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SPECIAL FEATURE

Charting a science of improvement in education

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A message from the Dean of the UNC School of Education

Greetings!

I commend to you our second issue of "Edge: Carolina Education Review," a magazine devoted to showcasing research conducted by faculty at the School of Education at the University of North Carolina at Chapel Hill.

At Carolina, we join other educational researchers across the nation who dive into tough questions around access, equity, effectiveness, measurement and evaluation, and leadership – all aimed at finding better ways to extend and enrich the promise of educational access and success.

In this edition you will find articles describing some of the work of these Carolina researchers:

Lora Cohen-Vogel, our Frank A. Daniels Professor of Public Policy and Education, is a leader in a movement to bring the principles of improvement science to educational settings. Lora developed an expertise in continuous quality improvement through her work as co-principal investigator with the five-year, \$13.5 million National Center for Research and Development on Scaling Up Effective Schools. The project has generated a considerable amount of research describing effective practices to incorporate and expand improvement efforts in schools.

Gregory Cizek, the Guy B. Phillips Distinguished Professor of Educational Measurement and Evaluation, is a nationally recognized authority in his field. One of his special interests is validity theory. Greg works at questions involving whether assessments accurately measure student understanding, and whether those test results are used appropriately. Can tests that measure student performance be used to assess teachers? That's among the questions Greg's research explores. Informed by her research and her work with children with learning disabilities, **Jennifer Diliberto**, clinical associate professor of special education, has developed a curriculum that has been shown to help teach students with dyslexia and other disabilities to read. Her curriculum, "Taking on Tough Words," has been adopted by school districts in a dozen states. It relies on "syllabication," which Jennifer's work has demonstrated helps struggling readers.

Professor **Sherick Hughes**, in the work of preparing educators and educational researchers, asks us to look inside ourselves. To be effective in educational settings and in our communities, it's important to wrestle with questions about our inherent biases and the biases embedded in our culture. Through autoethnography, Sherick shows how that's done by thinking and writing about his own experiences and how they have shaped his understandings.

Thad Domina, associate professor of educational policy and sociology, is raising some big questions with a recent study. He and colleagues took a look at data from the National School Lunch Program, asking a basic question: Is participation in the lunch program a good proxy for socio-economic status? It turns out they may not be ... which has big ramifications for educational researchers and administrators of many educational programs.

I hope you enjoy reading this issue of "Edge." As you do, look for areas of possible collaboration, as we stand ready to work with you!

AKFON

Fouad Abd-El-Khalick, Dean School of Education University of North Carolina at Chapel Hill

SPECIAL FEATURE

Charting a science of improvement in education



R esearchers have long endeavored to develop educational interventions that improve student outcomes, only to see them fail when they are scaled to wider use. Today, scholars are working to better understand why some innovations are implemented

and other are not. Lora Cohen-Vogel is one such scholar. She is one of a small but growing number of researchers charting a course for a new science of improvement in education. They have attracted the attention of foundations and the federal government



Lora Cohen-Vogel Frank A. Daniels Professor of Public Policy and Education

who have begun to fund studies to better understand the conditions under which implementation of educational interventions are successful.

The work received a substantial boost when the Carnegie Foundation for the Advancement of Teaching, under the leadership of Anthony Bryk, urged researchers and educators to come together to answer, "what is the problem we're trying to solve, what is the change we're putting in place, and how will we know if that change is

Article by Michael Hobbs

The Edge



In education, researchers have begun to use improvement science to uncover not only 'what works' in education but also to understand 'what works where, when and for whom.' Lora Cohen-Vogel is among a handful of scholars helping to bring the approach into education. In her words, "the science of improvement emphasizes innovation prototyping, rapid-cycle testing, and spread to generate learning about what changes, in which contexts, produce

improvements." In leading a team of researchers through the National Center on Scaling Up Effective Schools, Cohen-Vogel has not only recognized the promise of improvement approaches for schools and school systems but also identified challenges involved in the work. Understanding these challenges – challenges she recasts as "dilemmas" – will, she argues, inform future efforts to employ improvement science methods in schools and other educational settings.

an improvement?" (Bryk, 2010). Researchers have responded, seeking to uncover how improvement methods can be used in education.

Applying improvement science in education

Improvement science has its roots in industry. It is generally attributed to statistician W. Edwards Deming who developed a framework for continually improving work and production in manufacturing. Theoretically and in practice, the framework works to achieve improvement throughout a system – whether it be healthcare, criminal justice, or education – through the use of Plan-Do-Study-Act (PDSA) cycles. These cycles guide educators, clinicians, and other practitioners to set measurable aims and test whether the changes they make result in improvement. Specifically, during PDSA cycles, improvement teams PLAN the test, asking what change will be tested and with whom, and what is expected as the result of trying out the change. Next, the team DOES the test, gathering information on what happened during the test and as a result of it. The team STUDIES the information gathered during the test, comparing it with their expectations. Having studied the information, the team ACTS, making a decision about whether to abandon the change, revise it, or scale it up with a larger number of users.

After testing the change on a small scale, PDSA cycles repeat. The improvement teams learn from each test, refine the change, and then implement the change on a broader scale for example, in education, with an entire grade level. After successful implementation within a unit, the team can continue to use PDSA to spread, or bring to scale, the change to other parts of the organization or other organizations entirely.

Deming demonstrated the effectiveness of PDSA techniques in post-war Japan, helping spark the rebuilding of that nation's industry. During the past two decades, improvement science has migrated from industry to healthcare and, from there, into education.



Researchers' efforts to introduce improvement science in education has shown early promise. An example is the Middle School Mathematics and the Institutional Setting of Teaching (MIST) project, in which researchers worked in partnership with practitioners in four school districts to improve mathematics instruction at scale (Cobb et al. 2013). The work led to new decision-making routines and robust instructional improvements among teachers. Because the application of improvement science is new to education, relatively little work has been done to uncover the viability of its widespread use in K-12 public school settings. A \$13.6 million, five-year IESfunded initiative – the National Center for Scaling Up Effective Schools – was established to begin helping to provide that evidence by developing understandings around how to deploy improvement approaches and the challenges associated with those efforts. Lora Cohen-Vogel, UNC-Chapel Hill's Frank A. Daniels Professor of Public Policy and Education, has served as associate director and co-principal investigator with the Scale Up Center, helping lead a team to produce practice-based improvement tools that educators can use in partnership with researchers as they work to bring effective instructional strategies to scale. The team has also published dozens of articles to help understand the promise and pitfalls of improvement science in education and aimed at informing further efforts to use it.

Aiming for change beyond any one innovation

Working with high schools in two of the nation's largest school districts – Broward County, Florida, and Fort Worth, Texas – the Scale Up Center developed and tested a process in which researchers worked with educators to identify practices that had been shown to improve student achievement in their district, then worked to scale those practices into other classrooms and schools. The process relied on three core principles:

- First, a researcher-practitioner partnership is developed to engage people with diverse expertise as equals in the work, leading to a sense of collective ownership and accountability;
- Second, a prototype is built to reflect the core elements of programs or practices that have been shown to be effective locally;
- Third, PDSA cycles are used to test the prototype and adapt it to new contexts in which it is tried (Cohen-Vogel, et al. 2015).

The first core principle – the development of a researchpractice partnership – disrupts traditional roles, taking advantage of the partnerships' knowledge and expertise and boosting the rate at which change can occur. They challenge the assumption that researchers produce high-quality research, make it clear and accessible, and then practitioners should apply it to their work in the classroom. According to Vivian Tseng of the W.T. Grant Foundation, "without a concomitant focus on how practice should inform research, we risk privileging researchers' perspectives and relegating practice professionals to the receiving end of research and dissemination efforts."

Second, a prototype is designed that reflects the programs and practices that have shown promise locally. The Scale Up Center researchers spent three full weeks at each of four district high schools. They interviewed principals, guidance counselors, teachers and department heads and conducted focus groups with teachers and students. They conducted over 700 classroom observations and shadowed students. Researchers found that the higher performing high schools in the district had strong and deliberate organizational structures, programs, and practices that attended to both students' academic and social learning needs. The organizational structures supported meaningful conversation and interactions among adults and students from ninth grade through graduation. These structures included targeted looping, comprehensive and consistently enforced behavior management systems, and coherent data driven practices. Researchers and practitioners used these findings to build a prototype that came to be known as PASL, or Personalization for Academic and Social Emotional Learning.

Third, PDSA cycles are used to test the prototype, refine it using the data collected during the test, and test it again. Their use is motivated by studies of state and federal programs that have repeatedly found that opportunities for educators to tailor programs to meet their local needs and circumstances leads to support for new program initiatives and the local capacity to run them. By iteratively testing PASL in the district schools – by starting with a single classroom and moving onto more classrooms and, later, more schools – the Scale Up Center team was able to limit risks associated with early failure and allow the innovation to be gradually modified, or adapted, to the uniqueness of the system in which it was being implemented.

As improvement science is concerned with building capacity for sustaining ongoing change in organizations, a primary objective of the Scale Up Center project was to leave behind capacity in the districts for future efforts to design, implement and take to scale innovations aimed at solving local problems and improving student outcomes. According to Cohen-Vogel, "it's not enough to leave behind a 'proven' program or practice. Rather, we strive to leave behind what Deming called 'a system of profound knowledge' about how to enact change in an organization." Key to the work is the development of organizational routines that help innovations travel through a system, habits of mind that conceive of teachers and other practitioners as co-creators in the design process, and improvement teams within school districts organized around persistent problems of practice and using data collected in PDSA cycles to solve them.

Learning from 'dilemmas'

While there is a growing body of research regarding the benefits of improvement tools in education, there's been little examination of how researchers and practitioners actually work together for improvement. The five years of the Scale Up Center's work in Florida and Texas offered an opportunity to gain deep insights into how researchers and educators interact in research-practice partnerships, including identifying challenges to be addressed in future improvement work. Cohen-Vogel and others, in a paper - "Organizing for School Improvement: The Dilemmas of Research-Practice Partnerships" - examined some of the challenges they encountered as they worked together to design, test, and scale a prototype for boosting students' social-emotional learning. To do so, they gathered data not only on the implementation and efficacy of the prototype, but also on the ways researchers and practitioners worked together and the challenges they

faced. In reviewing nearly 500 hours of recorded conversations, documents, and interviews with partnership members, Cohen-Vogel and her team identified eight challenges faced by the partners in Broward and Fort Worth. As they worked, they realized the challenges represented "dilemmas" to be managed, instead of problems to be solved. Dilemmas present situations with equally valued alternatives. As such, when confronting a dilemma, the challenge is not to choose from among alternatives, but to act intentionally to manage the dilemma. When dilemmas are known and managed, partnership members understand where other partners are "coming from" and sharpen their attention to agreedupon goals.

The Dilemma of Organizational Goals typically describes the tension between organizational objectives and the motivations of individuals. This dilemma was seen in several ways. In one, differing incentive systems among partners led to conflicting interests between organizational and individual needs. For example, researchers with academic appointments are typically rewarded for published findings around generalized problems of practice they may help fix. While individual school-level reports are needed for a successful PDSA cycle, they may have little scholarly value on their own for researchers.

The Dilemma of Hierarchy describes the tensions around where decisions are made in organizations; such as, top-down versus bottom-up, centralized or decentralized. In the Scale Up Center work, representatives of different levels of the school districts – teachers, principals, central administration officials – were included in the teams. Questions sometimes arose about who owns the decision-making with the improvement work, questions that had to be recognized and negotiated.

The Dilemma of Professionalism describes the tensions around how much decision-making power is allowed for the individual educator. Scale Up Center researchers found this dilemma to be less of an issue, except that some

"Improvement scientists are interested not only in measuring the success and failures of the designed innovation but also in the evolving improvement process itself."

teacher partners were concerned about external pressures they may face in developing and implementing the project's innovation.

The Dilemma of Task Structures was described by Ogawa et al. as the tensions between formal and informal aspects of the relationships among an organization's members. Rules, regulations and policies are an example of formal structures. But informal structures, such as common, unwritten understandings among an organization's members, can either sustain or undermine the formal structures. In the Scale Up Center work, teachers were sometimes suspect of the authority development teams actually had to design and implement a new program. Some also wondered whether there would be administrative backing of the innovation work.

The Dilemma of Organizational Boundaries describes the sometimes unclear distinctions around where an organization's membership begins and ends. The nature of relationships in improvement work, Cohen-Vogel has found, introduces a dilemma of boundaries that may not arise in traditional research where researchers position themselves as outside observers. Researchers in Broward County reported that after initially feeling that they were being considered as full members of the district community, they subsequently felt themselves being treated as outsiders. In one example, they were discouraged from walking to interviews and focus group sessions without a school staff escort.

The Dilemma of Persistence describes the tendency of organizations to maintain current structures and practices, even when they are attempting to adopt changes. The Scale Up Center researchers found this dilemma frequently. In one example, researchers found that the improvement work often attracted key district and school practitioners who were most vested in buffering against change in their organizational environments. Also, practitioners often expressed concern about adoption of a new curriculum because of the uncertainty it would introduce. The Dilemma of Compliance describes how individuals and organizations sometimes take symbolic steps to comply with formal requirements. Schools and educators often balance between meeting technical requirements, while adopting symbolic steps to meet community expectations. An example would be seeking to meet the expectations of prohibitions on religious observances but allowing "holiday parties." In the Scale Up Center work, district administrators often voiced strong support for the innovations, and teachers and staff understood they were expected to participate. But some participants sometimes engaged in behaviors that could be considered symbolic, such as making posters and T shirts touting the innovation being pursued, and pointing to those as being evidence of the school's involvement while not fully taking part in innovation activities.

The Dilemma of Evidence is an additional dilemma that was uncovered by the Scale Up Center work - one that proved to be fundamental to the efforts. The dilemma centered around differences among partnership members over what counts as evidence an innovation was effective. At times, tensions arose when some data collection behaviors by practitioners challenged sampling norms practiced by researchers. Partners also faced concerns about their own participation and objectivity. Some researchers worried about their own objectivity as they got involved in the conceptualization, design, development and implementation of an innovation. As a result, researchers took part in activities intended to help them navigate the roles they occupied, such as outlining in a memo to other team members the types of activities they considered appropriate for themselves. Additionally, practitioner members of the teams struggled with what counts as evidence. For example, some argued that their own lived experiences should hold more weight in design decisions than those of researchers. Some practitioners also argued that there was not as much need for documentation as researchers expected. Some teachers expressed the feeling that the "paperwork" primarily benefitted "the research" and not the improvement efforts.

By identifying these dilemmas, Cohen-Vogel and her team generated insights into how research-practice partnerships might better organize themselves for future school improvement work.

What's next?

Research-practice partnerships are a useful mechanism for making educational research more relevant and for making practice more responsive to what is learned from research. In executing improvement science in education, a major undertaking lies in the work of respecting the professional identities, norms, and formal and informal tasks of individuals within organizations, while designing new structures or routines to support the work.

Understanding the dilemmas inherent in research-practice partnerships and in improvement science efforts in education can help people engaging in this work to forecast challenges – and be better positioned to manage them:

- Understanding and balancing differing organizational goals. Ways must be found to balance researchers' needs to publish and add new knowledge with the need of district and school practitioners to demonstrate progress toward district goals. One possibility is to ensure that the work of improvement scientists and others involved in engaged scholarship are included in standards for promotion and tenure at universities.
- The dilemma of hierarchy must be addressed in the design of research-practice partnerships. A governing board with power across organizational partners and clear procedures for making decisions is one way to bridge the divide.
- Improvement work can challenge the professional identities of participants, threatening the effort's goals. Honest

conversations – and the trust needed to have them – must be encouraged to help prevent misattributing motives and to facilitate productive collaboration.

- The dilemmas of task structure and organizational boundaries must be confronted. It's important that the work of research-practice partnerships be supported by formal organizational structures. Boundaries, roles and responsibilities can be established from the beginning, with both researchers and practitioners developing understandings of the constraints under which each other is working. A governing board may be a good venue for renegotiating any roles, responsibilities and tasks.
- The dilemmas of persistence and compliance might be addressed by building on what has been identified as already working in the school. Focusing on ways to improve what teachers and administrators are already doing may increase the likelihood of enacting change. Accountability systems that encourage teachers and other educators to implement improvement tools and techniques can help avoid only symbolic compliance.

Resources

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Invigorating methods of measurement, building better theory

hen a student takes a modern, well-developed test in school today, we can trust that higher scores indicate a sufficient grasp of a subject such as reading or math, while lower scores suggest a need for ... something. But who decides what that something is, and how can we have confidence that the something will truly benefit the students or teachers who must own the scores – and the consequences?



Gregory Cizek Guy B. Phillips Distinguished Professor of Educational Measurement and Evaluation

There are few, if any, rigorous approaches for answering such questions, says Gregory Cizek, Guy B. Phillips Distinguished Professor of Educational Measurement and Evaluation, and his research is addressing that gap. It's the lesserstudied side of validity theory which Cizek says needs a thorough reboot to help schools, systems and teachers investigate whether the decisions based on test scores

actually meet the school's intended goals and justify their use.

Cizek is a national authority on educational measurement and evaluation, having conducted research for more than 30 years in the field of applied assessment with specializations in standard setting, validity and test security. Prior to joining the faculty at Carolina's School of Education, Cizek managed national licensure and certification testing programs for American College Testing, served as a test development specialist for a statewide assessment program, and taught elementary school for five years in Michigan.

He has written extensively on the subjects, including authoring or editing books such as "Setting Performance Standards: Foundations, Methods, and Innovations." He has served as president of the National Council on Measurement in Education. He is currently serving on the National Assessment Governing Board, which helps set policy for the National Assessment of Educational Progress, also known as the "Nation's Report Card."Cizek regularly examines questions about the development and use of tests and their results.

Relying on little research

Imagine your school offers two choices for third grade students whose year-end reading scores don't meet the standards for promotion to fourth grade: retention or reading camp.

In order to avoid repeating third grade, most would choose the reading camp. But that choice alone leads to an entirely new set of considerations that go beyond books.

Article by Courtney Mitchell

The Edge



The use of standardized testing in education is a given. And, there is a tremendous amount of research on and evidence for what test scores mean when it comes to measuring a student's grasp of a concept. How to determine what are relevant, effective uses of that information is an understudied area of validity theory where Gregory Cizek is breaking new ground. Educators

have little to rely on in terms of literature when it comes to justifying the way they use test scores. Cizek's revitalization of this area of research can bring new ways of thinking and strategizing about what is fair and equitable when it comes to student learning and achievement, as well as the evaluation of educators. This new research could be essential to developing more transparent, objective testing practices that invite trust from parents, students and teachers



If you're a parent, you might be worried about disrupting longago set summer schedules and vacations. If you're a teacher, you might wonder if the overtime is worth the interruption to a well-earned break. Administrators may consider the cost to cool the buildings during the summer, cut the grass or run the busses out to rural areas. And, of course, the third grader complains he'll be kissing his summer goodbye. It would be important to verify, before such school policy decisions are even made, that they are going to work. There needs to be a considerable amount of certainty that summer reading camp is an appropriate response to low reading scores.

It's difficult to turn to the research for advice when there's not a lot of it out there, says Cizek. For example, considering the plight of the third grade student just described, there is often strong evidence that the lower test score means the child needs more instruction to be prepared for success in fourth grade, but there is often too little concern about gathering the evidence necessary to support that it is justified to *use* that score to make summer placements.

"If the end-of-summer retests shows growth in the students, then the camp was a success, and some of the annoyances surrounding it may be worth it because it helped the students master the subject," he said. "But, if no one thinks far enough down the line beforehand to consider the consequences – both good and bad – or even alternatives, you risk making decisions that cost both the school and the families."

Inspiring trust in tests

And, when those decisions cost schools and families, but do little to affect improvement in a child's reading level, you can count on discontent. In education, few topics inspire such quick controversy as standardized testing, especially the end-of-grade tests that can determine if a student meets the benchmarks for promotion. No matter how you feel about testing, you can feel the tension rise when parents and teachers start to talk about it.

Cizek's work in measurement doesn't address whether or not schools should use standardized testing in classrooms, but to study how that testing can be fair and equitable when it comes to student learning and achievement, as well as in the evaluation of educators.

"Testing and measurements should be used to make sure educational decisions are fair," says Cizek. "We gather information that is useful in making important decisions like assigning letter grades, awarding diplomas, or issuing certifications and promotions. In order to be fair, we need to make sure this information is accurate in order to make these decisions."

Validity theory in education evaluates the extent to which a test yields scores that have the meaning they are intended to have. It uses known, credible sources of evidence to support those interpretations of test scores. Nearly half a century of educational research, guidelines and traditions on measurement mean there are plenty of verified resources available, such as *Standards for Educational and Psychological Testing*, to make reasonable choices when investigating and confirming the meaning scores.

Developing the side of validity theory that focuses on justifying score use is essential when working toward a more comprehensive and objective system of testing that invites trust, says Cizek. Providing some certainty to the practices schools and systems have in response to scores will inspire confidence among worried parents who wonder how testing impacts their child.

Teachers who may be evaluated positively or negatively based on a class's test scores, or who are responsible for developing plans that would bring those students up to grade level, need better guidance to support them in using the best practices.

"There is a lot of educator discontent surrounding testing, especially when we use a class's performance on a test for teachers' evaluations, promotions and bonuses, but we haven't done a good job of backing up those choices with evidence showing they really do fit," says Cizek. "A lower score can tell us a student needs help, and we're confident in that knowledge. But a teacher using those test scores to divide students into different reading groups based on reading level or myriad other important decisions still doesn't have clear guidelines for when it's justified to use a score for a specified purpose."

Modernizing the method

Validity theory is an ever-evolving process, and it should be, says Cizek. As with score meaning, unbiased, objective guides for score use protect learners and educators from any one singular voice deciding how to use that information. Decisions should be based on data and broad input, and not on hierarchies within school systems or the concerns of a few.

Modernizing validity theory to make a clear distinction between justifying score meaning and justifying score use can open doors to new work on the latter part of that theory, which Cizek says can make tests more valuable and useful for all involved.

That's why Cizek is hoping to see this new area of study grow. Through his research and publications, Cizek has invited his peers in the national education community to call for a more systematic and rigorous process for justifying use to explore this part of validity theory in a way that balances validation for score meaning. "This part of validity theory needs some real revision and thought because it should include many voices – teachers, parents, academics – as we build these traditions for justifying test score use," he said. "Our stakeholders have to be involved in helping us create the educational policies that affect them, because if their voices aren't heard, we alienate them from the start."

Resources

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Helping students with learning disabilities tackle the tough words

ennifer Diliberto, clinical associate professor of special education, knows what strategies work when teaching students with dyslexia, a language-based neurological disability.

She is dyslexic and learned to read using an approach that included syllabication, the process of dividing words into syllables. Diliberto relied on her experiences as a student, a special education teacher, and educational researcher to develop her own curriculum,"Taking on Tough Words," which has now been adopted by school districts in 12 states.

"It's a very targeted intervention specifically designed to help students that are struggling with decoding multi-syllabic words," Diliberto said.

The curriculum helps students with and without reading disabilities learn to decode (word read) and encode (spell) phonetically regular multisyllabic words to increase reading achievement in higher level text. "Taking on Tough Words" offers an effective intervention to use with middle school students reading below grade level.

Many children with learning disabilities struggle with learning how to read due to their inability to quickly and automatically read text and retrieve words. While this makes learning to read and write challenging, these children often possess strong oral language, good problem-solving skills and are highly creative.

Diliberto says all multi-sensory structured language programs include syllabication within literacy instruction. But not all programs include direct, explicit instruction in syllabication.

"(There are) different philosophies out there, and a lot of people like to encourage students to find recognizable chunks within words rather than learning all of the rules for syllabication because there are a lot of rules, and it's not for every student," Diliberto said. "Not every student can memorize those rules to use them as tools for decoding."



Jennifer Diliberto Clinical Associate Professor of Special Education

While conducting research for her curriculum, she found that there was not a lot of "hard-core" scientific research focused on syllabication, even though interest in teaching the technique dates back many years to when textbook writers and researchers contended that the methods dictionary makers used to divide words would help students learn to read and spell (Diliberto, J. A., et al. 2009)

But "Taking on Tough Words" is different in that it isolates, or targets, syllabication skills. Most prior packaged programs included syllabication as part of the entire program and not a separate supplemental intervention. Schools are now using a multi-tiered system of support to determine which students are in need of further reading invention. That means students

Article by Jonnelle Davis

The Edge



Children who read below grade level struggle with quickly and automatically reading text and retrieving words. This makes learning to read and write challenging for students with and without learning disabilities, even though these children often possess strong oral language and other skills. Research conducted by Jennifer Diliberto led to development of a curriculum

that targets syllabication skills, teaching young readers – particularly those with learning disabilities – how to decode and encode multisyllabic words to increase reading achievement.

get targeted intervention in specific areas of need based on assessments. Many students in upper elementary to high school who struggle with reading and read below grade level need further intervention in decoding and encoding of multisyllabic words.

"This curriculum allows schools to purchase a packaged, evidence-based curriculum that targets the needed skills while monitoring progress in roughly 90, 15-minute lessons," Diliberto said.

Diliberto said that while teaching students to find recognizable chunks can be helpful in decoding words, the method is not as consistent for teaching reading and spelling as knowing the steps for syllabication.

There are rules with syllabication that are consistent with roughly 80 percent of words in the English language. Using the "recognizable chunk" method without knowing where the syllables divide the chunk might not be consistent with the division. Depending on where the word is divided, that chunk may not sound the way it does when it is outside of that word. The student could be dividing that chunk in the middle, and that is going to change the sound of the vowel. Therefore, it is not as consistent as when a student knows the steps for syllabication, she said.



The technique

The idea of syllabication is to teach students consistent patterns, and to get them to look for those patterns rather than recognizable chunks.

Diiberto said 80 percent of the words in the English language are decodable, making it easy to teach students how to attack unfamiliar words.

- Step 1: Separate prefixes and suffixes, which usually leaves you with a monosyllabic word, or a simple two-syllable word. Once students start to recognize prefixes and suffixes, it makes it easy for them to decode.
- Step 2: Label the vowel and consonants in the word (or in the root word) starting with the first vowel.
- Step 3: Look for letter patterns such as VCCV (vowel, consonant, consonant, vowel), VCV (vowel, consonant, vowel), VCCCV (vowel, consonant, consonant, consonant vowel), VV (vowel, vowel), and Cle (consonant-le) and divide the syllables.
- Step 4: Identify the syllable patterns.
- Step 5: Decode the word.

For example, when two consonants come between two vowels (VCCV letter pattern), Diliberto's curriculum teaches students to divide the word between the two consonants: VC/CV. The first syllable is a closed one with a short vowel sound. Students should not divide between the two consonants if they are a consonant diagraph (e.g., th, sh), a consonant blend (e.g., bl, gl), or a closed syllable exception, as in -ance and ence. Examples: rab/bit, man/ tel, fish/y, ref/er/ence.

Diliberto said students should learn how to look for those consistent pattern chunks, rather than just looking for recognizable chunks. To make it easier for students, Diliberto's curriculum condensed the steps for syllabication, showing students how to look for patterns based on the six syllable types — closed, open, vowel-consonantsilent e, vowel team, r-controlled, consonant-le. Those types determine how the vowel is going to sound, and Diliberto said the vowels are really the tricky part of our language, especially when it comes to spelling.

Diliberto said by knowing those six syllable types, students then know what sounds those individual vowels are going to make. They can learn about accenting once they start mastering those six syllable types."Taking on Tough Words" includes lessons for reading and spelling multi-syllabic words. The first couple of lessons teach students how to define and describe characteristics of a syllable, while the third lesson teaches them how to define and understand terminology needed for syllable pattern instruction. By Lesson 13, they are learning to decode and encode open and closed syllables. Diliberto said the level of detail used in the curriculum is very effective for students with dyslexia, who have high cognitive ability but struggle with different parts of the language, but also works for students who have difficulty with their reading skills for other reasons.

The motivation

Diliberto's curriculum grew out of her dissertation research at UNC-Charlotte. Prior to her dissertation, she and her mentor in the doctoral program were conducting a research study using a reading program that was not explicitly teaching how to divide words into syllables.

Diliberto noticed in the study that students were not making any progress in the area of word reading and word identification, and that the reading program did not provide direct instruction in syllabication. There were no gains from the beginning of the study from pre-test to pro-test in the area of word identification and word attack, also known as decoding, Diliberto said. At the same time, Diliberto and her mentor were co-teaching a literacy method course, in which her mentor did a lesson on syllabication. Diliberto felt that was the piece missing from the reading program, and that syllabication could be the key to success for students struggling with reading. In the "Effects of Teaching Syllable Skills Instruction on Reading Achievement in Struggling Middle School Readers," (Diliberto et al, 2009), Diliberto tested her theory on students with mild to moderate disabilities and students at-risk for failing reading, instructing them in syllable patterns, syllabication steps and rules, and accenting patterns.

They practiced these skills by decoding and encoding nonsense and low-frequency mono- and multisyllabic words. The students in the study either had an identified disability and were part of the exceptional children's program and/or received a 1 or 2 on the end-of-grade test the year prior to the study.

In the 2009 article, published in the journal *Literacy Research and Instruction*, Diliberto and her collaborators outlined their research comparing two groups of participants: those receiving instruction in syllable skill and those who did not receive instruction in syllable skills. Both groups included middle school students with high-incidence disabilities, including Attention Deficit Hyperactivity Disorder, and those students at risk of failing reading.

The question they wanted answered: To what extent is there a difference between students with high-incidence disabilities and those students at risk for reading failure who received direct, explicit, and systematic supplemental instruction in syllable skills versus students with high-incidence disabilities and those at risk for reading failure who did not receive instruction in syllable skills on reading achievement? Word identification skills, word attack skills, comprehension skills, and fluency skills were the specific areas of reading achievement that the study measured. She found that, statistically, there were significant differences between pre-test and post-test scores for three measures: word identification, word attack and reading comprehension. The treatment group showed greater increase from pre-test to post-test in those areas, and the gap in fluency performance decreased between the groups.

Diliberto then developed teaching lessons that would address syllabication and could be used in conjunction with core curriculums.

What's next

Diliberto tested her curriculum with sixth, seventh, and eighth graders and witnessed the most gains among sixth-graders. She is pursuing how it would work with upper elementary students as a tiered intervention within North Carolina Public Schools' Multi-Tiered Systems of Support model, which relies on evidence-based academic and behavioral practices to promote school improvement.

Resource

Diliberto, J. A., Beattie, J. R., Flowers, C. P., & Algozzine, R. F. (2009) Effects of teaching syllable skills instruction on reading achievement in struggling middle school readers. *Literacy Research and Instruction*, Vol. 48 n1 pp. 14-27.

Autoethnography: Grappling with the bias of the brain

n the first day of his Autoethnography in/as Educational Research class, Sherick Hughes, professor at the School of Education, talks about implicit and explicit biases, and the major impact they have on teachers and students in classrooms, and on society as a whole.

And, as autoethnography is a research methodology of critical self-reflection, he starts by exposing his own.

"Even the man teaching the class has biases – we all do. I'm going to be asking them to be really honest with themselves and have these conversations together as a group. So, I do this bias exposure to show that I can practice this process with them, I can embody it," says Hughes. "I have made a career of sharing my mistakes and my blind spots, along with the ways I continue growing through them."

His recent book "Autoethnography: Process, Product, and Possibility for Critical Social Research" serves as an introduction to autoethnography as well as a guide for educators and educational researchers to consider in their own work.

According to the National Education Association, nearly 80 percent of teachers are white females, and many of them will be teaching at schools with predominately black and Latino students. If these teachers have never confronted

how race, class and gender impact classroom trends, their students could have negative experiences in their classrooms, that, over time, can influence the trajectory of their lives.

"When our students and alumni see inequities in educational systems, they should be the leaders to ask questions, not only of the structures at work, but also of themselves," says Hughes. "For example, one might ask,

Sherick Hughes Professor

'If my school has a large number of students of color, why are there so few teachers of color at the school? Why are students with subjective special-needs labels, (such as Emotionally Disturbed or Learning Disabled), disproportionately nonwhite or impoverished at my school? How might I be contributing to these inequity and disproportionality issues?'"

When we have time to act rationally and think through my biases, we can either name and manage them toward more consistently equitable and just interactions with the object of my biases; or convince ourselves that we don't have them, thereby increasing our potential to do more harm to the object of our biases, says Hughes.

Article by Courtney Mitchell

The Edge



Sherick Hughes' "process, product and possibility" research model for autoethnography has the potential to help future

and current teachers tackle major social issues in education, such as racial and ethnic disparities in classrooms and school systems. Though the concept, used more often in the health sciences, is relatively new to education, this research methodology has the power to transform education by asking teachers and education leaders to investigate and confront their own cultural biases with openness and vulnerability. Gaining a greater understanding of themselves and how these influences play out in their lives will improve both the way they teach and conduct research. Hughes' current investigation into how the process of autoethnography can change the brain may offer broader opportunities to help others change for the better.



Harvard's Dr. Natasha Kumar Warikoo and her colleagues note that in high-stress situations, our knee-jerk thoughts tend to have more of an influence on our actions, particularly with the objects of our biases.

"In a school, you make decisions under stress all the time. So, if teachers' knee-jerk reactions are ones that could be detrimental to a student who is the object of her/his biases, we have to question that," he said. For example, "If you're a white Christian female teacher or principal going to a high stress, under-resourced, high-stakes testing accountability school, and you have strong biases toward black, brown, and/or Muslim male students and their families, you might rationally know that's wrong. But, it's really worthy work to explore why you have these biases and to learn how to effectively engage de-biasing strategies, before you are in charge of a classroom or school, where that could lead to negative outcomes for students."

Process

Hughes, whose research focuses on issues of race in education teaches his students autoethnography so they can study themselves critically, taking a deep look at how their racial and cultural predispositions have influenced their relationships to power, as well as how these things have brought them privileges (the advantages they experience in our sociocultural context) and penalties (the disadvantages they experience in our sociocultural context).

Ethnography is the study of people and cultures. Autoethnography is an extension of that study, a systematic method of critical self-reflection within those discussions of people and cultural contexts. It's intended to help professionals – anyone from educators to health-care providers – investigate their racial and cultural biases, begin to understand where they originate, and see how they influence the way they work, live and interact with others.

Hughes uses his own childhood experience as an example: the early intelligence tests he took as a child set him on a different trajectory than his siblings and friends in school. Performing well academically was a privilege. A penalty was limited access to educational opportunities available to wealthy children, as a child who qualified for free/reduced lunch in a poor, rural school district.

"As University of Maryland Professor Patricia Hill Collins explains, we all have privileges and penalties. If I walk across campus, and the students I walk past have their own biases at play, being male may be something they have a positive association with in that moment. If they see men as strong or powerful, being a man is privilege," he says. "But, then, my racial identity may bring a negative association for some others who have an implicit bias toward black people. If their implicit biases lead them to devalue, deskill, or infantilize me, because I'm black, that's a penalty I experience."

Together Hughes and his students work through researchbased exercises developed to help them begin the journey of autoethnography. The exercises test their reactions in the moment. Their automatic answers and reactions will expose their biases, especially the ones they've never acknowledged or recognized.

"In teaching students how to do autoethnographies, we ask them to identify an area in which they know they struggle; most often, the people with whom they have the least contact and experience. We ask students to question what words and images most immediately come to mind when they hear

"In high-stress situations, our knee-jerk thoughts tend to have more of an influence on our actions, particularly with the objects of our biases."

certain words like black male, white female, or Muslim. This exercise gets them thinking about association bias, how much of that bias is implicit, explicit, and how much is just unacknowledged or dismissed. It calls them to question how they think about people, and how those thoughts might be linked to how they treat people."

Many of these students will go in their careers to influence not only P-12 schools, but also, educational theories, policies and practices. They're going to work in academia and participate in research that will impact how education is taught and experienced.

"If they can learn how to be better and more critical participants by using this research method now, it's absolutely going to influence the quality and integrity of the work they do; and of the communities they call home."

Product

The next step in autoethnography is writing it down, examining the mistakes and missteps we all experience as part of the way we categorize the world around us. For Hughes' students, writing about and exploring the roots of how and why they see the world, and beginning to ask themselves what they can do about it, is the work they'll do in the class.

For students to unpack the difficult feelings that can come as a result of the process is very important, says Hughes. If future educators don't begin to uncover, learn about and discuss their biases, they may unnecessarily bring those biases into their own classrooms as educators, says Hughes. Hughes asks his students to turn the problems they've identified within themselves into an autoethnographical research questions: How did I learn to associate negative messages to certain racial, cultural and ethnic groups? What were the origins of those negative messages in my life and what can I do about it?

It is not easy, at first. A level of comfort among the students can take a while to find. But Hughes makes it clear that, in working with autoethnography, the School of Education classroom can be a safer space to talk about tough topics, when confidentiality is agreed upon and upheld by the group. With this agreement, students can reveal their vulnerabilities and tell their truths about what their biased minds quickly categorize as positive or negative.

"If we're having trouble getting there, sometimes I remind them they are learning a research methodology that helps them better refine their craft. Where else will they get to do something like this process, but at a research university?"

Hughes again uses his own autoethnographical work as an example: "The first time I taught a particular course in diversity, equity and social justice, I received several negative evaluations from students. Some called me racist and said the only thing they had learned in my class is that I'm black."

Hughes discussed this with his minority colleagues from other schools, who shared they had similar experiences. "The more we talked, the less upset I was about the evaluations themselves, and the more I wanted to know what I could have done differently and what exercises could have helped those students participate more productively. How could I improve my critical-race pedagogy? And, had the students and I carried any implicit biases into the classroom that affected the way I taught the class and what the students learned?"

Possibility

Can the processes of taking on an autoethnography actually change the brain? Hughes is collaborating with two neuroscientists to see how autoethnography as a centered component of race- and equity-based coursework may help rewire the brain to decrease automatic negative associations with images and words that reflect the object of participants' biases.

In post-tests given at the end of the semester, Hughes found quantitative data to support the changes students described at the end of the semester in their autoethnographies. Some 51 percent of his students who participated in the pilot study also have a positive change in their implicit biases via the Harvard Implicit Association Test, and statistically significant decreases (p < .01) via the Quick Discrimination Index, a highly valid and

reliable survey to assess subtle racial and gender bias. They are encouraging statistics, says Hughes, because it shows human beings can change for the better. Future studies will also examine how long these changes last and what boosters need to occur to sustain them.

De-biasing strategies should be ongoing, he says. Educators will continue to have their biases tested as they enter new school systems, grade levels and classrooms. Throughout a career, an educator may enter many different communities where they may encounter ethnic groups, poverty levels, religious affiliations or parenting styles that are new to them. An educator may spend much of her career in an urban area and have a new set of biases to confront when she moves to a rural school system.

AUTOETHANOGRAPHAN PROESS, PRODUCT, AND POSSIBILITY

SHERICK A. HUGHES JULIE L. PENNINGTON

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"Autoethnography should absolutely be

used as professional development. We can always work on decreasing our biases, especially the ones we've purposefully dismissed for so long."It's an admirable undertaking, even when it's hard, even when it forces educators to be vulnerable and investigate the parts of ourselves we know need to change, if we are to really live the egalitarian principles we espouse, Hughes says.

Resource

Hughes, S. A., Pennington, J. L. (2016). Autoethnography: Process, Product, and Possibility for Critical Social Research. Thousand Oaks, CA: Sage Publications.

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In Carolina's newly revised Ph.D. research strand in **Culture**, **Curriculum and Teacher Education** we engage in the tensions of individual freedom and collective responsibility, addressing society's tough issues and their histories. We do so to interpret and study curriculum as an index to a society's vision of what matters, tracing its links to culture, politics, economy, and conceptions of a just society.

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A MINUTE WITH ... THAD DOMINA

Study questions use of free and reduced-price lunch data

hurston "Thad" Domina, associate professor of educational policy and sociology at Carolina's School of Education, was the lead author of an article published in Educational Researcher that raises questions about a leading measure of socioeconomic status of school children: Free and reduced-price lunches.



Thurston "Thad" Domina Associate Professor of Educational Policy and Sociology

Q. Why was it important to do this study?

A. The National School Lunch Program was designed to provide healthy meals to school children whose parents may not be able to afford them. But over the years, the program has taken on a totally unrelated function – as a source of data about socioeconomic disadvantage in American schools. Children must report that their families' total household income is less than 1.85 times the federal poverty line in order to receive free or reduced-price lunch.

Since we don't routinely collect other data about kids' family backgrounds, free or reduced-price lunch data often the best measure of kid background we have. As a result, the measure is widely used, both in educational research and educational policy.

As we started researching this paper, my colleagues and I found, for example, that 70 percent of the recent articles in the journal Educational Researcher that reported some measure of student socioeconomic background used free or reduced-price lunch. What's more, the measure is hugely important

in school finance and school accountability policy. For example, schools qualify for many federal and state-level funding streams based on the proportion of their students who qualify for free lunch.

The problem is, nobody really knows how well free lunch data track on to other measures of student socioeconomic disadvantage. Our study tries to solve that problem by matching kids' school data with their families' IRS income tax filings.

Q. What were the main things you found?

A. My colleagues at the U.S. Census and the University of California, Irvine and I learned three main things:

- The correlation between free and reduced-price lunch status and children's IRS-reported family income is weak. Many kids from very low-income families do not enroll in free and reduced-price lunch and many kids from relatively high-income families do enroll in the program.
- At the school level, the relationship between the proportion of kids enrolled in free or reduced-price lunch and other measures of school-level socioeconomic disadvantage (like the school-level poverty rate) is also very weak.
- Free lunch is negatively related to student achievement, even after controlling for their IRS-reported household income and a host of other factors.

The first two findings raise real questions about the extent to which free or reduced-price lunch data proxy for socioeconomic disadvantage.

The third finding, however, suggests that these data are capturing something about students' educational disadvantage that our ostensibly better measures of family income don't capture. We're still puzzling over this third finding, but I suspect that kids from low-income families that have access to other resources might not enroll in the program, while schools may find ways to enroll kids from families with highly volatile household incomes or other challenges.

Q. Why is this important for other educational researchers?

A. We all know that students' family backgrounds have huge consequences for students' educational experiences, and basically all educational researchers try to account for those consequences as we study what happens inside the schoolhouse. Free lunch data is a handy and widely-used tool for doing so, but our study suggests that it's of questionable reliability. More broadly, I think our study raises important questions about how we conceptualize and understand student disadvantage and its role in educational processes. For example, when policy-makers measure school or teacher quality, they typically use free and reduced-price lunch data to account for differences in the learning resources available to kids from poor and non-poor families. I think this study raises big questions about the accuracy of these models and how fair it is to use them in school accountability systems.

Furthermore, these measurement problems are likely getting worse over time. Thanks to recent changes in free lunch regulations that are designed to help schools more easily provide meals to students who need them, I suspect the relationship between free lunch and student family background is weakening.

While these changes are wonderful for making sure that kids who need lunch are getting it, it means that we as researchers and policymakers shouldn't be trying to build research and policy on the back of this measure. If we're serious about making sure our schools work for students from across the socioeconomic spectrum, I think it's time for a serious national effort to measure and understand student family background.

Q. What other research questions need to be examined as a result of your findings?

A. In order to understand schools and students' educational experiences, we need to understand the contexts that students experience outside of school.

For me, our study is a reminder of what a poor job we've done at understanding and measuring those out-of-school contexts. The measurement problems that we're highlighting have huge consequences, and not just for educational research. Thurston Domina, Nikolas Pharris-Ciurej, Andrew M. Penner, Emily K. Penner, Quentin Brummet, Sonya R. Porter, and Tanya Sanabria. Is Free and Reduced-Price Lunch a Valid Measure of Educational Disadvantage. *Educational Researcher*. Sept. 6, 2018. https://doi.org/10.3102/0013189X18797609

Notes



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