Does Performance Pay Work? —POINt Experiment Results Announced—

Mathematics in Motion

VANDERBILT PEABODY COLLEGE

Office of the Dean
Vanderbilt University, Peabody College
Peabody #620
230 Appleton Place
Nashville, Tennessee 37203-5721
As we prepare this issue of Ideas in Action, the teaching profession is under sustained criticism from quarters including federal and state governments, municipalities, education reformers, the media, and large swathes of the public. Schools of education and human development, as the primary institutions charged with preparing teachers, are in turn under scrutiny, with public shaming promised should we fail to be sufficiently forthcoming.

The irony here is that despite those education schools that remain part of the problem, most others are working diligently to offer solutions to our pressing educational challenges—solutions that are based on research, not rhetoric. And we are seeking to offer these solutions transparently and publicly.

In the case of Vanderbilt’s Peabody College, here we point to two examples. First, members of our faculty are enthusiastic about our role in the further development and dissemination of a new measure of teacher preparedness for classroom teaching based on the Performance Assessment for California Teachers. Peabody is coordinat- ing the efforts of a consortium of Tennessee universities to pilot and implement what is hoped will become a national version of this assessment. It has the potential to help ensure that the teachers being graduated from schools of education are capable of success in their chosen profession—and, more importantly, of helping students to be successful learners!

The second example relates to the politically popular reform of teacher merit pay. Through Peabody’s National Center on Performance Incentives, we undertook a scientifically rigorous three-year experiment with merit pay in Nashville—the first of its kind. The results of that experiment were released in the fall and we detail them again here. While there are many possible approaches to merit pay and potential combinations of incentives with other reforms, it remains to be seen whether politicians and policy-makers will attend to our finding that merit pay by itself did not improve student performance.

Elsewhere in this issue, you will encounter ideas about teaching math on a grand scale, research-based findings on charter schools, efforts to improve Head Start, rethinking our approach to the achievement gap, and the wide-open new field of educational neuroscience.

When you consider these efforts in the context of the current rancor about teachers, schools, and education, we hope you will feel a little more confident that meaningful work is being accomplished—both at Vanderbilt and elsewhere.

Camilla P. Benbow
Patricia and Rodes Hart Dean of Education
and Human Development

Dean’s Message
IMMIGRATION AND EDUCATION: EXPLORING IN PEABODY JOURNAL OF EDUCATION

Immigration issues are as complex and varied in American classrooms as they are in the courtroom, yet answers on how to tackle these issues are elusive. A special issue of the Peabody Journal of Education published in the fall brings together research from a variety of disciplines to explore some of the most pressing topics surrounding education and immigration and offers decision makers guidance on how best to craft education policy for the nation’s rapidly changing populace.

“The answer to who is an American and to what types of education are all Americans entitled to has varied over the United States’ long history of immigration and is still being hotly debated today,” Stella Flores and Christopher Loss, co-editors of the issue and Peabody College faculty members, said. “Building on a growing body of scholarship on immigration, this collection offers a new view of the myriad ways in which immigration and education intersect across a spectrum of different policy contexts—from language policy to disaster relief, from public high schools in Los Angeles to selective public universities in Texas, to workforce development in the United States and around the world.”

Topics covered in the special issue include:

- the implementation and unintended outcomes of the Bilingual Education Act of 1968 in California;
- how contemporary visual art can be used as a counter-narrative to explore the racialization of immigration in the United States and its relationship to education;
- the effect that Hurricane Katrina had on 15,000 Latino/Hispanic children from Louisiana, who became the silent victims in light of all the attention given to the Black/White race divide in relief efforts;
- a qualitative study on undocumented immigrants and reasons why so many of them do not enter the path to college;
- a 10-year analysis of census data that looks at how a race-neutral percentage policy affected the admission of foreign applicants to two public flagship universities in Texas;
- the role of English skills and literacy in integration programs from Vienna to El Paso through the lens of the ever-increasing population of immigrant youth.

Researchers from Vanderbilt University, New School University, New York University, University of Houston, and the Migration Policy Institute contributed to the issue.

“By tackling the issue of immigration and education using historical, qualitative, quantitative and case study approaches, we hope this collection will help clarify issues and present possible solutions to some of the most pressing immigration-related education problems in this country,” Flores and Loss wrote.

Flores is an assistant professor of public policy and higher education and assistant professor of sociology. Loss is an assistant professor of public policy and higher education.

To request a full copy of any article, email Jayme.I.Place@vanderbilt.edu. The website for the journal may be accessed at http://peabody.vanderbilt.edu/ajhe.xml.

$3.8 MILLION GRANT TO FUND MENTAL HEALTH SERVICE STUDY BY VANDERBILT UNIVERSITY AND INDIANA UNIVERSITY

Peabody College’s Center for Evidence-Based Practice (CEPi) and the Indiana University Center for Adolescent and Family Studies (CABS) have won a $3.8 million grant from the National Institute of Mental Health to study methods to improve mental health services.

The five-year project will examine how to improve mental health services for youth and families in community mental health settings. The study will integrate a computer-based method of measurement and feedback about treatment development by Leonard Bickman, CEPI director and Betts Chair and professor of psychology, psychiatry and public policy, with an evidence-based treatment co-developed by Tom Sexton, director of CAFS and professor of counseling and psychology in the IU School of Education.

The project will apply functional family therapy, a type of clinical treatment for youth with violent, criminal, behavioral, school and conduct problems and their families, with Bickman’s “Contextualized Feedback System” or CFS. CFS is an automated, self-scoring and clinically-oriented feedback system that includes measurement of treatment progress, detailed feedback, onsite training and web-based clinical training modules.

During the project, Western Youth Services in Orange County, Calif., will use functional family therapy and continuously evaluate its effectiveness with the CFS. The feedback will come to service providers immediately so that they can adapt ongoing treatment in an evidence-based manner to better serve the needs of the youth and families in treatment.

Sexton said the project represents a potential positive change in how all mental health services are provided. “We never do what psychiatrists do,” Sexton said. “We don’t measure our progress.” Sexton said for mental health providers, there hasn’t generally been something akin to checking a patient’s cholesterol level, for example. “Vanderbilt’s got a terrific system of psychometrically sound measures to actually measure change as it’s going on,” he said.

The Vanderbilt and Indiana researchers began to work together more than three years ago to apply functional family therapy to the computerized feedback system.
RESEARCH BRIEFS OFFER ANSWERS ON SCHOOL CHOICE

The National Center for School Choice (NCSC) at Peabody College has released a series of research briefs explaining new findings on charter schools. The briefs explore the inner workings of charter schools to look at a variety of issues such as how the teaching environment differs from other public schools, whether those differences affect student achievement, and what factors parents and teachers consider when deciding whether to enroll or teach in charter schools.

The new research briefs are based on scholarly papers but take them a step farther by explaining how the researchers conducted their studies and what major points they found. They are written in plain language and provide break-out boxes on key concepts and findings, making them useful to policymakers, educators and the broader public.

The briefs are summarized below and can be found in full at: www.vanderbilt.edu/schoolchoice. More information about current events related to school choice is also available on the center’s blog, www.vanderbilt.edu/schoolchoice/blog. The center will continue to issue new briefs as more findings become available.

Instructional Conditions in Charter Schools and Students’ Mathematics Achievement Gains
This project seeks to understand how conditions inside schools differ between charter and traditional public schools and whether those differences affect student achievement. The researchers found achievement gains in mathematics were similar for students in both school sectors and that greater instructional innovation did not result in greater achievement gains. Students did experience higher gains, however, in schools where teachers reported they had high expectations for achievement, believed it was important for all students to do well, and emphasized challenging work and completing assignments.

Researchers: Ellen Goldring, Xiu Craven, Peabody College, Mark Berends, University of Notre Dame; Mark Stein, Johns Hopkins University

Charter Schools and the Teacher Job Search in Michigan
Researchers surveyed newly minted teachers in Michigan about factors they considered when deciding where to apply for their first jobs and whether they considered working in charter schools. Few prospective teachers give equal consideration to charter schools and traditional public schools and many said they included charters only if positions in traditional public schools were not available. Charter schools were more popular with teachers who had personal experience with them, but many teachers did not understand how charter schools work. New teachers who accepted jobs in charter schools earned less money than peers in traditional public schools and were much more likely to say they planned to look for a new job at the end of the school year.

Researcher: Marisa Cannata, Vanderbilt University

Choosing Indianapolis Charter Schools: Espoused Versus Revealed Academic Preferences
Researchers surveyed parents about why they chose a specific charter school and compared those explanations with characteristics of both the school they chose and the one they left. The findings were surprising. A majority of surveyed parents indicated that academics were a top priority in their decision, especially if they considered their child’s previous school average or below. But that preference wasn’t evident in many of the actual moves. About equal numbers of students moved to schools with worse academic records than the ones they left as moved to schools that were higher performing.

Researchers: Mark Stein, Johns Hopkins University; Ellen Goldring and Xi Craven, Vanderbilt University

Notes and Honors
Dale Balloo, associate professor of public policy and education; Will Doyle, assistant professor of higher education; Stella Flores, assistant professor of public policy and higher education; and Stephen Heyneman, professor of leadership, policy and organizations, traveled to Sao Paulo, Brazil, to present research at the second Brazil/U.S. Seminar on Education Policy.
Kimberly Bess, assistant professor of human and organizational development, was appointed a Junior Faculty Teaching Fellow for 2010-11 at the Vanderbilt Center for Teaching.

Elisabeth Dykens, Annette Schaffer Eskind Chair; professor of psychology, pediatrics and psychiatry; and director of the Vanderbilt Kennedy Center, was appointed to the Board of Directors of Special Olympics International.

Mimi Engel, assistant professor of leadership, policy and organizations, received a Ralph E. Powe Junior Faculty Enrichment Award in Policy, Management or Education. The award is sponsored by the Oak Ridge Associated Universities.

Andy Finch, assistant clinical professor of human and organizational development, was an invited participant at the Higher Education Recovery Summit convened in October in Washington, D.C. by the U.S. Department of Education and the Higher Education Center for Alcohol, Drug Abuse, and Violence Prevention.

Four faculty members were honored for 25 years of service to Vanderbilt University: Lynn and Douglas Fuchs, Nicholas Hobbs Professors in Special Education and Human Development; Judy Garber, professor of psychology; and Ann M. Neely, associate professor of the practice of teaching and learning.

Judy Garber, professor of psychology, received a Chancellor’s Award for Research for her article, “Prevention of Depression in At-Risk Adolescents: A Randomized Control Trial” in JAMA, June 3, 2009.

Amanda Goodwin, assistant professor of language, literacy and culture, received the National Reading Conference/Literacy Research Association Student Outstanding Research Award for her dissertation work at the University of Miami.

Mark Lipsy, research professor of human and organizational development, was appointed by Attorney General Eric Holder to the newly created Office of Justice Programs (OJP) Science Advisory Board.

Rich Milner, associate professor of education, won the 2010 Carl A. Grant Multicultural Research Award from the National Association for Multicultural Education.
Findings

BRAIN IMAGING PREDICTS FUTURE READING PROGRESS IN CHILDREN WITH DYSLEXIA

Brain scans of adolescents with dyslexia can be used to predict the future improvement of their reading skills with an accuracy rate of up to 90 percent, new research indicates. Advances of brain activity images are significantly more accurate in driving predictions than standardized reading tests or any other measures of children’s behavior.

The finding raises the possibility that a test one day could be developed to predict which individuals with dyslexia would most likely benefit from specific treatments.

The research was published Dec. 20, 2010, in the Proceedings of the National Academy of Science.

“This approach opens up a new vantage point on the question of how children with dyslexia differ from one another in ways that translate into meaningful differences two to three years down the line,” Bruce McCandliss, Patricia and Rodes Hart Professor of Psychology and Human Development and a co-author of the report, said. “Such insights may be crucial for new educational research on how to best meet the individual needs of struggling readers.

“This study takes an important step toward realizing the potential benefits of combining neuroscience and education research by showing how brain scanning measures are sensitive to individual differences that predict educationally relevant outcomes,” he continued.

The research was primarily conducted at Stanford University and led by Fumiko Hoeft, associate director of neuroimaging applications at the Stanford University School of Medicine. In addition to McCandliss, Hoeft’s collaborators included researchers at MIT, the University of Jyväskylä in Finland and the University of York in the United Kingdom.

“The finding provides insight into how certain individuals with dyslexia may compensate for reading difficulties,” Alan E. Guttmacher, director of the National Institutes of Health’s Eunice Kennedy Shriver National Institute of Child Health and Human Development, which provided funding for the study, said.

“Understanding the brain activity associated with compensation may lead to ways to help individuals with this capacity draw upon their strengths,” he continued. “Similarly, learning why other individuals have difficulty compensating may lead to new treatments to help them overcome reading disability.”

Methodology

The researchers used two types of brain imaging technology to conduct their study. The first, functional magnetic resonance imaging (fMRI), depicts oxygen use by brain areas involved in a particular task or activity. The second, diffusion tensor magnetic resonance imaging (DTI), maps white matter tracts that are the brain’s wiring, revealing connections between brain areas.

The 45 children who took part in the study ranged in age from 11 to 14 years old. Each child first took a battery of tests to determine their reading abilities. Based on these tests, the researchers classified 25 children as having dyslexia, which means that they exhibited significant difficulty learning to read despite having typical intelligence, vision and hearing and access to typical reading instruction.

During the fMRI scan, the youths were shown pairs of printed words and asked to identify pairs that rhymed, even though they might be spelled differently. The researchers investigated activity patterns in a brain area on the right side of the head, near the temple, known as the right inferior frontal gyrus, noting that some of the children with dyslexia activated this area much more than others. DTI scans of these same children revealed stronger connections in the right superior longitudinal fasciculus, a network of brain fibers linking the front and rear of brain.

When the researchers once again administered the reading test battery to the youths two and a half years later, they found that the 13 youths showing the stronger activation pattern in the right inferior frontal gyrus were much more likely to have compensated for their reading difficulty than were the remaining 12 youths with dyslexia. When they combined the most common forms of data analysis across the fMRI and DTI scans, they were able to predict the youths’ outcomes years later with 72 percent accuracy.

The researchers then adapted algorithms used in artificial intelligence research to refine the brain activity data to create models that would predict the children’s later progress. Using this relatively new technique, the researchers were able to predict the brain scanning data collected at the beginning of the study to predict with over 90 percent accuracy which children would go on to improve their reading skills two and a half years later.

In contrast, the battery of standardized, paper-and-pencil tests typically used by reading specialists did not aid in predicting which of the children with dyslexia would go on to improve their reading ability years later.

“Our findings add to a body of studies looking at a wide range of conditions that suggest brain imaging can help determine when a treatment is likely to be effective or which patients are most susceptible to risks,” Hoeft said.

Hoeft suggested the finding that youths with dyslexia recruited right brain frontal regions to compensate for their reading difficulties, rather than regions in the left side of their brains, as typical readers do, may have something to do with this.

The study is part of a rapidly developing field of research known as “educational neuroscience” that brings together neuroimaging studies with educational research to understand how individual learners differ in brain structure and activity and how learning can drive changes at the neural level. Such questions are now being effectively examined in young children even before reading instruction begins, McCandliss explained in a Proceedings of the National Academy of Science article published earlier this year.

“This latest study provides a simple answer to a very complex question—‘What can neuroscience contribute to complex issues in education?’” McCandliss said. “Here we have a clear example of how new insights and discoveries are beginning to emerge by pairing rigorous education research with novel neuroimaging approaches.”

The research was funded by the National Institute of Child Health and Human Development, the Stanford University Lucile Packard Children’s Hospital Child Health Research Program, the William and Flora Hewlett Foundation and the Richard King Mellon Foundation.

Bruce McCandliss’s article in the Proceedings of the National Academy of Science, “Educational neuroscience: the early years,” can be read in pdf format at www.pnas.org/content/107/18/8049.full.pdf.

Bruce McCandliss

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Babies learn best from parents, not video

Sorry, Mom and Dad: that virtual babysitter you hoped was providing educational information for your tot is no match for interaction with you. New research from Peabody College and the University of Virginia finds that infants learn little to nothing from popular educational videos and learn the most from face-to-face interactions with their parents and other familiar figures.

The research was published in November in the journal Psychological Science.

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The researchers found the highest level of learning among the children taught by their parents. The children who watched the videos learned no more than the children in the control group who received no special exposure to new words.

The researchers also found parents who liked the video tended to overestimate its benefits, saying that their children were indeed learning from it.

If children have been watching videos, parents may attribute normal vocabulary growth to media exposure. “During these months of late infancy, children undergo a ‘vocabulary spurt’ when they learn new words on a daily basis,” Troseth said.

“As if children have been watching videos, parents may attribute normal vocabulary growth to media exposure.”

New research shows states’ spending for higher education capital projects is not consistent with other higher education appropriations

State spending for capital projects in higher education does not conform to the same boom and bust funding cycle typical of higher education general appropriations, according to new research presented by William R. Doyle and Jennifer A. Delaney at the Association for the Study of Higher Education conference in Indianapolis, Ind., in November.

Doyle is assistant professor of higher education at Peabody College. Delaney is assistant professor of educational organization and leadership at the University of Illinois at Urbana-Champaign. Their research was discussed in an article in The Chronicle of Higher Education on November 17.

Using U.S. Census data from the period 1985 to 2004, Doyle and Delaney found that capital outlays do not fit the balance wheel model devised by Harold Hovey to describe cycles of state spending on higher education. In the abstract for the paper, the researchers describe this model as follows: “In good economic times, higher education is funded at a higher rate than other state budget categories. In bad economic times, higher education is often one of the first state budget categories to be cut and is cut more deeply than other state budget categories due, in part, to its ability to tap into alternative revenue streams.”

What the researchers found instead is a funding pattern much closer to a quadratic model, which they describe as “a counter-cyclical relationship with state spending on capital outlays rising or falling in the opposite direction of total state expenditures.” They also determined that state spending for higher education capital projects is not as political as previous scholars have suggested.

Despite intense legal and political scrutiny of these programs, there has been little evidence about whether or not they were having the intended effect of enabling more students to attend college.

“A federal DREAM Act would create a pathway to the use of increased human capital produced by these state policies. It would also allow students to participate and give back to the country’s institutions in a meaningful way,” Flores said.

Latin Americans make up 85 percent of the nation’s undocumented immigrants, with 57 percent of that group coming from Mexico. Mexican immigrants, most between the ages of 15 and 29, make up 77 percent of Texas’ undocumented immigrant population.

The Lumina Foundation for Education, the Association for the Study of Higher Education and the Time Warner/Harvard University Achievement Gap initiative funded the research.

“The Chronicle of Higher Education

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Since most previous investigations of state higher education spending have focused on general appropriations, the study by Doyle and Delaney sheds light on an area of state higher education spending that has been rarely scrutinized. “Given the enormous amount of expenditures for capital purposes in higher education, we know very little about what works and why,” said Doyle. “This study is just a start toward understanding this area better.”


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As members of Congress sparred last fall over whether or not to provide tuition benefits and a path to legalization to undocumented students through the DREAM Act, an examination of the nation’s first state-level “dream act” found that such policy effectively boosts college enrollment by these students.

The study by Stella Flores, assistant professor of public policy and higher education, examined the Texas dream act. It was published in the December issue of the journal Educational Evaluation and Policy Analysis.

“In an era of policymaking that demands results on political investments, the data show that this policy worked to increase college enrollment in Texas,” Flores said. “The data also show that it is the community colleges that are the most likely to be the first education home for these students.”

Flores found foreign-born, non-citizen Hispanic students were more likely to attend college after the introduction of the Texas benefit. The results were strongest for older high school graduates, who were 4.84 times more likely to have enrolled in college after the tuition policy than their counterparts in Southwestern states without a tuition policy. She also found that undocumented Hispanic students were more likely to attend community colleges than four-year universities.

Texas passed its dream act in 2001, granting undocumented students the same in-state resident tuition discount as legal residents and giving them access to state financial aid, provided they meet specific residency and graduation requirements. Since 2001, similar legislation has been passed by 10 other states and considered by over 25 states.

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Measuring Teacher Preparedness

Peabody College in vanguard of institutions piloting expansion of a new teacher performance assessment

By Jennifer Johnston

A unique collaboration among Tennessee public and private universities, state government, and national educational entities is working to develop a reliable measure of novice teacher instructional practice as part of a national movement to improve teacher performance.

The newly formed Teaching Performance Assessment Consortium of Tennessee (TPAC-TN) is a partnership of the Tennessee Department of Education, the Tennessee Board of Regents, the University of Tennessee system, the University of Memphis and Vanderbilt’s Peabody College.

The consortium is helping to develop and pilot a teacher performance assessment that can be used to determine whether a teacher candidate is ready for full-time classroom teaching. Tennessee is among 19 states piloting the performance-based assessment and one of five states on an accelerated schedule due to state policy directives and Tennessee’s First to the Top initiative. Tennessee was one of only two states to receive federal Race to the Top grants awarded in the first round of funding in 2010.

As the lead institution in Tennessee, Peabody is coordinating with national TPAC partners, including the American Association for Colleges of Teacher Education, the Council of Chief State School Officers and the Stanford Center for Assessment Learning and Equity. A leadership team for the project includes representatives from Peabody, the Tennessee Board of Regents, the Tennessee Ready2Teach task force, the University of Memphis and the University of Tennessee.

The prototype for TPAC-TN is the Performance Assessment for California Teachers, designed in response to a California state law requiring teaching candidates to demonstrate proficiency beyond standardized testing. Successful PACT completion is one of two approved options for licensure assessment in the state of California. PACT’s creators followed an assessment process model originally developed by the National Board for Professional Teaching Standards, which certifies highly accomplished teachers who meet rigorous standards. PACT has proved so far to be a reliable measure of teacher performance and a powerful tool for program and teacher candidate improvement, according to Peabody professor Marcy Singer-Gabella, coordinator of the state effort.

That effort began in earnest in the summer of 2010, when faculty from Vanderbilt, the University of Tennessee, the University of Memphis, Austin Peay State University, East Tennessee State University, Middle Tennessee State University, Tennessee State University and Tennessee Technological University were involved in training “to help faculty get a deep understanding of the assessment model, and to plan implementation at their institutions,” said Singer-Gabella.

During 2010-11, the model is being piloted at all eight campuses. This summer, the participating institutions will analyze the pilot experience. Tennessee partners will work with the national TPAC team to examine both the reliability of scoring and the implementation process at each site. The group expects to tweak the model and scale it up in fall of 2011 to involve more campuses, programs and candidates.

The pilot assessment model has been aligned both with Tennessee and national professional teaching standards such as the Interstate New Teachers Assessment and Support Consortium and the Common Core standards for intellectual content. All university-based teacher education programs in the state are accountable to these standards.

“During implementation, faculty will refine strategies to help students understand and prepare for the assessment by, for example, providing students with more opportunities to learn and practice key instructional approaches,” Singer-Gabella said.

While some programs, such as in California, require students to pass the assessment in order to be recommended for licensure or to satisfy a degree requirement, the use and consequences of the assessment are not currently mandated in Tennessee, Singer-Gabella said. The Tennessee Board of Regents mandated a capstone performance assessment for its graduates and likely will use TPAC-TN in partial fulfillment of that requirement. The results of the development and pilot effort will influence how the assessment will ultimately be used at Board of Regents institutions.

“To date, tools for assessing the outcomes of teacher preparation have been extremely limited,” said Singer-Gabella. “Typically these have included classroom observations that offer little useful feedback, or written tests of basic skills and subject matter knowledge that do not necessarily correlate with later classroom effectiveness.”

In Tennessee, the state has begun to use new teachers’ first-year Tennessee Value-Added Assessment System scores to rate preparation programs. The report card looks at performance indicators like retention, subject matter knowledge, and impact on student learning. It is not, however, used as a gateway into the teaching profession.

“Our efforts to improve the quality of teachers entering schools must include development of reliable and valid measures of how well they perform in the classroom. This new assessment model has the potential to provide much stronger evidence of novice teachers’ effectiveness in promoting learning for students,” Singer-Gabella said.

Marty Alberg, assistant dean of the College of Education at the University of Memphis, agrees: “The feedback we are receiving from administrators and experienced teachers in partner schools where candidates are engaged in this performance model is overwhelmingly positive. They believe, as we do, that novice teachers who successfully complete this assessment will be well prepared for the realities of classroom teaching.”

A candidate’s perspective

Nicole Barrick Renner received her master’s of education degree from Vanderbilt in May 2010 and is a first-year teacher of 9th grade English in Nashville’s East Literature Magnet School. Going through the Teaching Performance Assessment as a candidate taught her “to be reflective in a very meaningful, effective way.”

“Reflection doesn’t just mean, ‘how do I feel about what happened today?’ My reflection is more like an orderly process, a habit of mind I developed through what felt like endless practice. I think through steps: What worked today? What didn’t? For whom? Why? How do I know what worked and what didn’t? What could I have done differently? ‘To what research or resources can I turn to make this a better learning experience for my students?’”

Renner said the assessment led her toward the ultimate reflective performance question: “How can I be a better teacher tomorrow than I was today?”
Rewarding teachers with bonus pay, in the absence of other support programs, does not raise student test scores, according to study results issued by the National Center on Performance Incentives (NCPI).

The study is the first scientific experiment on performance pay ever conducted in the United States. The results were released in late September and generated considerable attention.

Paying teachers bonuses based on their performance has been a controversial issue nationwide since the 1950s, but the concept had never been scientifically researched.

“We tested the most basic and foundational question related to performance incentives: does bonus pay alone improve student outcomes? And we found that it does not,” Matthew Springer, executive director of NCPI and assistant professor of public policy and education, said. “These findings should raise the level of the debate to test more nuanced solutions, many of which are being implemented across the country, to reform teacher compensation and improve student achievement.”

The Project on Incentives in Teaching, called the POINT Experiment, took place over the 2007–2009 school years with participation of mathematics teachers in grades 5 through 8 in Metropolitan Nashville Public Schools. The complete study, including setup and analysis, began in 2005 and ended in 2010.

POINT tested no other types of incentives or systems of support for the teachers, such as professional development or guidance on instructional practices—many of which have evolved over the five years since POINT began.

“We designed POINT in this manner not because we believed that an incentive system of this type is the most effective way to improve teaching performance, but because the idea of rewarding teachers on the basis of students’ test scores has gained such currency,” Springer said. “We sought a clean test of the basic proposition: If teachers know they will be rewarded for an increase in their students’ test scores, will test scores go up? We found that the answer to that question is no. That by no means implies that some other incentive plan would not be successful.”

While there was no overall effect on student achievement across the entire treatment group, the researchers found a significant benefit for fifth graders in year two and year three of the experiment: fifth graders taught by teachers who earned bonuses did show gains in test scores. However, the effect did not carry over to sixth grade when students were tested the following year. Springer said this finding raises questions about what is different about fifth grade and what factors—student development, curriculum, teaching and classroom structure—may have played a role.

He also noted that implementation of POINT went smoothly, with no complaints from teachers about the calculation of bonuses, the payment of awards, bonuses they did or did not receive or the fairness of the process. This in itself is a significant finding, Springer said, because historically, teacher associations have opposed performance or merit pay plans, particularly if the pay plan awarded teachers solely on their individual value-added score.

Springer attributed this smooth implementation of the POINT experiment to a broad partnership involving the Metropolitan Nashville School Board and Metropolitan Nashville Public Schools administrators, the Mayor’s Office, the Metropolitan Nashville Education Association, the Nashville Alliance for Public Education, the Tennessee Education Association and the Tennessee Department of Education. The POINT experiment team received guidance and support from these organizations, as well as the participating teachers, throughout the project. The POINT experiment was funded by the U.S. Department of Education’s Institute of Education Sciences. Performance bonuses were funded by a private donor.

“We believe there is an important lesson here: Teachers are more likely to cooperate with a performance pay plan if its purpose is to determine whether the policy is a sound idea, than with plans being forced on them in the absence of such evidence and in the face of their skepticism and misgivings,” Springer said.

The POINT results were widely covered by print and online media at the time of the announcement, with Education Week, USA Today, the Washington Post, and PBS Newshour all giving play to the findings. With teacher performance incentives continuing to be prominently included among various state education reforms, the POINT results are likely to remain a research touchstone for policy-makers and advocates both for and against merit pay.

The full report as well as archived video of the announcement is available at http://www.performanceincentives.org.
Tangibility for Math Project re-visions math instruction

This summer the Peabody lawn could become a giant playground for math project as students working in teams use everyday objects such as jump ropes and masking tape along with more sophisticated tools like GPS devices to explore geometric concepts on a large scale.

Why the buzz of activity? It is the application of hands-on approaches to learning developed by the Spatial Learning and Mobility (SLaM) research group and the culmination of SLaM’s participation in the National Science Foundation-funded Tangibility for Math Project.

SLaM researchers study the ways movement can be incorporated into teaching and learning mathematics with the goal of understanding how the abstract can be brought into the physical realm, according to Rogers Hall, professor of mathematics education.

Vanderbilt and two other universities, the University of Wisconsin-Madison and San Diego State University, are part of the $2 million, five-year NSF grant. The Tangibility for Math Project ultimately seeks to create new concepts and teaching methods.

At Vanderbilt, the SLaM group has explored, among other things, how the preponderance of readily available gadgets could be incorporated into learning math.

“We are surrounded by new technologies that keep track of our location,” said Hall. “With this explosion of new technologies, we are trying to explore how people’s own motion through space is related to how they learn.”

In addition to Hall, SLaM team members at Vanderbilt are Kevin Leander, associate professor of language and literacy, as well as doctoral students Jasmine Ma, Nate Phillips and Katie Taylor.

While math is among the more abstract of the sciences, it is clear that the way teachers express themselves physically in teaching the subject impacts how the students respond, Hall says.

“Our students are trying to explore how people’s own motion through space is related to how they learn,” he said.

For example, in a conventional middle school geometry class, even though the concepts are three-dimensional, all of the problems and pictures are presented on a paper scale.

“What we’re asking is, ‘What happens when you explore mathematical objects on a much larger scale? What if you bisect angles and inscribe circles and triangles the size of a playground or football field?’ You use different tools and GPS devices as your stylus,” he said. The students also have to use a team approach because of the scale, which enhances learning on another level.

Another task of the SLaM group was to try to understand how adult professionals use spatial activity and modeling (or SPAM) in their daily activities.

In three case studies, the researchers followed archeologists, urban planners and emergency medical transporters in their daily activities, mapping how they problem-solve using SPAM.

The complicated logistics of a dig require archeologists to understand how structures change over time and how they are related to structures around them. The SLaM group focused on how dig personnel collected data, analyzed it, preserved it, and how newcomers were integrated.

In urban planning, the researchers followed a neighborhood plan revision cycle in a metropolitan area. They were particularly interested in how public participants learn about the details of urban planning and how they envision themselves on a global and local scale.

Emergency air transport personnel, in the third study, were found to have myriad problems to address daily, all complicated by the complexity of the patients’ medical conditions, weather, topography and other airborne objects.

“We’re trying to look across these case studies and find common aspects of spatial analysis and spatial modeling in order to inform the experimental teaching we’re doing this summer,” Hall said.

These brand new teaching methods will be tested at a Nashville middle school in May and during a Vanderbilt Summer Academy course for gifted students this summer.

The middle school students will build a bicycle by applying mathematical problem-solving skills. They also may map out parts of their community that are reachable by bicycle and try to understand how their community might become more accessible to bicycles.

“The whole field of spatial analysis and modeling or neo-geography has taken off really fast. But schools haven’t caught up with it yet,” Hall said. “This is a new domain of thinking.”

Kevin Leander, associate professor of language and literacy, as well.

Kevin Leander sought to identify emerging learning techniques by observing professionals who create spatial models in their daily activities. His research team studied archeologists on a dig, urban planners and emergency medical crews.

“A big problem in literacy is thinking not only about how someone learns how to read but how spatial models are used in everyday life and how they are embedded into everyday activity,” Leander said.

A longer-term interest for Leander is how to continue to incorporate new technologies and methods into student learning.

“We want to connect what students are experiencing in and out of the classroom,” he said.

“We are beginning to see school as a kind of nexus or airport where people pass through as part of a learning journey,” he said. “It’s a journey that’s highly connected to social relationships and to technologies and to the places they’ve been before they hit the door. We want to consider how school can support those kinds of engaging learning trajectories rather than operate from the stale model of learning containment.

“Knowledge is accelerating so fast. Instead of bodies of knowledge, we have to give people ways of learning, ways of building connections, ways of accessing information and ways of networking.”

Redefining literacy, rethinking schools

New technologies are changing the definition of what it means to be literate and even the spaces where learning is most effective – and that applies to mathematics literacy, as well.

Kevin Leander, associate professor of language and literacy, focuses on the spatial side of literacy – from the ways people connect geographically in digital spaces to the current prevalence of maps to explain political elections and other events on television news shows.

As part of the Tangibility for Math Project, Leander sought to identify emerging learning techniques by observing professionals who create spatial models in their daily activities. His research team studied archeologists on a dig, urban planners and emergency medical crews.

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He likens the new way of obtaining knowledge to the “lifeline” option on “So You Want to be a Millionaire?” Contestants have three “lifelines” – having a multiple choice answer reduced to just two choices, placing a friend for help, or electronically polling the audience for the correct answer.

“The metaphor of having a lifetime is a better metaphor of being,” Leander said, because students today have access to multiple sources of information. In the workplace, it would be unusual, he says, for just one person to keep all pertinent information in his head. “The question is, ‘How do you give kids lifelines?’”
Don’t Stay There: Understanding Diversity, Milner’s book is Start Where You Are, But Don’t Stay There. A report released in November by the Council of Great City Schools found that black male students continue to perform white counterparts. At the same time, the need for teacher education programs to prepare their students to teach in both urban and suburban schools.

The book provides a counter to pervasive notions that teachers and students in highly diverse and urban schools cannot succeed. Rather, it demonstrates how teachers and students work through and transcend academic, social, individual and systemic challenges in order to thrive.

In addition, explicit attention is placed on the need for teacher education programs to study their practices and transform them. The title stresses the need for all teachers, even experienced ones, to start where they are but not to stay there in understanding issues related to diversity, opportunity gaps and instructional practices.

Milner analyzes case studies of classroom practices that address learning and developmental needs of racially diverse learners. Informing these discussions and the cases themselves is their persistent attention to opportunity gaps that need to be understood by teachers who aim to promote the success of all students.

Milner’s research, teaching and policy interests are urban education, teacher education and the sociology of education. He has published more than 50 journal articles and book chapters.

Start Where You Are, But Don’t Stay There is his fourth book.