to shoulder with community leaders to inspire their leap of faith in the YDA. "We never underestimate the value of ownership," Gerstein said.

"Data are the engine of collaboration."
– Milbrey McLaughlin

The authors of *From Data to Action's* nine chapters, all veterans of the YDA process, share their distinctive and instructive journeys from data to action. They identify hurdles such as data gaps, personnel turnover and organizational regulations, to name a few, and offer insights on clearing them. Finally, they describe incremental changes on what everyone recognizes as a continuum.

An analysis of chronic absenteeism in Redwood City, Calif., for example, led to district outreach activities targeting kindergarten parents. In San Francisco, a study of individual-level data helped map alternative routes for incoming community college students to complete their core requirements in the first year, with the aim of boosting graduation rates. "These outcomes and others show the potential of linking data across contexts," Dukakis said. "The opportunity for replication is huge."

In the book's conclusion, McLaughlin and London reflect on the YDA as a resource for strengthening the local youth sector. They note that its university-community research partnership model, and others like it, push current notions of scholarship and raise tension within academic institutions. Yet they hope, as evidenced by the projects profiled in *From Data to Action*, its value is clear in advancing the field of youth development. SE

Pamm Higgins writes for the John W. Gardner Center for Youth and Their Communities.

Troubling Patterns in Teacher Class Assignments

Even within the same school, lower achieving students often are taught by less-experienced teachers, as well as by teachers who received their degrees from less competitive colleges, according to a new study by researchers from the Stanford Graduate School of Education and the World Bank. The study, using data from one of the nation's largest school districts, also shows that student class assignments vary within schools by a teacher's gender and race.

In a paper published in the April issue of *Sociology of Education*, the researchers present the results of a comprehensive analysis of teacher assignments in the nation's fourth-largest school district, Miami-Dade County Public Schools. Their findings identify trends that may contribute to teacher turnover and achievement gaps nationwide.

Previous research indicates that high-quality teachers can significantly improve education outcomes for students. However, not all students have equal access to the best teachers.

"It is well-known that teachers systematically sort across schools, disadvantaging low-income, minority and low-achieving students," said Demetra Kalogrides, a research associate at Stanford GSE's Center for Education Policy Analysis (CEPA) and one of the study's authors. "Our findings are novel because they address the assignment of teachers to classes within schools. We cannot assume that teacher sorting stops at the school doors." The authors note that more research needs to be done to see whether such patterns exist within schools across the country.


Demetra Kalogrides

The assignment of teachers to students is the result of a complex process, involving school leaders, teachers and parents. While principals are constrained by teachers' qualifications — not all high school teachers, for instance, can teach physics classes — they also may use their authority to reward certain teachers with the more desirable assignments or to appease teachers who are instrumental to school operations. Teachers with more power due to experience or other factors may be able pick their preferred classes. Parents, particularly those with more resources, also may try to intervene in the process to ensure that their children are taught by certain teachers.

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Welcome to Critter Corral

Harper Franklin faces a big question. While playing the iPad app Critter Corral, he had selected "2" when asked which number of cars were needed to fill three spaces between an engine and a caboose. "Can you fix it?" the app asked him.

He presses a small finger once on a "+1" button, and the app explodes with applause. Harper, 4 years old, responds with a big grin.

He's clearly engrossed with Critter Corral, a game developed at the Graduate School of Education that uses animals in a Wild West theme to help teach 4- to 6-year-olds early math concepts.

Able to count confidently to number 5, Harper hadn't learned numerical symbols when he started playing the app. But after 20 minutes of counting bug feet, eyeballing train cars and deciding how many apples to serve a group of raccoons, he started to recognize 1, 2 and 3.

"It was fun," Harper said as he put on his raincoat and headed off to preschool after giving the game a trial run in December.

Kristen Blair, a research associate in the education school's AAA Lab, headed the team that developed Critter Corral, which took a year of work and funding from the Wallenberg Foundation. The researchers tested it with kids at local preschools, as well as Blair's own daughter, before they released it at the end of last year. "All our pilot testing indicates that children love it," said Daniel Schwartz, professor of education and head of the AAA Lab.

Harper Franklin learns about numbers.

Since its release, there have been about 3,000 free downloads of the game from the iTunes store, but the researchers are less concerned about its popularity than with determining its effectiveness — and making it and other games better. "We want to learn more about how kids are solving problems," said Blair.

Ensuring that preschoolers are grounded in math concepts — beginning addition and subtraction as well as geometry — has become a critical challenge in education. Research shows that kids who enter kindergarten with better mathematical understanding outperform their peers. Early math skills are connected not just to better math performance later on, but also to improved reading.

Yet few math games for preschoolers promote the kind of reasoning Critter Corral does. For example, the game lets children see how far off their answers are and gives them an opportunity to fix them, rather than just signaling "right" or "wrong." "This helps the children really get to the 'meaning' of numbers," said Blair, whose voice is on the game guiding children through problems, counting and asking questions.

Indeed, the game integrates multiple representations of numbers. Instead of just the numeral 3, for instance, it presents three dots, a length of 3 units and a third position in a line of cars. Children must link these concepts if they are to gain a strong math sense. "Young children do not always know that if you count up the number of objects in a pile — '1, 2, 3' — that the last number also stands for the total number of objects," Schwartz said. "The game helps kids connect these different ideas of quantity."

As the 4-to-6 set play the game, AAA Lab researchers are gathering information — without knowing who it's from — on how children respond to problems. They can use that information to improve the game, if, for example, players seem to get stuck at a certain point. It will also help inform the lab's understanding of math learning.

"We are conducting efficacy research

The game teaches math with a Western theme.

to see how well it helps children learn early number concepts and prepares them to keep learning more advanced concepts," Schwartz said. "We can analyze the anonymous data to help determine which parts of the in-game experience seem to be helping the most — for example, by tracking where children exhibit a faster rate of improvement."

When players respond to a question, their answer, the time it took and the level and game they were playing, among other things, automatically gets sent to a server. "We randomly generate an alpha-numeric code for each player that is added to the data sent to the server so we can follow their progress over time, but we don't know who a player is or where they're from," Blair said.

The research team is also continuing to run pilot studies in preschool classrooms, collecting pre- and post-test measures by interviewing kids and asking them math questions. "We have seen significant pre-post gains," Blair said, noting that the sample size is too small to be conclusive.

The researchers are looking to conduct a more comprehensive study in the fall in partnership with the San Francisco Unified School District. Blair said that the plan is to work with six or more transitional kindergarten classes. (These are for 4-year-old kids who just missed the birthday cutoff for kindergarten.) The goal is to compare the gains made by three groups of children who use different versions of the game as well as with those in a control group who don't play the game at all.

Others involved in the game's development are graphic designer Jamie Diy, instructional designer Heidi Williamson and researcher Jessica Tsang. Blair is a graduate of the GSE's Learning Sciences and Technology Design program, having earned her PhD in 2009. SE

Mandy Erickson writes frequently for the Graduate School of Education.

Enhancing Early Childhood Math

Math turns out to be more important for young children than previously thought. Happily, math education experts know how to teach young children mathematical concepts. They just need to get the word out.

To that end, a group of national experts on early math teaching and learning gathered at Stanford last fall to begin developing a new model to improve young children's math skills. They have continued to work on it through the winter and spring, with the intent of preparing cohorts of California teachers to serve as instructional leaders and coaches in their schools and districts. This summer 60 preschool and early elementary grade teachers will participate in a professional development program, beginning with a four-day intensive, followed by seminars over the course of the school year.

The research group will also introduce a new model for math instruction to faculty at California universities and community colleges that train preschool and elementary school teachers. About 10 university and community college faculty, representing ed schools with substantial teacher-preparation programs, are participating in the first year of the project.

This effort could bring about a substantial change: The state's training programs for preschool teachers do not require any courses in math education, and elementary teachers are required to take only one course. "Math doesn't get anywhere near the attention that literacy does," said professor of education Deborah Stipek, who is leading the initiative with Megan Franke, chair of UCLA's education department.

Recent longitudinal studies have found that children who enter kindergarten with strong math skills do better later on in school. Not only do they perform at a higher level in math, but their literacy skills are also superior, and they may have a greater chance of graduating from high

Deborah Stipek advocates preschool math.

school. Yet instructors of young children typically focus primarily on reading. One study showed that preschool teachers spent 3 percent of the school day teaching math, compared with 11 percent of the day on reading.

The Stanford-UCLA project is unusual in that it is serving both teachers of preschool students and teachers of the early elementary years — kindergarten through third grade. The initiative is designed to promote continuity in math instruction from preschool to grade 3. The preschool teachers who attend the workshops will come from programs connected with elementary schools.

The initiative is particularly timely given California's adoption of the Common Core standards, which place more emphasis on reasoning and problem-solving skills.

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Narrowing the Achievement Gap: Values Affirmations

The achievement gap in academic performance between academically at-risk minorities and white students has concerned educators for decades. It's a troubling fact that Latino Americans and African Americans, for example, earn lower grades on average than their white peers, and are much more likely to drop out of high school.

Amid such sobering statistics, a bright spark has appeared in the form of research led by Graduate School of Education professor Geoffrey Cohen and David Sherman of UC–Santa Barbara. In a recent article published by the *Journal of Personality and Social Psychology*, Cohen, Sherman and seven co-authors reveal that a simple intervention made with middle-school Latino American students reduced the achievement gap significantly — and this positive effect persisted over time.

Geoffrey Cohen and colleagues are finding remedies for the academic effects of "stereotype threat."

The matter comes down to overcoming the negative effects of "stereotype threat," a phenomenon that researchers have identified and documented over the last two decades. What they have found — in numerous studies — is that the stress and uncertain sense of belonging that can stem from being a member of a negatively stereotyped group contributes substantially to poor academic performance of minority students as compared with white students.

Cohen and his colleagues have been looking for remedies to stereotype threat. In the first study described in the *JPSP* article, the researchers devised well-timed "values-affirmation" classroom assignments given to both Latino American and white students as part of the regular curriculum. In one exercise, middle schoolers were given a list of values, such as "being good at art," "being religious" and "having a sense of humor." They picked the ones that were important to them and wrote a few sentences describing why. In a second exercise, they reflected on things in their life that were important to them. And in a third they were guided to write a brief essay describing how the things they most consistently valued would be important to them in the coming spring. The control group was guided to write about values that were important to other people, but not themselves, or about other neutral topics.

The tasks were given at such critical moments as the beginning of the school year, prior to tests and near the holiday season, a stressful time for many kids with challenging home environments.

The results were dramatic: Latino American students who completed the affirmation exercises had higher grades than those in the control group. Moreover, the effects of the affirmation intervention persisted for three years, remaining stable even as students transitioned from middle school to high school. The task had no significant effect on white students.

A second study looked at whether affirmation interventions could lessen the persistent threat to Latino Americans' identity caused by the overt or subtle presence of racial and ethnic stereotypes and prejudices. Researchers administered values affirmation tasks and assessed students' perceptions of daily adversity, identity threat and feelings of academic fit several times over the school year as reflected in diary entries, and again measured their grades.

Surveys completed by children "in vivo" in the classroom indicated that Latino American students who had participated in the affirmation exercises were less likely to feel threats to their identity and sense of belonging in school. They were less likely to have their feelings of academic fit and motivation undermined. Once again, their grades were also consistently higher than those who did not participate in the affirmation assignments.

"Self-affirmation exercises provide adolescents from minority groups with a psychological 'time out,'" said Cohen. In the midst of what can feel like a hostile environment for these kids, such tasks offer reassurance about who they are and what's important in life at a critical time when they are engaged in identity crafting, he said.

As to why the interventions affected minority but not white students, Cohen said, "Latino Americans are under a more consistent and chronic sense of psychological threat in the educational setting than their white counterparts on average. They constantly face negative stereotypes about their ability to succeed, so they are the ones to benefit the most from affirmations that help them to maintain a positive self-image." Such affirmations not only help students feel more confident, but also allow them to reframe adversity and challenges as temporary phenomena rather than looming signs that they somehow don't belong — or worse, that they are fulfilling negative stereotypes about their inferiority.

The study also underscores that underperformance is frequently not a function of individual inadequacy, but systemic failure. "A threatening environment can make smart kids less likely to show what they know, whereas a positive environment can pull out qualities that make the seemingly average student shine," says Cohen.

Cohen's study builds upon decades of work on minority student achievement by a group of researchers across the country, including Dean Claude Steele. Working in this arena for the past 10 years, Cohen takes critical insights from previous research identifying the pernicious effect of stereotype threat to explore what types of measures could reduce its effects.

"In this particular study, we also add the insight that interventions can have significant positive long-term effects," Cohen said.

As to the implications of the study for pedagogy, Cohen noted that such interventions in fact echo what great teachers do all the time: continually affirm children. "Clearly, small gestures of affirmation can have lasting consequences, especially when they are woven into the student's daily experience," he said. Teacher training, then, should include more formalization of such practices so that teachers who are not necessarily naturally inclined in this direction can draw upon them as part of their toolkit, he added.

But Cohen cautioned that such interventions are not a magic bullet. "Psychological threat might not contribute to a group's performance in some schools, in which case affirmations shouldn't have much effect," he said. "There are also family and neighborhood factors to always be aware of. At the school level you need committed teachers and a solid curriculum. But when these factors are in place, when opportunities for growth are there, psychological interventions like these can help students seize the opportunities and change their lives for the better," he concluded.

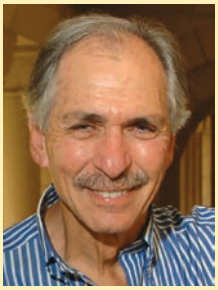
In addition to Cohen and Sherman, the paper's other co-authors were from UC–Santa Barbara, Columbia University, the University of Colorado and the University of Chicago. The NSF, Spencer Foundation and University of California funded the study. SE

Marguerite Rigoglioso, a frequent contributor to Stanford Educator, *wrote this story for the GSE website.*

Leaning on PISA

Socioeconomic inequality among U.S. students skews international comparisons of test scores, according to a report released in January by the Graduate School of Education and the Economic Policy Institute. When differences in countries' social class compositions are considered, the performance of U.S. students in relation to students in other countries improves markedly.

In preparing the report, professor of education Martin Carnoy and Richard Rothstein, an EPI research associate, examined adolescent reading and mathematics results from four test series over the last decade, sorting scores by social class for the Program on International Student Assessment, the Trends in International Mathematics and Science Study and the domestic National Assessment of Educational Progress.



Martin Carnoy

The report, *What do international tests really show about U.S. student performance?*, particularly raises questions about conclusions many educators draw from the PISA. It finds that average U.S. scores in reading and math on the PISA are low compared with many nations because a disproportionately greater share of U.S. students comes from disadvantaged social class groups, whose performance is relatively low in every country.

U.S. rankings on the PISA rise to sixth from 14th in reading and to 13th from 25th in math after the researchers recalculated average scores so that the United States had a social class composition similar to that of top-ranking nations. Indeed, the gap between U.S. students and those from the highest-achieving countries would be cut in half in reading and by at least a third in math.

"You can't compare nations' test scores without looking at the social class characteristics of students who take the test in different countries," said Carnoy. "Nations with more lower social class students will have lower overall scores, because these students don't perform as well academically, even in good schools. Policymakers should understand how our lower and higher social class students perform in comparison to similar students in other countries before recommending sweeping school reforms."

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English Language Learning Meets Common Core

Kenji Hakuta is leading a national effort to introduce a new approach to teaching English language learners.

"Learning English in action" is a good way to describe a new K-12 teaching approach being rolled out nationally by a group of educators whose aim is to help raise the quality of education for all learners, no matter what their language proficiency.

Earlier this year, the Understanding Language initiative, co-chaired by professor of education Kenji Hakuta, had its first official pilot in Charlotte-Mecklenburg, N.C.; another in Denver is to be completed by June; and a third is set to begin in Chicago.

The new initiative aims to help English language learners to meet rigorous English language arts standards while developing their English proficiency at the same time. The effort is inspired, in part, by the new Common Core State Standards in English language arts, among other subjects. "The Common Core requires students to go deeper by doing things like using text-based evidence to make arguments," said Hakuta. "While that's great, it could disadvantage English language learners."

The new five-week unit, called "Persuasion Across Time and Space: Analyzing and Producing Complex Texts," helps seventh-grade intermediate-level English language learners grapple directly with challenging documents such as Abraham Lincoln's *Gettysburg Address*, Martin Luther King Jr.'s *I Have a Dream* and Robert Kennedy's *On the Assassination of Martin Luther King*. Students must then produce their own persuasive speeches.

"In the past, teachers may have given English language learners simplified versions of such texts, or they may have pre-empted their learning by explaining such documents before students even had a chance to read them," said Martha Castellón, executive director of Understanding Language. This unit, in contrast, provides learners with multiple supports they need to delve into the texts themselves. It features historical background primers, close readings of texts with the teacher, guided questions and activities encouraging students to work together.

"This simultaneous approach speeds up students' language acquisition," Hakuta said. "It pushes us beyond the old, sequential mode of teaching grammar and then having students apply their language knowledge to the real world."

After being "pre-piloted" last summer in Oakland and New York City, the unit was unveiled Dec. 6 in a webinar broadcast to about 100 educators and administrators around the United States. Going forward, video documentation will allow the work to be shared more widely, and there's a plan to offer a professional development course on the material to teachers, to be followed by a massive open online course. The curriculum is now available on the Understanding Language website.

The group also is developing similar resources to support English language learners in math and science.

The other co-chair of Understanding Language is Maria Santos, a deputy superintendent for the Oakland Unified School District in California. The group also includes members from UC–Santa Cruz; WestEd, a San Francisco nonprofit organization that works on education reform; the Council of the Great City Schools; the New York City Department of Education; the Council of Chief State School Officers; and the National Council of La Raza, among others. The Carnegie Corporation of New York and the Bill and Melinda Gates Foundation are funding the effort through grants to Stanford.

"Persuasion Across Space and Time" was developed by a team at WestEd under the leadership of Aída Walqui, director of the Teacher Professional Development Program, who received her PhD from the Stanford Graduate School of Education. SE

Marguerite Rigoglioso is a Bay Area freelance writer.

Pescadero Adopts New Approach to Teaching English

"Dominga," said English-as-a-second-language teacher Shari Sollars, "I want you to ask Leti, '¿Donde está tu hermana?'"

"Where is your sister?" Dominga Antonio Gonzalez asked in slow, accented English. "She is in Mexico," responded her classmate Erica (Leti) Nuñes.

The exchange at a session earlier this year may seem like a standard exercise for a language class, but it's something of a revolution for English as a second language. For one, Sollars is interjecting Spanish to help her students learn English. She's also teaching them language for real-life situations. And she's focusing on oral interaction, rather than writing.

The two-hour class meets every Tuesday and Thursday morning at Puente de la Costa Sur, a community resource center in Pescadero, which lies over an hour's drive from Stanford and is home to many Mexican immigrants.

Guadalupe Valdés

Until recently, Puente instructors spoke only English and focused on grammar and textbooks. It was a typical method for ESL instruction, but it wasn't working. About half the students were dropping out, and students kept repeating the first-level class.

So in November 2011, Suzanne Abel, Puente's academic director, tapped her colleague Guadalupe Valdés, the Bonnie Katz Tenenbaum Professor of Education at Stanford. The two had worked together on a project in East Palo Alto, another Bay Area community with many Spanish-speaking residents. "I knew she was the right person to help Puente understand what was going on," said Abel.

Pescadero, *fishmonger* in Spanish, is considered part of the Bay Area, but it's a world away from the metropolis. It's a few miles inland from a remote section of the California coast. The town boasts just a few streets, and the only taqueria runs out of a gas station.

A teacher (right) uses both English and Spanish in an ELL class in Pescadero.

Immigrants arrive mostly from the Mexican states of Guanajuato, Michoacán and Oaxaca to plant and harvest artichokes, Brussels sprouts and onions, crops that thrive in the coastal fog. They also work in nurseries and on the organic farms that are sprouting up along the coast.

The fieldworkers and the mothers who stay home with children are surrounded by Spanish, which is spoken by their friends, elementary school teachers, grocers and employers. But they want to learn English: Speaking the lingua franca will help them better understand their English-speaking children, find higher-paying jobs and communicate better with doctors.

Like many poor immigrants from Mexico, the students who come to Puente to learn English have little schooling. That's why the previous ESL teaching method, which focused on grammar and writing, was mostly failing. "The writing and grammar are activities that discourage them," said Rita Mancera, program director at Puente.

When Valdés made the trek out to Pescadero, she understood the problem immediately. "The ESL classes had been as successful as other ESL classes, which is to say they were not very successful," said the professor, who is nationally known for her research on English-Spanish bilingualism. "Part of it is that there is a low literacy level among the students."

Using what she terms a comprehension-based approach, she taught a class that Puente videotaped so its ESL teachers could watch and learn. She used oral communication, not writing. She spoke Spanish when her students needed help. She showed them how to use meta-strategies, such as eavesdropping on English conversations, that help them develop their skills outside the class. "Listening is a neglected skill in language teaching," Valdés said.

Noting that "You must think about the real needs of the people," she focused on vocabulary and phrases for situations the students encounter regularly, such as grocery shopping and visiting the doctor.

Abel said that 90 percent of the students are staying in class. "There's much more enthusiasm now," she said.

The four students in Sollars's first-level class have lived in Pescadero between one and 10 years. Three of them took the class before Valdés made her visit. "Before, I didn't learn much," said Gonzalez in Spanish. "It's more practical now," agreed Marisol Silva. When they pass an oral exam, the students will move to the second level, which provides more focus on writing.

"I don't care if their English is perfect and they know how to spell," Sollars said. "As long as they can navigate in the community, that's what's important." SE

Mandy Erickson writes frequently for the Graduate School of Education.

Enhancing Math

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The initiative is supported by an $850,000 grant from the Heising-Simons Foundation to Stanford's Center to Support Excellence in Teaching and UCLA's Center X.

"We believe that children's early math learning lays the foundation for later learning, and that teachers play a vital role," said Liz Simons, president of the Heising-Simons Foundation. "This initiative aims to promote a shift in our educational system's approach to early math, and we hope that it will give teachers the tools they need to help California's children excel in math, and build reasoning skills that will help them throughout their school years."

Presently, when preschool and early education teachers do teach math, they often emphasize counting, which is useful but a very small part of the math-related skills that young children can and should learn. They tend to focus on memorization rather than showing how to add, divide or use geometry. Those involved in the Stanford-UCLA project emphasize that there is great potential to teach concepts.

Over the next three years, the program aims to educate 180 preschool and elementary teachers and involve 30 college faculty members, all in California. "The idea is to have a multiplying effect," said Stipek. "The hope is that better math education techniques will spread through preschool and elementary teaching communities and that college professors will improve and expand their teaching of math education." SE

Mandy Erickson writes frequently for the Graduate School of Education.

Troubling Patterns

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"We wanted to understand which teachers are teaching which students," said Susanna Loeb, the Barnett Family Professor of Education at the Stanford GSE and an author of the study. "In particular, are low-achieving students more likely to be assigned to certain teachers, and if so, why? Also, we wondered whether teacher sorting is more common in certain schools or under certain circumstances." Loeb is also CEPA's director.

Using data from Miami-Dade County schools, the authors compared the average achievement of teachers' students in the year before the students were assigned to them. They found that certain teachers — those with less experience, those from less competitive colleges, female teachers, and black and Hispanic teachers — are more likely to work, on average, with lower achieving students than are other teachers in the same school. They found these patterns at elementary, middle and high school levels.

> **"In particular, are *low-achieving students more likely to be assigned* to certain teachers, and if so, why?"** – Susanna Loeb

According to the researchers, teachers who have been at a school for a long time may be able to influence the assignment process in order to secure their preferred classes — for instance, classes with higher achieving students. The study found that teachers with 10 or more years of experience, as well as teachers who have held leadership positions, are assigned higher achieving students on average.

Susanna Loeb looks at how teachers are deployed.

Assigning lower achieving students to inexperienced teachers could have significant repercussions. According to the researchers, it could increase turnover among new teachers, since novice teachers are more likely to quit when assigned more low-achieving students. It also could exacerbate within-school achievement gaps — for example, the black-white gap. Since they are lower achieving on average, minority and poor students are often assigned to less experienced teachers than white and non-poor students. It is well established that less experienced teachers tend to be less effective, so this pattern could reinforce the relationships between race, poverty and achievement, the researchers said.

The study also found that lower achieving students are taught by the teachers who graduated from relatively less competitive colleges, based on admission scores and acceptance rates. This trend is particularly evident at the middle school and high school levels, possibly due to the more varied demands of middle and

high school courses. Teachers from more competitive colleges may have deeper subject knowledge than their colleagues from less competitive colleges, leading principals to assign them to more advanced courses, the researchers explained.

The researchers noted that assignment patterns vary across schools. Experienced teachers appear to have more power over the assignment process when there are more of them in a school; in such cases, they are assigned even higher achieving students. At the same time, schools under more accountability pressure are less likely to assign higher achieving students to more experienced teachers than schools that are not under accountability pressure.

Finally, according to the findings, class assignments vary depending on a teacher's gender and race. Since female teachers are more likely to teach special education than male teachers, on average they work with lower achieving students than their male colleagues. Also, black and Hispanic teachers, when compared with white teachers in the same schools, work with more minority and poor students, who tend to be lower achieving. Unlike sorting based on experience, the authors said that teacher-student matching based on race could improve student achievement because previous research suggests that minority students may learn more when taught by minority teachers.

"Our analyses are a first step in describing within-school class assignments, an important, yet often overlooked, form of teacher sorting," said Kalogrides. "Hopefully, future research will shed more light on the specific mechanisms underlying the relationships we found and the likely implications for students, teachers and schools."

The other co-author is Tara Béteille of the World Bank. A grant from the Institute of Education Sciences supported this study. SE

Rachel O'Brien, who recently received her doctorate from the GSE, wrote this story for Stanford Educator.

Leaning on PISA

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The report finds that while an achievement gap exists between more and less disadvantaged students in every country, that gap is smaller in the United States than in its peers, and not much larger than in the highest scoring countries. Also, the achievement of U.S. disadvantaged students has been rising over time, while achievement of disadvantaged students in countries to which the United States is frequently unfavorably compared — Canada, Finland and South Korea, for example — has been falling.

six other nations: three of the highest scorers (Canada, Finland and South Korea) and three economically comparable nations (France, Germany and the United Kingdom). The researchers show that score trends on these different tests can be very inconsistent, suggesting need for greater caution in interpreting any single test. For example, declining trends in U.S. average PISA math scores do not track with trends in TIMSS and NAEP, which show substantial math improvements for all U.S. social classes.

"You can't compare nations' test scores *without looking at the social class characteristics* of students who take the test in different countries."
– Martin Carnoy

Still, the report notes, the highest social class students in the United States do worse than their peers in other nations, and this gap widened from 2000 to 2009 on the PISA.

With each release of international test scores, many education leaders assert that American students are unprepared to compete in the new global economy, largely because of U.S. schools' shortcomings in educating disadvantaged students. "Such conclusions are oversimplified, frequently exaggerated and misleading," said Rothstein. "They ignore the complexity of test results and may lead policymakers to pursue inappropriate and even harmful reforms."

The report examines test results in detail from the United States and

Carnoy and Rothstein say that the differences in average scores on these tests reflect arbitrary decisions about content by the designers of the tests. Look at how the emphasis on particular subjects can affect how two nations compare: Although it was widely reported that U.S. 15-year-olds perform worse on average than students in Finland in mathematics, U.S. students perform better than students in Finland in algebra but worse in number properties (e.g., fractions). If algebra had greater weight in tests, and numbers less weight, test scores could show that U.S. overall performance was superior to that of Finland.

The report is available in the publications section of EPI's website, www.epi.org. SE

Special Chemistry

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to Support Excellence in Teaching (CSET) at the Graduate School of Education, in collaboration with scientists in the Department of Chemistry, the eight-day program showed participants how to build thought-provoking laboratory classes around easy-to-see chemical phenomena. The idea is to pique students' curiosity first, and hit them with the abstract theory later.

It sounds simple, but for Doyle it was a revelation. Chemistry textbooks almost always start with atomic structure, as do most high school courses. Yet many 15-year-olds have a hard time picturing molecules and atoms, let alone protons, neutrons and electrons. "Why do we teach theory first?" he wonders. "The giants of chemistry didn't start that way. They started with, 'Hey, when I mix this stuff with that stuff, this happens consistently.' They started with phenomena — things happening."

Doyle and his colleagues were so impressed by the workshop's upside down, "phenomena first" approach that they went to their principal last fall and asked if they could revamp Aragon's chemistry curriculum. "Today we start all of our units by making things happen, and having our students observe," he says. "Only then do we slowly add on the layers of understanding."

Pam Grossman

Stanford has a long history of engagement with Bay Area chemistry teachers. Graduate students often visit schools to help with lab demonstrations. Faculty regularly work with teachers on special summer projects in the university's labs. The idea behind ChemEX^2 was to bring even more chemistry teachers to campus. The course is part of CSET's Stanford Summer Teaching Institute (http://stanford.io/ZRN829).

ChemEX^2 program coordinator Cristina So said that last summer's program had 75 applicants — three times more than the available slots. One participant drove in every day from Stockton. CSET's faculty director, education professor Pam Grossman, said she's not surprised. Most professional development programs for teachers are fairly generic, dealing with topics like classroom management and the needs of particular student populations, she notes. "The need for high quality, subject-specific professional development is just enormous," Grossman said.

At the same time, state standards for chemistry courses have been expanding like bubbles in a hot test tube. "There's a giant checklist of things teachers have to get through in the lab," said Jennifer Schwartz Poehlmann, a senior chemistry lecturer. Christopher Chidsey, associate professor of chemistry, agreed: "The burden is put on teachers to try and figure out what's important, and what's doable."

Each of last summer's ChemEX^2 sessions began with a different phenomenon. Like the cabbage juice lab, they used simple materials. One day teachers inflated bags with different gases; on another they used plastic bottles, topped with balloons, to see how varying the amount of baking soda in vinegar affects carbon dioxide output.

After each demonstration, the teachers were solicited for their input and encouraged to think about how to use the phenomenon to teach concepts in their own classrooms. "One of the wonderful pieces of feedback that we got from them was, 'It's so fabulous to be a chemistry nerd in a group of chemistry nerds!' said Jean Lythcott, a Stanford teacher educator. "They loved having the freedom to muck around."

Kevin Doyle helped revamp his school's chemistry curriculum.

Once the school year started, ChemEX^2 participants kept in touch with each other via the program's website. They gathered on campus this school year for two daylong follow-up workshops. In an afternoon brainstorming session on March 9, one teacher solicited advice about handling students who lack the basic math skills necessary for chemistry. Another, determined to incorporate more phenomena into her classes, said she had taped a sheet of paper over her desk listing things to change for next year. She's not alone. When asked how likely they were to use ChemEX^2 material in their classrooms, nearly every teacher in the program responded with a 5 out of 5.

Back at Aragon High School, Kevin Doyle and his colleagues are now in their seventh month of the new curriculum. It's been a lot of work, rethinking classes that they have been teaching for years. But the results should pay off big time when the new Common Core standards are in place. "Even today, on this little activity with cabbage juice on coffee filters, my students are writing page-long arguments that start with, 'These must be acids because . . .'" Doyle said. The kids are thinking a lot more now about what they are doing in chemistry class — and that's a winning formula indeed. SE

Theresa Johnston, a Palo Alto-based freelance writer, wrote this story for the GSE website.

Schools Resegregate

continued from page 1

desegregation plans. The pattern of growing segregation was found in more than 200 medium and large districts following the end of their court supervision from 1991 to 2009, with the most pronounced increases occurring "in the South, in elementary grades, and in districts where prerelease school segregation levels were low."

The study, published in the *Journal of Policy Analysis and Management*, makes no interpretations about the relationship between the end of judicial control and ongoing academic results, such as test scores and graduation rates. Indeed, as notable as the research is in its scope (including the formulation of a list of all districts ever under court order), it's not clear how consequential resegregation is, in the context of either current education or race relations in general.

Still, Reardon thinks the shift toward resegregation is more than a temporary fluctuation or stall along the path to fuller integration. "This looks more like the canary in the coal mine of a reversal," he says. That segues to the question, he acknowledges, "Should we care?"

On that note, education expert Eric Hanushek, a senior fellow at the Hoover Institution, offers a resounding "yes," in part because of the impact on the math and reading achievements of black children. "Racial concentration for black kids is an extraordinarily important issue," he says. "The higher the concentration of the black students in a school, the worse black kids do." Possible explanations, says Hanushek, include negative peer pressures and low expectations from teachers.

The Reardon-led study emerges from the effects of the 1954 U.S. Supreme Court *Brown v. Board of Education* decision that said state-established legal protection for separate black and white schools was unconstitutional. The enforcement that eventually followed led to substantial decreases in school segregation throughout the South. But later Supreme Court decisions determined that mandated desegregation plans were not meant to be permanent.

In the absence of judicial intervention, school integration is limited by a variety of social factors, starting, as Reardon notes, with the persistence of racially segregated neighborhoods and school districts nationally. Hanushek points, for instance, to particularly entrenched concentrations of black students in some urban school systems. One wrinkle found by the Stanford study is that a high level of residential segregation may not dictate a rapid return to school segregation. Among the reasons: Parents may want their children to remain in the same schools they attended before the district's release from court oversight (at which point districts may change their methods for assigning students to schools). "Nonetheless," the study finds, "the degree of resegregation is substantial" — although not comparable to the pre-integration era.

Part of the findings, for example, measure how evenly students are distributed by race among all the schools in a district. Consider this 10-year trend in districts released from court orders: On average, the percentage of black or white elementary school students who would need to be reassigned to different schools to achieve the same racial balance throughout a district rose from a quarter of the students to over a third, an increase of 40 percent. In districts still under court orders, there was no significant change in segregation levels over that same period.

Sean Reardon shows integration's unraveling.

Hanushek is pessimistic about communities and educational policy makers taking notice in any practical way. Ultimately, he thinks, it's a conversation that people don't want to revisit.

"I agree," says Reardon, "that broad policy attention and interest in desegregation — and other policies aimed at reducing racial inequality — has waned over the last few decades." But, he adds, "Although policymaking is not always guided by evidence, my hope is that the accumulation of evidence on the patterns, causes, consequences of racial disparities in education will lead to more informed policy discussions and the development of more effective remedies."

The study has three co-authors: Elena Grewal, a doctoral candidate in the economics of education program; Demetra Kalogrides, a research associate at Stanford's Center for Education Policy Analysis; and Erica Greenberg, a doctoral candidate in the education policy program. SE

Mike Antonucci wrote this article for the March/April issue of STANFORD *magazine.*

Online Course Draws 44,000 — and Questions from Students

Becca Constantine, a student in Stanford's Policy, Organization and Leadership Studies master's program, was keenly interested in education professor Dan McFarland's MOOC experiment.

McFarland was putting his Organizational Analysis class online — available free to literally anyone with a computer — as a massive open online course. At the same time, he required his students at the Stanford Graduate School of Education to take the fall 2012 course in what's called a "flipped" format, in which they first watch online videos of lectures and then come into class to discuss them with McFarland and a teaching assistant.

To put his Organizational Analysis class online, Dan McFarland recorded 80 lectures of 15 to 20 minutes.

Because Constantine is hoping to go into higher education administration, she wanted to experience a MOOC, to see how it fits into the future of education. Over the last two years, Stanford and other universities have started offering MOOCs that are reaching tens of thousands of students globally. But questions abound. Will they be a substitute for "real-world" courses now being offered at colleges nationwide? And how well do students learn in an online format?

"I'd never been in an online course, and I'd never had to learn how to engage with a screen rather than a person," Constantine said. "There were times when I wanted to stop and say, 'Wait, I don't understand,' but I had to wait for the class."

A few Stanford students expressed frustration with the approach, but the majority, including Constantine, found the online lectures more organized than those delivered in a classroom. "There aren't tangents and sidebars," she said. "You get the material in a very directed way."

The class was McFarland's first foray into the MOOC world. He launched it after receiving a seed grant from the Office of the Vice Provost for Online Learning to offer the course. It was made available through Coursera, one of a handful of organizations now offering university classes as MOOCs, generally for free.

While the initial MOOCs were devoted to computer science subjects, McFarland's class reflects how the approach is now being tried in the social sciences, the humanities and other disciplines. McFarland's course examines theories of how organizations — businesses, schools, nonprofits, associations — are structured, how they create a product or effect a change, and how individuals behave within them.

The MOOC was a learning experience for McFarland, too. He had the same big-picture questions as Constantine, but he also needed to tackle the practical aspects of teaching over 40,000 students scattered around the world instead of 40 seated in a single classroom.

McFarland spent much of the summer and fall recording some 80 lectures of 15 to 20 minutes each, using the same material he has taught in previous years to his students at the Graduate School of Education. He developed short quizzes to interrupt the lectures, helping to keep students engaged. And additional readings were offered at $80, discounted from $200. (The texts were made optional, because, as McFarland noted, $80 is a year's salary for many people in developing nations.)

Online forums gave the MOOC students a means to help each other, and each week, McFarland answered the six questions MOOC students voted the most popular. Meanwhile, the Stanford students met in a real-world class to discuss the material, engage in group projects and collaborate on applying the material to cases. Both Stanford and MOOC students graded each other's written papers, while the Stanford students received added feedback from McFarland and his TAs.

During the 10-week course, Coursera gathered statistics on the MOOC students and how engaged they were in the class.

"What I learned is that very few people want to write papers and take a college class," McFarland said. "Also, a lot don't have enough command of English to write an eight-page paper."

Of the 44,501 students registered for McFarland's MOOC, only 2,375 took the final, which earned them a basic certificate if they scored 70 percent or better and spent time on the class's online forums. Just 291 also chose to write papers and were awarded an advanced certificate for their efforts.

As the quarter progressed, McFarland learned how to be more engaging online: "Now I know how to act animated in front of a camera," he said. "I gained a lot of respect for TV actors." He had to alter the lectures because he realized that many students didn't have the reading material: "Suddenly your lecture becomes the only text. Every minute they watched I wanted to give them something meaningful and succinct."

He was also surprised by how international his MOOC students were — they represented 70 nations and every continent except Antarctica. And he stumbled across a number of technical problems, which Coursera staff and his team of teaching assistants — Charlie Gomez, Emily Schneider and Dan Newark — ironed out.

When the course ended and McFarland received the evaluations, he found that his MOOC students from outside Stanford were almost uniformly enthusiastic. Huda Midani, a human resources consultant in Damascus, Syria, wrote by email that the course "helped me understand organizational issues better and be better prepared to analyze them." She added that "Professor Dan was really helpful and deeply cared about us (students)."

But some Stanford students, while liking the course content, were not fans of the online format.

"There's something about the computer that allows you to ignore it," said Whitney Stubbs, a POLS student, who noted that sometimes she did chores while listening to them. "At least if I were in a lecture hall, I wouldn't do my dishes or seed pomegranates. I'd take notes." The problem could be that Stanford students were required to take the class, while the other students were there voluntarily. "Maybe we're just less motivated to pay attention," Stubbs said.

McFarland acknowledged that the challenge is to figure out how to make the class more appealing to the Stanford students — how to provide additional in-person experiences that will make them feel the expense of a Stanford education is worth their while. Still, he was struck by the benefits.

"I think the MOOCs are a great service to the world," he said. "It brings knowledge to the masses and enables Stanford to do a global service a nonprofit could be proud of providing."

As for how well students learn online, it depended on how much they put into the class.

Inga Brandes, a higher education administrator in Hagen, Germany, who took the advanced track, felt that writing papers was the key to understanding the material. "If you just watch videos, you think, 'Yeah, yeah, I got it.' But when you have to write it down and explain it to someone, you really have to think about it," she said in an interview by phone.

And while the MOOC is "not the same [as a classroom], it still gave you a feeling of a learning community," she added, noting that being a MOOC student gave her an added benefit: The wide diversity of fellow students taught her about organizations in different cultures, where, for example, customs prohibit people from telling colleagues they made a mistake.

"I think the MOOCs are a great service to the world. *It brings knowledge to the masses and enables Stanford to do a global service* **a nonprofit could be proud of providing."** – Dan McFarland

So, will MOOCs replace classrooms?

POLS student Constantine, who wrote a paper about the MOOC for another class, thinks not. "MOOCs aren't there to replace Stanford," she said. She felt that the classroom, in which the students grouped together to discuss the material, was an essential part of the learning experience.

"If they start to replace schools, it will be community colleges," Constantine said.

McFarland too doubts that MOOCs will replace all classrooms or call into question the higher education system's existence: "Universities are expanding their functions and audiences over time. Stanford reaches a new population in the world through MOOCs, and they have distinctive interests and needs. Even if MOOCs do replace some teaching efforts in universities, the universities will continue to perform research, partner with industry, conduct outreach with communities, and develop social networks of alumni and societal stakeholders." SE

Mandy Erickson, a Bay Area freelance writer and editor, contributes stories to the Graduate School of Education.

MOOC Analysis

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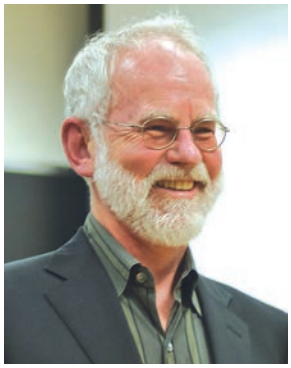
Schneider and her colleagues — René Kizilcec in the Department of Communication and Chris Piech in the Department of Computer Science — looked at three MOOCs offered by Stanford faculty and presented a paper on their research at a conference in Belgium in April. They identified the different types of students taking these classes, how they have different approaches to the courses and how the classes might better serve them.

"There is an enormous amount of work to be done in this space in terms of developing and investigating good models for instructional and interface design and developing appropriate outcome measures and analytics," Schneider said.

This work is part of a broad Learning Analytics initiative at Stanford, which includes graduate students, researchers and professors from not only education but also computer science, communication and sociology. In addition to Schneider's project, there's work under way on a dashboard to help instructors monitor student engagement, a study of peer assessment based on 63,000 peer grades in a MOOC on human-computer interaction, and development of predictors of student performance.

The "Lytics Lab," which meets weekly under the auspices of the Office of the Vice Provost for Online Learning and the GSE's Learning Sciences and Technology Design program, is driven by the plethora of data resulting from Stanford's early adoption of online learning. Data are collected when students complete assignments, take exams, watch videos, participate in class forums or do peer assessments. The data from these courses can be used to both improve these courses and to answer a multitude of questions about how humans learn and interact.

"Learning analytics is all about patterns and prediction," said Roy Pea, the education professor who worked with Schneider and other students to establish the Lytics Lab and serves as one of the program's two faculty directors. "It's about algorithms for identifying patterns in data to infer a learner's knowledge, their intentions and their interests, and then predicting what should come next to advance their progress."



Roy Pea co-directs the Lytics Lab.

Schneider's group used learning analytics to better understand why so many students don't complete MOOCs. To do so, they studied student behavior in three such courses offered by Stanford faculty: Computer Science 101, a high-school-level course; Algorithms: Design and Analysis, at the undergraduate level; and the graduate-level Probabilistic Graphical Models.

The study found that people take classes or stop for different reasons, and therefore referring globally to "dropouts" makes no sense in the online context. They identified four groups of participants: those who completed most assignments, those who audited, those who gradually disengaged and those who sporadically sampled. (Most students who sign up never actually show up, making their inclusion in the data problematic.) The point of all this is not simply to record who is doing what but to "provide educators, instructional designers and platform developers with insights for designing effective and potentially adaptive learning environments that best meet the needs of MOOC participants," the researchers wrote.

For example, in all three computer science courses they analyzed, they found a high correlation between "completing learners" and participation on forum pages; the more students interacted with others on the forum page, the better they learned. This led the researchers to suggest that designers should consider building other community-oriented features, including regularly scheduled videos and discussions, to promote social behavior.

While many people take online courses for certification and skills acquisition, many more take them simply for intellectual stimulation. The completion rates for the classes were 27 percent for the high-school-level class, 8 percent for the undergraduate-level course and 5 percent for the graduate-level class. But 74 percent of the undergraduate students and 80 percent of the enrollees in the graduate class sampled, meaning they may have dipped in and out according to time constraints and interest.

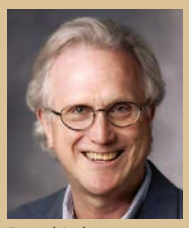
Finally, the researchers found substantial gender differences in the more advanced classes. Counting "active learners," defined as those who did anything at all on the website (around half the original enrollees), 64 percent of the high-school-level class were men, and the percentage rose to 88 percent men for both the undergraduate-level and graduate-level courses.

"There are people coming to MOOCs from a vast range of backgrounds," said Schneider. We want to optimize systems to best meet their needs."

Schneider said that their next steps may include extending their study's analysis to other courses, collaborating with MOOC researchers at other institutions to build on their work, beginning to develop an online evidence base on MOOC research, investigating the community aspect of MOOCs, and running experiments on team dynamics and interface design. She is also working with a colleague at MIT to organize what could well be the first research workshop on MOOCs, aka the moocshop, in July. For more information, see moocshop.org. SE

This story was adapted from an article by R. F. MacKay for the Office of the Vice Provost for Online Learning.


Linda Darling-Hammond


David Labaree


Ira Lit


Susanna Loeb


Sean Reardon


Mitchell Stevens

Linda Darling-Hammond, the Charles E. Ducommun Professor of Education, was elected chair of the California Commission on Teacher Credentialing in December. The new role places her in a position to shape the state's policies affecting the recruitment and training of teachers and principals. In an interview with *EdSource*, she identified several major projects in the works for the next year: updating the state's standards for teaching to incorporate Common Core standards in math and English language arts, rewriting standards for administrators and rethinking the credential to teach special education, where there is a critical shortage of teachers.

David Labaree, professor of education, was selected as a 2013 AERA Fellow for his exceptional scholarly contributions to education research. A sociologically oriented historian of education, Labaree explores in his studies the development of the American system of schooling and the role this system plays in American society. He is the author of a number of award-winning books, including *Someone Has to Fail: The Zero-Sum Game of Public Schooling, The Trouble with Ed Schools*, and *How to Succeed in School Without Really Learning: The Credentials Race in American Education.*

Labaree was also asked to deliver on April 27 the annual John Dewey Lecture, sponsored by the John Dewey Society, at this year's AERA conference in San Francisco. The title of the lecture is "College — What Is It Good For?"

Ira Lit, associate professor of education, was elected to the board of directors of the American Association of Colleges for Teacher Education. His three-year term began March 1. Lit, who is also director of the Stanford Teacher Education Program–Elementary, has been involved in AACTE throughout his career, serving as chair of the AACTE membership development committee and as a member of the AACTE task force on state grants initiative. He also serves on California state advisory panels on teacher-preparation policy and teacher professional standards and other leading professional task forces.

Susanna Loeb, the Barnett Family Professor of Education, was elected in February to membership in the National Academy of Education on the basis of her outstanding scholarship in the economics of education and the relationship between schools and federal, state and local policies. Among her research subjects, she studies teacher policy, looking specifically at how teachers' preferences affect the distribution of teaching quality across schools, how pre-service coursework requirements affect the quality of teacher candidates and how reforms affect teachers' career decisions. [*See "Troubling Patterns in Teacher Class Assignments," p. 7.*] She is also director of the Center for Education Policy Analysis.

Sean Reardon, professor of education, and **Andrew Ho**, who received his PhD from the GSE and is now assistant professor of education at Harvard, were chosen to receive AERA's Palmer O. Johnson Memorial Award for their paper, "Estimating Achievement Gaps from Test Scores Reported in Ordinal Proficiency Categories" in the August 2012 issue of the *Journal of Educational and Behavioral Statistics*. The award is given annually to recognize the highest quality of scholarship published in *JEBS* and three other AERA publications.

In the paper, Reardon and Ho present novel statistical methods that enable researchers to better use readily available test score data to estimate achievement gaps among student groups. In particular, they describe ways to more accurately estimate achievement gaps when only incomplete data are available.

Mitchell Stevens, associate professor of education, was appointed in April to a newly created position, director of digital research and planning, in which he will help bridge research efforts in the Office of the Vice Provost of Online Learning and the GSE. He will report to both John Mitchell, vice provost for online learning, and GSE dean Claude Steele.

"The position arises from our conviction that educational research and new online learning efforts are inherently intertwined and complementary ventures," said Steele. "In his new role,

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GSE Startup Offers Autism Therapies on iPad

A company hatched by recent graduates is winning kudos for its games to augment behavioral therapies for kids on the autism spectrum.

Three recent alumni from the Learning, Design and Technology program have become "edu-preneurs." Their start-up is off to a fast start in the nascent field of game design for disabled children.

Joy Wong Daniels (MA '12), Alexis Hiniker (MA '12) and Heidi Williamson (MA '12) worked as a team during the LDT master's program, graduating last August. Their final project, first presented at the school's LDT Expo, is a suite of iPad games to augment traditional behavioral therapies for children with autism spectrum disorders.

The first suite of three fantasy/adventure games ... *aims to teach autistic children how to quickly notice* multiple features of objects in their immediate environment.

The games, released on the iTunes App Store in October, have garnered praise from parents, teachers and therapists, as well as an award for design excellence from *Children's Technology Review* and the distinguished Parents' Choice Gold Award for best mobile app. In February, their fledgling company, Go Go Games Studios, won this year's Shobe Prize, awarded by the University of Washington's Human Centered Design and Engineering program. The prize includes office space at UW through the summer and mentoring from faculty, prize judges and industry partners. While in residence at UW, the team will develop their second game program for the autistic market, focusing on speech therapy. (Hiniker is a doctoral candidate in the Human Centered Design and Engineering program.)

Alexis Hiniker and Joy Wong Daniels have become "edu-preneurs."

The first suite of three fantasy/adventure games was designed at the Stanford Graduate School of Education under the guidance of faculty advisors associate professor Brigid Barron and professor Dan Schwartz. The goal is to teach autistic children how to quickly notice multiple features of objects in their immediate environment. That's an essential learning skill that is known to be a challenge for children on the autism spectrum.

The iPad platform shows a great deal of potential for therapies for children on the spectrum because those students typically perform better with a touch screen interface than with a keyboard and a mouse. Also, a new study reports that 41 percent of such children spend most of their free time playing video games.

"After talking with researchers and therapists in the field, Alexis felt that the intersection of video games and therapy was under-explored," said Wong Daniels, the chief executive officer of Go Go Games. "We wanted to use our technical and design skills to serve an underserved audience. We saw Go Go Games as a way to provide learning experiences that work like therapy but feel like play."

Go Go Games is now developing a prototype for its next product, and is currently seeking angel investment and other seed funding to continue its work and expand its efforts.

For more information about Go Go Games, visit www.go-go-games.com. SE


Ellen Mandinach, PhD '84


Felicia (Khoja) Kamriani, MA '93


Keri Morgret, MA '02

Share your latest news by mailing us the attached envelope or submitting your update at: http://ed.stanford.edu/alumni/keep-in-touch.

1960s

Christopher N. Miller, MA '67, is active in U.S. professional soccer education, working with a broad range of ages from youth to adults. He retired after 45 years working as a public school teacher and administrator. Prior to attending Stanford, Miller earned a BS from Lewis and Clark College, where he was a nine-time All American in cross country and track and field.

1970s

Thomas B. Roberts, PhD '70, edited *Spiritual Growth with Entheogens: Psychoactive Sacramentals and Human Transformation* (Park Street Press, 2012). Featuring writings by more than 25 spiritual leaders, scientists and psychedelic visionaries, the book examines how entheogens can serve as catalysts for spiritual development. Roberts is professor emeritus at Northern Illinois University and a former visiting scientist at Johns Hopkins University. He has spoken at international conferences on entheogens, consciousness and psychedelic science.

1980s

Ellen Mandinach, PhD '84, is a senior research scientist at WestEd in Washington, D.C. She is a leading expert in the area of data-driven decision making at the classroom, district and state levels. Mandinach authored *Transforming Teaching and Learning Through Data-Driven Decision Making* (Corwin, 2012) with Sharnell S. Jackson. The book bridges the gap between classroom practice and the principles of educational psychology by presenting an integrated model that helps teachers and administrators transform data into actionable knowledge.

1990s

Felicia (Khoja) Kamriani, MA '93, will attend the Arts in Education master's program at Harvard Graduate School of Education this fall. She has worked for several years as an educational consultant helping students navigate the private school and college application process and as an entrepreneur creating art with positive messages for kids (www.felittlepeople.com). 2013 marks her 20th reunion year with Stanford GSE, and she is looking forward to returning to the Farm to celebrate.

2000s

Keri Morgret, MA '02, relocated to the Seattle area with her husband, Stephen, last summer. A graduate of the Learning, Design and Technology program, she serves as the on-site community manager for SEOmoz, a company specializing in search engine optimization software and Internet marketing. Her husband sells model warship kits.

Travis J. Bristol, MA '04, is a fourth year PhD candidate at Teachers College, Columbia University. His dissertation, *Men of the Classroom*, explores how organizational conditions, characteristics and dynamics in schools affect the recruitment, experiences and retention of black male teachers. He also works as a clinical teacher educator with the Boston Teacher Residency program.

Christopher Chiang, MA '04, was elected in November to the Mountain View Whisman School Board in Mountain View, Calif. He teaches sixth grade social studies at Sacred Heart Schools in Atherton, Calif.

Lenay Dunn, MA '05, completed her PhD in education policy from Arizona State University in 2011 while working there as associate director, then director of research and evaluation for an administrative unit. She's recently been working at WestEd as a senior research associate doing research on issues of equity, reform, school and district improvement, and family and community engagement with a focus on Arizona and the Western region.

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Travis J. Bristol, MA '04


Christopher Chiang, MA '04


Lenay Dunn, MA '05


Jessica James Hale, MA '06


Erin Furtak, PhD '06


Josefino Rivera, Jr., MA '07

2000s

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Jessica James Hale, MA '06, is pursuing a PhD in mathematics education at Georgia State University, where she was awarded the Dean's Doctoral Fellowship.

Erin Furtak, PhD '06, won the Presidential Early Career Award for Scientists and Engineers, the highest honor bestowed by the U.S. government on outstanding scientists and engineers in the early stages of their careers.

An assistant professor of education at the University of Colorado at Boulder, Furtak was honored for developing new tools that help high school teachers build their content knowledge and teaching skills so that they can better understand student perceptions of natural selection. She is working on-site with teachers at three high schools in Jefferson County, Colorado, over the course of four years to help them learn how to adapt instruction to meet students' needs and enhance their learning.

The White House cited Furtak for "innovative research on how professional development focused on learning progressions increases teacher knowledge and student achievement, and for working with schools and teachers to implement such professional development in diverse settings." She is a graduate of the Curriculum Studies and Teacher Education program.

After graduating, **Josefino Rivera, Jr., MA '07**, taught at Mountain View High School, where he had served as a STEP student teacher. In 2010, he began his international teaching career at the American Overseas School of Rome, where he combined his love for education, literature and travel. "Teaching *The Odyssey* strikes a different chord with students when they realize Odysseus' journey took place in some parts of their own country," he said. In 2012, he moved to Bonn International School in Bonn, the former capital of Germany. Rivera believes that working with third culture kids — students who were born in one country and live on the outskirts of another — is an exciting opportunity because they develop a global mentality at a young age. "Of course," he adds, "the challenge is to help develop a sense of community in a classroom that has a revolving student population."

Martha Alvarez, MA '09, had the opportunity to pursue a Capitol Fellows Executive Fellowship at the California State Treasurer's Office after graduating from the POLS program in 2009. As a fellow, she was a member of the team that developed and implemented two statewide financing programs. She now serves as director of government relations for the San Diego Unified School District, the second largest school district in California. For Alvarez, this opportunity comes "at a time when California schools are experiencing new standards and more local control, and (will) potentially undergo the greatest education finance reform in 40 years."

2010s

Ben Grossman-Kahn, MA '10, began a new job last year in Seattle with the Nordstrom Innovation Lab to spread design thinking and innovation. He previously spent one and a half years in San Francisco building the education and innovation program at the Children's Creativity Museum, which he says is a great resource for user testing and research for fellow alumni and students in the Learning, Design and Technology program. He says, "I am learning that everything we learned about K-12 education and student learning behavior is just as relevant to coaching creativity and organizational design at the corporate and executive level. If you are up in Seattle, please say hi — it's always great to connect with fellow GSE'ers!"

Helen Snodgrass, MA '10, has been appointed dean of instruction at YES Prep North Forest, one of the campuses of YES


Martha Alvarez, MA '09


Helen Snodgrass, MA '10


Elise Paradis, PhD '11

Prep Public Schools in Houston, beginning next year. In addition to teaching AP Biology, Snodgrass will plan with, observe and provide feedback to fellow teachers, and plan and lead professional development activities.

Jacob Klein, MA '10, continues to have a blast building Motion Math, the startup he co-founded with Learning, Design and Technology (LDT) classmate **Gabriel Adauto, MA '10**. In the past year, they produced their first game for preschoolers, as well as school versions of five Motion Math games. They are now hard at work creating a game that addresses the concepts of estimation and measurement — their most ambitious learning game yet. Klein and Adauto are collaborating with classmates **Coram Bryant, MA '10**, and **Ignacio Schiefelbein, MA '10**, who work as Motion Math's head of learning and game designer/artist, respectively. They hope to collaborate with more Stanford GSE graduates in the future. On a personal note, Klein and his fiancé, Liz, will marry in May.

Rachel Fishbein, MA '11, recently became program manager for the Quest for Excellence New York City Award, a new initiative for high-achieving, low-income high school juniors from New York City. The award is a new initiative of Questbridge and its National College Prep Scholarship program. For more information about the initiative, visit http://questbridge.org/for-students/qfe-nyc-award.

Elise Paradis, PhD '11, began a new position as an adjunct assistant professor in the Department of Social and Behavioral Sciences at UC–San Francisco in April.

Aneeqa Ishaq, MA '12, is now working at Lutron Electronics, where she designs energy saving technologies that are cognitively simple, intuitive, and user-centered. SE

IN MEMORIAM

Marjorie Balazs, MA '63, died on March 9 in St. Louis County. She graduated from Washington University in St. Louis, Mo., and earned a master's degree in teaching at Stanford and an honorary doctorate from the University of San Francisco. She founded Balazs Analytical Laboratories, a Sunnyvale, Calif.-based company known worldwide for its pioneering work in water purity and chemistry, and for its ability to solve the most difficult contamination problems in the semiconductor industry. A longtime enthusiast of chemistry and other sciences, she passed down her lifelong passion for the sciences to a new generation of curious minds through her generous support of Chemistry EXperiences and EXperiments for Learning (ChemEX^2), a partnership between the Stanford Department of Chemistry and the Center to Support Excellence in Teaching. [*See "That Special Chemistry," p. 1.*] Her role in launching ChemEX^2 was highlighted in the summer 2012 *Stanford Educator*. She is survived by her brother, Karl; sister, Carol Waggle; and nieces, great nieces, nephews and many friends.

Randi Alexandra Engle, PhD '00, died on Oct. 26, 2012 at her home in Berkeley, Calif. from pancreatic cancer. She was 45. A native of Ridgewood, N.J., Engle graduated from Dartmouth College in 1990 with bachelor degrees in psychology and mathematics, and earned a PhD in Symbolic Systems in Education from Stanford in 2000. She then worked for five years as a post-doctoral researcher at the Learning Research and Development Center at the University of Pittsburgh. In 2005, Engle joined the faculty of UC–Berkeley's Graduate School of Education, and received tenure as an associate professor in 2011. Her studies of classrooms and how discussions can be structured so that students can apply what they learn outside of the classroom have changed the field's understanding of what teachers can do to make their lessons more powerful. Engle is survived by her husband, Thomas Kuhn; their daughters, Rebecca and Gwendolyn; her brother, Russell; her mother, Ingrid; her father, William; and her stepmother, Kathy.

Thomas Edgar Holland, MA '02, died on Nov. 9, 2012 in Zarautz, Spain after a one-and-a-half-year battle with brain cancer. Holland graduated from the University of Texas at Austin with a BA in English and a secondary English teaching credential. At Stanford, he earned an MA in Educational Linguistics in 2002. Forty-seven years old at the time, he loved to boast that he was the "oldest and thickest" student in his classes. Before becoming a teacher, Holland spent over 20 years in the hospitality industry as a restaurant server and manager, and in the last eight years, worked in fine dining with the Ritz Carlton and Four Seasons hotel chains. He then relished teaching for nearly 20 years at various high schools in Texas, Massachusetts and Spain, before ending up at the Centro de Linguas at the University of A Coruña in Galicia, Spain, where he was happiest. Holland is survived by his wife of over 20 years, María Eizaguirre Altuna; his brothers and spouses Harry, John and Charlotte, and Bob and Kelly; as well as his aunts, cousins and extended family members in Brazil, France and Spain. SE

Student News


Parissa (Jahromi) Ballard


Shannon Brady


Jeremy Jimenez

Parissa (Jahromi) Ballard has been selected as a Robert Wood Johnson Foundation Health and Society Scholar, starting this fall. Her two-year research appointment at UC–San Francisco and UC–Berkeley will focus on understanding health disparities and promoting positive health. She plans to examine the links between civic engagement and health, both within individuals and in communities.

Shannon Brady, a doctoral student in Developmental and Psychological Sciences, organized an Alternative Spring Break trip to the Pine Ridge Indian Reservation in western South Dakota, home to the Oglala Lakota tribe. Prior to coming to Stanford, she had worked there for five years as a kindergarten through eighth-grade teacher.

Undergraduate **Todd Phelps**, who was a student during Brady's teaching stint at Pine Ridge, helped lead the trip, which was the culmination of a quarter-long directed reading course that the two had organized. Among the 11 participants was **Jeremy Jimenez**, a doctoral student in International Comparative Education. The faculty advisor was professor of education **Teresa LaFramboise**.

As part of the trip, the group spent two and a half days at Little Wound Day School (Brady's former school and Phelps' alma mater), where each participant worked with a different teacher, observing regular classroom life and helping out whenever appropriate. Jimenez, for instance, sat in on several Lakota Studies and Tribal Studies classes, and, at the request of the teacher, provided feedback on a role-playing simulation, based on the forced relocation of the Cherokee, which the teacher was modeling in collaboration with a university professor who had recently developed the program.

There also were visits to three other schools on the reservation, where Stanford students talked with administrators, staff and students and learned about the diversity of schools, the challenges they face and the innovative solutions they have generated to address their challenges.

Brady is already planning for next year's course and trip.

Shuchi Grover co-authored "Computational Thinking in K-12: A Review of the State of the Field" with her advisor **Roy Pea**. The paper, a synthesis aimed at the general education research audience, was recently published in the January/February issue of *Educational Researcher*. Grover is a fourth-year student in the Learning Sciences and Technology Design doctoral program. Her research focuses on helping middle school and high school students develop computational competencies.

Bertrand Schneider, a doctoral student in Learning Sciences and Technology Design, and three co-authors, including professor of education **Roy Pea**, were honored with a best paper award at the Learning Analytics and Knowledge 2013 conference in Leuven, Belgium, in April. The paper — "Toward Collaboration Sensing: Applying Network Analysis Techniques to Collaborative Eye-tracking Data" — advances the way researchers can study collaborative learning using eye tracking to record real-time mutual gaze perception. This research is funded in part by the NSF-funded LIFE Center for which Pea serves as co-director.

Jim Soland, a doctoral student in the Developmental and Psychological Sciences program, was awarded a dissertation grant from AERA, the American Educational Research Association, to fund his study of how predictive data can be blended with teacher intuition to more accurately target supports and interventions for students.

Soland is using data from the National Educational Longitudinal Survey to evaluate how effectively teachers and school districts can predict future student outcomes. These "early warning systems" incorporate such data as grades, courses completed and absences to forecast outcomes such as


Shuchi Grover


Bertrand Schneider


Jim Soland


Rachael Tutwiler

whether a student will drop out or enroll in college. "My goal is to see if these statistical models forecast outcomes any better than if we simply ask teachers what they think will happen," he said. "If not, why not? These models implicitly assume that their predictions improve on teacher intuition, an assumption that hasn't yet been tested."

Soland's primary doctoral adviser is professor **Edward Haertel**. Professor **Kenji Hakuta** serves as his secondary adviser for his dissertation.

Rachael Tutwiler, a student in the Policy, Organization, and Leadership Studies master's program, has been selected as a finalist for the prestigious Presidential Management Fellows program, a two-year leadership development program for advanced degree candidates sponsored by the federal government's Office of Personnel Management. Established in 1977 by executive order, the program attracts citizen-scholars from a variety of academic disciplines and career paths who have a clear interest in excellence in the leadership and management of public policies and programs.

Tutwiler's research focuses on federal education policy, specifically the Obama administration's No Child Left Behind waivers. She is also interested in collaboration between federal, state and local education agencies that work to improve student outcomes. As a policy and research intern at the Stanford Center for Opportunity Policy in Education, she is working on a project that studies the research that policy makers use for deciding on the reauthorization of the Elementary and Secondary Education Act.

As a Presidential Management Fellow, Tutwiler is seeking to work on current education policies and initiatives. She hopes to work at the U.S. Department of Education in an office that allows her to interact with senior department leadership, as well as with state and district officials responsible for implementing policies. SE

Faculty News *continued from page 21*

Mitchell will be working to ensure that Stanford takes full advantage of the GSE's great research capacity, its great expertise in practice, and its longstanding focus on digital learning."

Stevens, a sociologist who has done extensive research on issues relating to higher education, is cofounder of Education's Digital Future, a GSE initiative to catalyze conversation about digital learning.

Sam Wineburg, the Margaret Jacks Professor of Education, and two colleagues received in January the American Historical Association's James Harvey Robinson Award for the best teaching innovation, digitally or in print, for their book *Reading Like a Historian: Teaching Literacy in Middle and High School History Classrooms.* The book promotes a high school history curriculum that draws on original source material rather than relying on textbooks. "This is a great honor," said Wineburg, who directs the Stanford History Education Group, where this new approach to teaching history was developed. The two other recipients, who both earned their doctoral degrees from the GSE and co-founded the Stanford History Education Group with Wineburg, are Daisy Martin, now a senior researcher at the Stanford Center for Assessment, Learning and Equity, and Chauncey Monte-Sano, an associate professor at the University of Michigan. SE

STAFF NEWS

Jonathan Rabinovitz became director of communications at Stanford Graduate School of Education in November. He is available to assist members of the media who are working on education stories and would like help tapping into the school's resources. He also provides information to the public at large about school initiatives and services, in addition to overseeing strategic communication and news content for the school's website, print publications and social media.

Rabinovitz has worked as a reporter on the metropolitan desk of *The New York Times*, as the economy writer for the *San Jose Mercury News* and as an editor at the *Industry Standard* and *Mother Jones* magazines. He has worked in communications for more than a decade at Stanford, serving as editor of the law school's alumni magazine, as the university's media relations director and as managing editor in the medical school's communications office.

Rabinovitz has an MA in journalism from UC–Berkeley and a BA with honors in social studies from Harvard College.

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FabLab Thailand

Paulo Blikstein, assistant professor of education, received a warm welcome from Thailand's Prime Minister Yingluck Shinawatra in Bangkok earlier this year to celebrate the opening of his latest educational FabLab.

Blikstein is at the forefront of a movement to improve the teaching of science, engineering and math by enabling students to use high-tech equipment — laser cutters, 3D printers, milling machines, robotics and other tools — to learn by making, creating and collaborating. The opening of the FabLab at the Darunsikkhalai School for Innovative Learning follows his launching labs in Moscow and at the Castilleja School in Palo Alto, along with establishing one on campus.

"A FabLab is a special place in a school," he told 250 Thai education leaders at a Jan. 15-17 symposium on constructionism. "It's a disruptive space — an invention lab, but also a science lab, a robotics club and a place to hang out and make stuff."

The symposium included the official signing of a partnership between Stanford and leading Thai educational institutions, made possible by a $1.1 million grant from the Suksapattana Foundation. Along with the new FabLab, the agreement includes fellowships for Thai graduate students to study at the Graduate School of Education and support for Stanford postdoctoral scholars to conduct research on how the Thai FabLab is helping students to learn.

Blikstein emphasized that the key to FabLab's success in schools is research that measures what works and what doesn't and how to develop appropriate lesson plans. SE