DEEPER LEARNING RESEARCH SERIES

EQUAL OPPORTUNITY FOR DEEPER LEARNING

By Pedro Noguera, Linda Darling-Hammond, and Diane Friedlaender
October 2015

EDITORS' INTRODUCTION TO THE DEEPER LEARNING RESEARCH SERIES

In 2010, Jobs for the Future—with support from the Nellie Mae Education Foundation—launched the Students at the Center initiative, an effort to identify, synthesize, and share research findings on effective approaches to teaching and learning at the high school level.

The initiative began by commissioning a series of white papers on key topics in secondary schooling, such as student motivation and engagement, cognitive development, classroom assessment, educational technology, and mathematics and literacy instruction.

Together, these reports—collected in the edited volume *Anytime, Anywhere: Student-Centered Learning for Schools and Teachers*, published by Harvard Education Press in 2013—make a compelling case for what we call "student-centered" practices in the nation's high schools. Ours is not a prescriptive agenda; we don't claim that all classrooms must conform to a particular educational model. But we do argue, and the evidence strongly suggests, that most, if not all, students benefit when given ample opportunities to:

> Participate in ambitious and rigorous instruction tailored to their individual needs and interests

> Advance to the next level, course, or grade based on demonstrations of their skills and content knowledge

> Learn outside of the school and the typical school day

> Take an active role in defining their own educational pathways

Students at the Center will continue to gather the latest research and synthesize key findings related to student engagement and agency, competency education, and other critical topics. Also, we have developed—and have made available at www.studentsatthecenterhub.org—a wealth of free, high-quality tools and resources designed to help educators implement student-centered practices in their classrooms, schools, and districts.

Further, and thanks to the generous support of The William and Flora Hewlett Foundation, Students at the Center has expanded its portfolio to include an additional and complementary strand of work.

The present paper is part of our new series of commissioned reports—the Deeper Learning Research Series—which aim not only to describe best practices in the nation's high schools but also to provoke much-needed debate about those schools' purposes and priorities.

In education circles, it is fast becoming commonplace to argue that in 21st-century America, each and every student must aim for "college, career, and civic readiness." However, and as David Conley described in the first paper in this series, a large and growing body of empirical research shows that we are only just beginning to understand what "readiness" really means. Students' command of academic skills and content certainly matters, but so too does their ability to communicate effectively, to work well in teams, to solve complex problems, to persist in the face of challenges, and to monitor and direct their own learning—in short, the various kinds of knowledge and skills that have been grouped together under the banner of "deeper learning."

What does all of this mean for the future of secondary education? If "readiness" requires such ambitious and multi-dimensional kinds of teaching and learning, then what will it take to help students become genuinely prepared for life after high school, and what are the implications for policy and practice?

We are delighted to share this installment in the Deeper Learning Research Series, and we look forward to the conversations that all of these papers will provoke.

To download the papers, executive summaries, and additional resources, please visit the project website: www.jff.org/deeperlearning.

Rafael Heller, Rebecca E. Wolfe, Adria Steinberg

Jobs for the Future

Introducing the Deeper Learning Research Series

Published by Jobs for the Future | New and forthcoming titles, 2014-15

A New Era for Educational Assessment
David T. Conley, EdImagine Strategy Group and the University of Oregon (October 2014)

The Role of Digital Technologies in Deeper Learning
Chris Dede, Harvard Graduate School of Education (December 2014)

Let's Get Real: Deeper Learning and the Power of the Workplace
Nancy Hoffman, Jobs for the Future (February 2015)

Civic Education and Deeper Learning
Peter Levine & Kei Kawashima-Ginsberg, Tufts University (February 2015)

Deeper Learning for Students with Disabilities
Louis Danielson, American Institutes for Research & Sharon Vaughn, University of Texas (August 2015)

Equal Opportunity for Deeper Learning
Pedro Noguera, Teachers College, Linda-Darling Hammond, Stanford University, & Diane Friedlaender, Stanford Center for Opportunity Policy in Education (October 2015)

How School Districts Can Support Deeper Learning: The Need for Performance Alignment
Meredith I. Honig & Lydia Rainey, University of Washington (October 2015)

The Why, What, Where, and How of Deeper Learning in American Secondary Schools
Jal Mehta & Sarah Fine, Harvard Graduate School of Education

The Implications of Deeper Learning for Adolescent Immigrants and English Language Learners
Patricia Gándara, UCLA Graduate School of Education & The Civil Rights Project at UCLA

Deeper Teaching
Magdalene Lampert, Boston Teacher Residency and the University of Michigan

Effective Schools for Deeper Learning: An Exploratory Study
Rafael Heller & Rebecca E. Wolfe, Jobs for the Future

JOBS FOR THE FUTURE

Jobs for the Future works with our partners to design and drive the adoption of education and career pathways leading from college readiness to career advancement for those struggling to succeed in today's economy. We work to achieve the promise of education and economic mobility in America for everyone, ensuring that all low-income, underprepared young people and workers have the skills and credentials needed to succeed in our economy. Our innovative, scalable approaches and models catalyze change in education and workforce delivery systems.

WWW.JFF.ORG

Students at the Center
JOBS FOR THE FUTURE

Students at the Center—a Jobs for the Future initiative—synthesizes and adapts for practice current research on key components of student-centered approaches to learning that lead to deeper learning outcomes. Our goal is to strengthen the ability of practitioners and policymakers to engage each student in acquiring the skills, knowledge, and expertise needed for success in college, career, and civic life. This project is supported generously by funds from the Nellie Mae Education Foundation and The William and Flora Hewlett Foundation.

WWW.STUDENTSATTHECENTER.ORG

ABOUT THE AUTHORS

Pedro Noguera is the Peter L. Agnew Professor of Education at New York University. Dr. Noguera is a sociologist whose scholarship and research focuses on how schools are influenced by social and economic conditions and demographic trends. He holds faculty appointments in the departments of Teaching and Learning and Humanities and Social Sciences at the Steinhardt School of Culture, Education and Development. He also serves as a faculty member in NYU's Department of Sociology and is the Executive Director of the Metropolitan Center for Research on Equity and the Transformation of Schools. From 2008–2011, he was an appointee of the Governor of New York to the State University of New York (SUNY) Board of Trustees. In 2014, he was elected to the National Academy of Education.

Linda Darling-Hammond is Charles E. Ducommun Professor of Education at Stanford University. She is Faculty Director of the Stanford Center for Opportunity Policy in Education and former president of the American Educational Research Association. Her research and policy work focus on educational and teaching equality and school reform. In 2008, she served as director of President Obama's education policy transition team. Her book, *The Flat World and Education: How America's Commitment to Equity will Determine our Future*, received the coveted Grawemeyer Award in 2012. Her most recent book, *Beyond the Bubble Test: How Performance Assessments Support 21st Century Learning* was released in 2014.

Diane Friedlaender is a Senior Associate at the Stanford Center for Opportunity Policy in Education, where she oversees research and professional development efforts. The studies she has led at SCOPE are: High Schools for Equity: Policy Supports for Student Learning in Low-Income Communities of Color and Windows on Conversions, a multimedia exploration of redesign at four comprehensive high schools. She previously taught sociological and multicultural foundations in education and has also conducted research on school reform models, youth intergroup relations, and youth development. She earned her BA from UC San Diego and PhD in Education Policy from UCLA.

TABLE OF CONTENTS

INTRODUCTION

Out of concern that the nation's schools—particularly those working with traditionally underserved populations—are not adequately preparing all students to succeed in college and careers, education policymakers have launched a series of major reform efforts in recent years. Among the most prominent are two initiatives that call for fundamental changes in the areas of curriculum and assessment.

The first is the development of the Common Core State Standards, which aim to improve upon the "mile wide, inch deep" curriculum guides of the past by replacing them with a set of "fewer, higher, and deeper" learning goals. These learning goals emphasize critical thinking, analytic skills, and other deeper learning competencies, such as the ability to apply core academic content, work collaboratively, communicate effectively, and learn how to learn (Pellegrino & Hilton 2012).

Because the existing school accountability system does not measure these learning goals, the second initiative aims to develop complex forms of assessment that can support and evaluate student progress toward meeting the new college- and career-ready standards. Until now, most states have relied on multiple-choice tests that primarily measure low-level recall and recognition skills (Yuan & Le 2012). However, two consortia of states—the Partnership for Assessment of Readiness for College and Careers (PARCC) and the Smarter Balanced Assessment Consortium (SBAC)—have created new assessments, mapped to the Common Core, that include more open-ended tasks and complex problems, and will provide much richer information about student mastery of higher-order skills.

While promising, these initiatives will require many schools to transform their teaching methods, organizational systems, and approaches to leadership. Undoubtedly, these changes will be particularly challenging for schools that serve large numbers of "high need" students (e.g., English language learners, students with disabilities, and over-age and undercredited students). Many of these schools have already been struggling to meet the lower standards that have been in place for over two decades. Now, as the academic bar rises, they could see a massive increase in the numbers of students deemed to be failing.

To help students meet the new standards, schools will need to provide regular opportunities to practice high-level skills such as solving complex problems, conducting research, communicating in multiple forms, and using new technologies to find, analyze, and evaluate information. However, when it comes to creating such a rich learning environment, schools serving low-income students and students of color tend to have the furthest distance to travel.

Over the last 15 years, since the passage of the No Child Left Behind Act (NCLB), schools serving relatively affluent

>> To help students meet the new standards, schools will need to provide regular opportunities to practice high-level skills such as solving complex problems, conducting research, communicating in multiple forms, and using new technologies to find, analyze, and evaluate information.

students have continued to offer rigorous instruction (particularly in their honors, Advanced Placement, and college prep courses) and a wide course selection, including world languages, science, history, music, and the arts. In contrast, schools serving underprivileged students, already underresourced, have struggled to maintain a broad curriculum in the face of budget cuts. Many have shifted significant amounts of classroom time to test preparation in an effort to boost student performance on high-stakes exams (Au 2007; McMurrer 2007).

Complicating matters further, the segregation of students on the basis of race and socio-economic status has intensified over the last thirty years (Civil Rights Project 2014). While dropout rates have declined recently, they remain extremely high in some parts of the country, particularly in urban areas. As of 2011, 25 percent of the nation's African American high school students and 17 percent of Latino high school students were enrolled in what some call "dropout factories"—schools that see their enrollment decline by 40 percent or more between ninth and twelfth grade; only 5 percent of white students attend such high schools (Balfanz et al. 2013).

In short, successful implementation of these major new policy initiatives will need to overcome inequities in funding, learning opportunities, and learning conditions that are pervasive in the American educational system and that contribute to the persistence of the so-called "achievement gap."

In a recent report to the U.S. Secretary of Education entitled *For Each and Every Child: A Strategy for Educational Equity and Excellence* (2013), the National Commission on Excellence and Equity documented these widespread disparities and defined an equity agenda to address the following needs:

> the need to restructure the school finance system to ensure equitable distribution of resources

> the need to ensure access to quality teachers

> the need to ensure access to high-quality early childhood education

> the need for external supports to address the social needs of children

> the need for a new accountability system to hold policymakers responsible for conditions within schools

This report addresses the issue of equity in another crucial dimension: teaching and learning. We argue that to ensure equity in access to deeper learning, practices and policies must address the context for education both outside and inside of schools. To enable low-income students to learn deeply and successfully, schools that serve them must offer a high-quality instructional experience and the wraparound services that can help ameliorate the stressful conditions they experience in their communities.

To inform efforts to prepare greater numbers of students for college, careers, and civic life, we first describe the obstacles that currently prevent schools from delivering high-quality instruction. We then examine educational models, structures, and practices that facilitate deeper learning. Finally, we take a wider systemic perspective to consider how policy, practice, and research can be aligned to support the development of pedagogy for deeper learning in schools serving students who have been placed at risk of school failure.

» Successful implementation of these major new policy initiatives will need to overcome inequities in funding, learning opportunities, and learning conditions.

RESOURCE EQUITY FOR DEEPER LEARNING

In this paper, we define equity as the policies and practices that ensure that every student has access to an education focused on *meaningful learning* (i.e., that teaches the deeper learning skills contemporary society requires in ways that empower students to learn independently), taught by competent and caring educators who are able to attend to the student's social and academic needs, and supported by *adequate resources* that provide the materials and conditions for effective learning (Darling-Hammond et al. 2014). Equity-based reforms in teaching and learning will be central to the effort to expand access to deeper learning.

For many years, critics of the accountability movement have argued that its emphasis on narrowly framed academic goals has made it more difficult to pursue deeper learning with students. Even before the adoption of NCLB, advocates such as Ted Sizer, author of *Horace's Compromise* and the founder of the Coalition of Essential Schools, argued that the high school curriculum had become little more than an amalgamation of scattered facts and skills, lacking coherence and more likely to elicit boredom than serious engagement. As an alternative, Sizer and others called for educators to choose "depth over breadth" by emphasizing instruction in critical thinking, problem solving, and other "habits of mind" that would foster lifelong learning as well as the ability to acquire and use knowledge to tackle new problems and develop new ideas, products, and possibilities.

For a number of reasons, advocates for such teaching and learning never gained much traction in schools serving children of color in areas where poverty was concentrated. Harvard Education Professor Jal Mehta (2014) recently suggested that advocates of deeper learning have a "race problem," in that the practice of "deeper learning in the U.S.

is much more white than the nation as a whole." He goes on to add that many educators and civil rights advocates have been skeptical of calls for deeper learning and, as a result, "students in more affluent schools and top tracks are given the kind of problem-solving education that befits the future managerial class, whereas students in lower tracks and higher-poverty schools are given the kind of rule-following tasks that mirror much of factory and other working class work."

While it is true there is a divide, there is a long tradition of support for deeper learning in the black community. Since the days when W.E.B. DuBois and his colleagues in the NAACP argued for a liberal arts curriculum for African American students, civil rights groups have fought against the lower-level, skills-based curriculum that society has typically reserved for students of color. Only in the last decade have accountability hawks cloaked arguments for test-based reform in civil rights language, even as the effects of those reforms have deepened the gulf between the curricula offered to the haves and the have-nots.

>> As an alternative, Sizer and others called for educators to choose "depth over breadth" by emphasizing instruction in critical thinking, problem solving, and other "habits of mind" that would foster lifelong learning as well as the ability to acquire and use knowledge to tackle new problems and develop new ideas, products, and possibilities.

While the No Child Left Behind Act brought a needed measure of attention to the achievement of often-neglected groups of students, high-stakes testing has inadvertently reinforced long-standing tracking systems based on assumptions about differential ability and the future life roles of students. This has occurred because (1) in many schools, especially those serving low-income students, the curriculum has been narrowed to mirror the tests; and (2) test scores have been used to allocate differential access to the curriculum, with the result that students of color and low-income students have often been denied access to a thinking curriculum and instead relegated to remedial, rote-oriented, and often scripted courses of study.

In short, recent policies have created a vicious cycle that exacerbates existing inequities. Evidence suggests that even when these policies do lead to a momentary bump in scores on low-level tests of basic skills, the lack of access to a broad liberal arts curriculum and to opportunities to engage in complex problem solving ultimately contributes to poor performance on gateway tests for college (i.e., ACT and SAT) and in college courses that require deeper comprehension skills and higher-order thinking (Conley 2014).

To the degree that deeper learning remains unavailable to students of color and children of low-income families, America will never be able to solve its equity dilemma. The evidence is clear: students will only acquire the skills to be truly college and career ready if they have access to a higher-level curriculum.

The Effects of Poverty and the Environment

Educators have long understood that environmental factors–related to family background, peer groups, neighborhood conditions, and more–influence the health, nutrition, safety, and overall psychological and emotional well-being of young people, which in turn affect their development and learning (Rothstein 2004).

As numerous studies have shown, family income and parental education are two of the strongest predictors of student achievement and educational attainment (Coleman et al. 1966; Goldhaber et al. 1999; Jencks 1972; Jencks &

Phillips 1998; Kahlenberg 2011). Children in schools where poverty is concentrated underperform their counterparts in more economically mixed settings. Indeed, students who are not low-income have lower achievement in high-poverty schools than low-income students attending more affluent schools (National Center for Education Statistics 2004).

Poverty also limits the amount and quality of academic and social support students receive outside of school. Whereas middle-class parents can generally provide their children with a broad range of opportunities–such as quality preschool, summer camp, homework assistance, music lessons, and the like–that support healthy development and enhance the likelihood of academic success (Lareau 2003), lower-class parents typically lack the education and resources needed to do so.

Further, as poverty rates have risen in recent years, a growing number of researchers have drawn attention to the ways in which food insecurity, poor prenatal care, poor heath, lack of safety, housing instability, violence, and pervasive and persistent stress negatively influence children's welfare and well-being (Adelman & Taylor 1999; Syme 2004; Rothstein 2004; Eccles & Gootman 2002; Noguera & Wells 2011). Many have argued that the rise in childhood poverty rates since the 1980s has been a major reason for the lack of progress in improving American schools, as federal and state education policies have done little to redress what has become an increasingly tattered safety net (Barton & Coley 2010). By 2007, according to a large-scale study on child health and well-being conducted by the United Nations Children's Fund, the U.S. ranked 24th out of the 25 wealthiest nations.

The educational consequences of poverty appear early. Studies have found, for example, that the working vocabulary of four-year-old children from low-income families is approximately one third the size of that of children from middle-income families (Hart & Risley 1995), which makes it more difficult for them to read with comprehension and engage in academic learning when they enter school. By first grade, only half as many students from low-income families are as proficient as students from more affluent families at understanding words in context and engaging in basic mathematics (Denton & West 2002).[1]

> ❯❯ To the degree that deeper learning remains unavailable to students of color and children of low-income families, America will never be able to solve its equity dilemma.

These differences in early year experiences among young children often lead schools to organize a remedial curriculum focused on rote skill development for these students. Rather than creating an enriched environment that would provide robust linguistic and hands-on learning experiences that could develop higher-order thinking and performance, students are often subjected to a series of drills and learning experiences designed to develop low-level skills. The problem is often exacerbated by the prevalence of unskilled teachers who frequently depart within the first few years of teaching. To compensate for high teacher turnover and a lack of highly skilled teachers, many districts have adopted highly scripted "teacher proof" curricula. Such approaches cannot reach deeper learning goals, and they generally fail to develop the capacity of teachers to teach the more sophisticated curriculum needed to develop higher-order thinking skills in students.

Moreover, research suggests that poverty and the social issues that frequently accompany it (e.g., housing instability, substance abuse, crime, and unemployment) have a negative impact not only on individual students but on the culture of their schools, undermining the collegiality and trust that organizations need in order to improve (Adelman & Taylor 1999; Noguera 2003; Payne 2008; Rothstein 2004; Bryk et al. 2010).

None of this should be taken to suggest that demography is destiny or that children from low-income communities cannot be expected to achieve. However, it does mean that we must pay attention to the ways in which poverty negatively influences academic outcomes, and we must ensure that our schools provide the academic and social supports that enable students to thrive. Otherwise, we will be unlikely to reduce the race- and class-based disparities in achievement that characterize American education today.

Unequal Funding

Inequality in public spending on education further exacerbates the effects of high poverty rates and income inequality. In the U.S., funding for schools in affluent communities is typically higher than in poor ones (EEC 2013; Baker et al. 2013; Darling-Hammond 2010). The differences are dramatic in many states, with wealthy suburban schools spending twice as much as urban and rural schools that serve higher-need students.

Contrary to the oft-repeated claim that increases in school spending levels have little impact on educational outcomes, funding affects the ability of schools to provide both high-quality instruction and the wraparound services (before and afterschool care, health supports, and social services) that students need to be ready to learn.

A recent longitudinal study powerfully demonstrated the importance of providing adequate resources to schools in order to transform academic outcomes: the study found that in districts that substantially increased their spending as a result of court-ordered changes in school finance, low-income children were significantly more likely to graduate from high school, earn livable wages, and avoid poverty in adulthood (Jackson et al. 2014). For low-income students who spent all 12 years of school in districts that increased spending by at least 20 percent, graduation rates rose by 23 percentage points and educational attainment levels rose by a full year. Between the ages of 25 and 45, these same children were 20 percent less likely to fall into poverty during any given year. Their individual wages were 25 percent higher than they would have been, and their family incomes were 52 percent higher. The effects were large enough in some cases to eliminate the entire gap in adult outcomes between those raised in low-income and high-income families.

In short, school funding formulas must enable all children to receive the fundamental supports and services they need, along with access to an engaging, relevant curriculum that promotes the acquisition of deeper learning skills. Having established the challenges faced by schools serving children with higher needs, we turn now to teaching and learning, first by describing the scientific basis for pedagogical strategies that promote deeper learning and then by discussing examples of schools that use these strategies successfully.

>> We must ensure that our schools provide the academic and social supports that enable students to thrive.

WHAT EDUCATORS NEED TO KNOW TO ENABLE DEEPER LEARNING

In recent years, neuroscientists have gone from regarding the brain as a static organ—one that undergoes few changes after early childhood—to understanding that the neural pathways and synapses that wire the brain go through ongoing changes in response to social interaction, the environment, and neural processes. A growing body of research suggests that experience can actually change the brain's physical structure and functional organization well into adulthood (Pascual-Leone et al. 2005; Dweck 1999; Boykin & Noguera 2011; Blackwell, Trzesniewski, & Dweck 2007).

This research has significant implications for how we think about deeper learning and equity. For years, schools have relied on testing to sort students into groups or tracks, presumably for the purpose of efficiently meeting their learning needs. Such practices have persisted despite research that shows they almost always result in lowered expectations for those labeled "slow" and reinforce the tendency to separate students by race and socio-economic status (Oakes 2005). The latter practice often results in low-income students of color being relegated to less demanding courses and less prepared teachers (Venezia & Kirst 2005).

However, when educators come to understand just how much potential all children have to learn—if given the kinds of support and stimulation that encourage the growth of new and stronger neural connections—they can better implement practices that intellectually challenge and nurture all students. Furthermore, research has shown that when students learn about the malleability of the brain—and the fact that intelligence is not static but is constantly developed—it can actually improve their performance in school (Trzesniewski and Dweck 2007; Boykin and Noguera 2011).

What We Know about Learning

According to the landmark report *How Students Learn*, published by the National Academy of Sciences (Bransford et al. 1999; Donovan & Bransford 2005), three well-established fundamental principles of learning line up with emerging research in the neurosciences and are especially important for teachers to understand:

1. Students come to the classroom with prior knowledge that must be addressed if teaching is to be effective.

2. Students need to organize and use knowledge conceptually if they are to apply it beyond the classroom.

3. Students learn more effectively if they understand how they learn and how to manage their own learning.

In turn, the research on effective teaching aligns with these principles. Studies consistently find that highly effective teachers support the process of meaningful learning by:

> Creating **ambitious** and **meaningful** tasks that reflect how knowledge is used in the field

> Engaging students in active **learning**, so that they apply and test what they know

> Drawing **connections to students' prior knowledge** and experiences

> Diagnosing student understanding in order to **scaffold the learning process** step by step

> **Assessing student learning continuously** and adapting teaching to student needs

> Providing clear **standards**, constant **feedback**, and opportunities for **revising** work

> Encouraging strategic and **metacognitive thinking** so that students can learn to evaluate and guide their own learning

Active project- or problem-based learning—which allows students to delve deeply into an area of inquiry and

make connections among ideas and areas of knowledge–strengthens understanding, retention, and transfer of knowledge. Ironically, however, as we have noted, such learning opportunities are often reserved for students in upper tracks and affluent schools.

Fortunately, we have models of excellent practice in the many teachers, schools, and districts serving low-income students that have drawn on research from the learning sciences to provide students with the instructional supports they need to learn in deeper and more meaningful ways. Consider the case of Jordan Fullam, a high school English teacher in Brooklyn who found that he could engage his ostensibly "low-achieving" students in reading existential philosophers such as Kierkegaard, Nietzsche, and Camus. Through debate, highly interactive Socratic seminars, and connecting the philosophical subject matter to familiar contemporary themes, Fullam created a classroom environment in which his students felt comfortable asking questions and probing the underlying meaning of material they initially regarded as dense and impenetrable.[2] In follow-up interviews, several remarked that they felt "smarter" because they had been challenged–and pushed themselves–to grapple with material that took them time to grasp.

What We Know about Child Development

Educational researchers have long recognized that children's cognitive, emotional, psychological, and physical development are interrelated, and that learning involves progress in all of these strands (Wood 1998). Over several decades, this broad understanding of child development has influenced the design of school curricula (Connor et al. 2004), the application of learning strategies in classrooms (Chatterji 2006), and the training of teachers (Ames 1990, 1992). However, the research has evolved in important ways. In recent years, developmental psychologists have moved away from the notion that "normal" child development occurs through specific unvarying stages to a more nuanced view, which acknowledges that development is influenced by a variety of complex factors related to the interaction between the individual and the social environment (Brooks-Gunn et al. 2003).

Individual differences, along with differences in parents' education, amount of time parents can spend with their children, environmental stimulation, social context, and culture all affect the developmental process (Brooks-Gunn et al. 2003). This helps explain why children vary widely in the pace and timing at which they acquire particular skills and reach certain milestones. For example, while it is common for most children learn to walk sometime between 8 and 15 months, or to learn to read independently sometime between age 4 and 8, the range for what is considered "normal" in acquiring these skills is quite broad (Paris & Newman 1990). Most developmental psychologists and pediatricians now recognize that if a child is relatively advanced or delayed in acquiring these skills, they should not necessarily be regarded as "gifted" or "slow." Early reading proficiency, for instance, is not necessarily predictive of future success.

In recent years, however, educational policymaking has diverged from contemporary knowledge about child development. As the focus on holding schools accountable for student achievement (as measured by performance on standardized tests) has intensified, policymakers have paid less heed to research showing, for example, that children reach milestones such as learning to read at varying rates, or that the opportunity to play during the school day is critical to socialization.

Schools and academic programs that are committed to deeper learning and equity must resist the tendency to teach all students in exactly the same way, or to make judgments about their ability based upon a few arbitrary measures of progress. This is not to say that educators should be unconcerned with student achievement in math, reading, and other areas; rather, educators should seek to understand each child's individual learning needs so they can provide the kinds of support that will help them meet specific goals.

While such an approach may seem beyond the capacity of many schools, it is both mandated in the Americans with Disabilities Act for children identified with learning disabilities (Cortiella & Horowitz 2014) and supported, for all children, by a vast body of research. In other words, our understanding of learning and development makes it clear that to really bring deeper learning to all, we need a student-centered approach.

>> Our understanding of learning and development makes it clear that to really bring deeper learning to all, we need a student-centered approach.

SCHOOLS THAT ENACT DEEPER LEARNING

A number of studies have examined schools that are disrupting the status quo and engaging low-income and minority students in deeper learning (Darling-Hammond et al. 2002; Friedlaender & Darling-Hammond 2007; Friedlaender et al. 2014; Martinez 2014; Wasley 2000). This body of research suggests that these schools have stronger academic outcomes, better attendance and student behavior, lower dropout rates, higher graduation rates, and higher rates of college attendance and perseverance than comparison schools serving similar students.

In a recent study, the American Institutes of Research (2014) compared a set of 13 schools in California and New York that belonged to school networks focused on deeper learning strategies with matched comparison schools serving similar students. The study found that, on average, students who attended the network schools achieved higher scores on the OECD PISA-Based Test for Schools, which assesses core content knowledge and complex problem-solving skills, as well as on state English language arts and mathematics tests. They were also more likely to graduate from high school on time and to enroll in four-year colleges and more selective colleges, and the benefits were similar whether students entered high school with low or high levels of prior achievement.

In this section, we examine the practices utilized by the schools in these studies to understand how they operationalize their simultaneous commitments to equity and deeper learning. Key elements include:

> **Authentic instruction** and assessment in the form of project-based learning, performance-based assessment, collaborative learning, and connections to the world beyond school

> **Personalized supports for learning** in the form of advisory systems, differentiated instruction, and support for social services and social-emotional learning along with skills

> **Supports for educator learning** through opportunities for reflection, collaboration, and leadership, as well as professional development.

Schools that incorporate these key features are more likely to develop students who have transferrable academic skills, feel a sense of purpose and connection to school, graduate and go on to college, and are prepared for a fast-changing job market. Many of these schools also have developed personalized systems of in-school support for students, along with access to health care, mental health services, and social supports. In short, they look at the student as a whole person.

Authentic Instruction and Assessment[3]

At the heart of instruction that provides equitable access to deeper learning lies pedagogical approaches that emphasize the development of the analytic and

> Schools that incorporate these key features are more likely to develop students who have transferrable academic skills, feel a sense of purpose and connection to school, graduate and go on to college, and are prepared for a fast-changing job market.

communication skills needed to navigate and excel in a dynamic, information-rich environment. To build these skills, schools need to build student leadership capacity and autonomy within the classroom and help students connect with and apply what they are learning through performance-based assessments.

INQUIRY-BASED PEDAGOGY AND GROUP LEARNING

Inquiry-based pedagogy and group learning prepare students for college, career, and life by promoting transferable skills such as critical thinking, problem solving, collaboration, and communication. To help students develop these skills, teachers must create opportunities for them to engage actively with course content, grapple with real world problems, explore core questions, develop and test hypotheses, make generalizations, and communicate with audiences beyond the classroom. For inquiry-based instruction to succeed, students need a base level of background content knowledge, a solid understanding of the process of inquiry (Edelson et al. 1999), and the skills to design and manage a complex set of activities. This requires their teachers to provide access to background knowledge, along with substantial scaffolding for the analytic and inquiry processes, until students have had sufficient practice with these skills.

Schools use different strategies to structure inquiry-based learning. For example, in the San Francisco Bay Area Envision Schools, teachers design all class activities to give students the opportunity to build knowledge, apply their knowledge, and reflect on what they have learned and how they can improve. They tie this framework to their core competencies, which include inquiry, analysis, research, and creative expression.

At other schools, such as Oakland's Life Academy, teachers frame the curriculum around inquiry topics related to essential questions like, "How do people survive the horrors of war?" and, "Was capitalism or socialism better for America in the 20th century?" This type of instruction encourages higher-order thinking and requires more complex project-based and collaborative classroom activities, such as interactive class projects, role playing, mock trials, art projects, and presentations.

While individual students can engage in inquiry-based learning, research has shown that group work is particularly effective, with hundreds of studies finding significant learning benefits when students are asked to work together on learning activities rather than on their own.[4] Experimental studies have also shown that groups tend to outperform individuals on learning tasks and, further, that individuals who work in groups perform at a higher level on individual assessments (Barton 2000, 2003).

The largest positive effects appear when students receive explicit instruction on how to work productively in a group and when the work involves "group-worthy" tasks that require the talents of all participants and call for a significant amount of analysis and discussion. Structured student roles, interdependent group rewards, accountability for both individual and group efforts, and opportunities for groups to reflect regularly on their own process also make group learning more effective. Many studies have found that low-income students, students of color, and urban students tend to see even greater benefits from group work than do other students, making it a crucial strategy for an equity agenda for deeper learning (Darling-Hammond et al. 2008).

FOCUSING ON MASTERY

One of the distinguishing factors of a student-centered deeper learning approach is a seismic shift in the purpose of assessment—away from accountability measures designed to rank and sort students and toward performance assessments that diagnose student learning needs, promote skill acquisition, and move students toward mastery. These productive learning tasks enhance the learning process

>> Research has shown that group work is particularly effective, with hundreds of studies finding significant learning benefits when students are asked to work together on learning activities rather than on their own.

so that students can gauge their progress, providing vital feedback that helps orient teachers and students.

Key to this approach is a focus on mastery, which shifts the purpose of instruction from task completion to deeper learning. For example, at Dozier-Libbey Medical High School in Antioch, California, teachers use assessments to gauge students' progress in meeting academic standards, with an eye toward reaching a mastery level. A school staff member explains:

> We look for opportunities for students to re-learn and redo. Are the students learning and mastering the concepts that we want them to? If not, how can we give them the opportunities to learn? It is about meeting the standards or trying again. Not everyone learns at the same pace.

This perspective is diametrically opposed to schools with pacing guides or a focus on getting through the curriculum rather than making sure students learn the curriculum. Such approaches make failure almost inevitable for students who start with less prior knowledge or learn at a slower pace, and thus never have the chance to fully grasp the introductory material that undergirds the more advanced concepts they encounter later on. In contrast, a focus on mastery, which emphasizes practice and revision of work, is fundamentally student centered, for it ensures that students acquire the essential skills they will need in order to acquire more complex skills and abilities.

PERFORMANCE-BASED ASSESSMENTS

Schools that teach for deeper learning gauge mastery through assessments that reflect the kinds of literacy, mathematics, and analytical tasks found in higher education and the work world. Assessments such as Socratic seminars, exhibitions, and projects result in tangible products and encourage learners to draw on multiple kinds of knowledge in order to demonstrate higher order and integrated learning. Often these schools require students to gather their work in portfolios designed to display their best work in a cumulative fashion and illustrate the range of skills they have mastered.

Many schools use exhibitions as a way for students to demonstrate their learning, often across disciplines, and practice their communication skills. At City Arts and Technology Academy in San Francisco, students do at least one exhibition every year. Tenth-grade students prepare an exhibition on Animal Farm, in which they conduct a literary analysis in English class, study the Russian Revolution in history class, and create a poster of the novel's symbols in art class. They present this work to an audience that includes parents and community members, who vote on the best citizen and leader in the novel. Exhibitions enable students to see the connections between their courses and understand how the knowledge acquired in one domain (history) can be relevant to what they learn in another (literature and art).

Reflection is a fundamental part of this assessment process, from daily reflections in "exit slips" at the end of class to more in-depth reflections during portfolio defenses or exhibitions. For example, at Impact Academy in Hayward, California, students, advisors, and parents reflect on the student's academic and behavioral accomplishments and set goals for improvement during family conferences that occur twice per year.

RELEVANT CURRICULUM CONNECTED TO THE WORLD BEYOND SCHOOL

To successfully build the skills required for college and careers, students must be exposed to instructional content and materials that are relevant to who they are and want to be. That is, instructional content needs to make connections to what students already know, at the same time as it introduces the information and skills they will need to achieve their future aspirations. This is not meant to imply

>> Schools that teach for deeper learning gauge mastery through assessments that reflect the kinds of literacy, mathematics, and analytical tasks found in higher education and the work world.

that students should be limited to information within their experience; it simply means that, like adults, students thrive in environments where their work has intrinsic value, meaning, and applicability beyond the classroom. An intellectually engaging curriculum that is challenging and connected to real-world issues supports in-depth reflection and engagement while providing better support for postsecondary education and the work world.

For example, two career-focused schools—Dozier-Libbey Medical High School and Life Academy of Health and Bioscience—create relevance through interdisciplinary coursework, collaborative projects, and internships in the health and life sciences, integrating their health careers focus not only through internships and projects in settings ranging from hospitals to scientific laboratories, but also through their coursework. At Life Academy, for instance, tenth-grade students investigate issues of mental health in an interdisciplinary project in humanities and biology, in which they read *Slaughterhouse Five* while studying five mental illnesses through a biological lens. The project concludes with a written assessment in which students take the role of a psychiatrist and use textual evidence from the book to diagnose the main character. This type of interdisciplinary work incorporates the health care focus, brings relevance to the curriculum, and shows students how their academic subjects have value in the real world.

The Envision Schools create relevance through a focus on art and technology, which encourages students to think critically about themselves and their environment. Here, too, internships engage students in learning outside of school, and the curriculum makes topics relevant through connections to current events and universal social themes. For example, the art rooms, hallways, and student exhibitions at City Arts and Tech High School display provocative art that speaks to both personal issues of identity and larger social issues. Teachers incorporate social justice themes as a strategy to empower youth and encourage them to think critically. While exploring key events in world history, students discuss overarching themes and questions related to culture and subjectivity, the power of perspective, and resistance and complicity that resonate from the era of Nazi power in Germany to American society and the world today.

Personalized Learning Practices

Supporting high academic achievement for all students begins with a shared belief among all school stakeholders,

Developing and Gauging Mastery through Portfolio Assessments

Performance-based assessments that serve as capstones to project-based learning activities can serve as a powerful driver of instruction. At the Envision Schools, tenth-grade students present a "Benchmark Portfolio" to advance to eleventh grade, and twelfth-grade students must successfully defend a "College Success Portfolio" to graduate. Students demonstrate proficiency in leadership skills and core competencies through creating and defending their portfolios. Since these are high-stakes assessments, teachers must make sure the assignments and projects students complete in preparation for the portfolios embody the core competencies and skills they will be expected to demonstrate, and students must revise their work, on the basis of feedback, until it is "portfolio-ready." Teachers plan their instruction so students have at least two portfolio-worthy projects a year. The competencies thus drive instruction, assessment, and revision.

The portfolio process itself has multiple components. Students must compile five certified artifacts (projects, papers, or other pieces of work) that embody all the core competencies and leadership skills. To be certified, the work must meet the proficient standard in the Envision Schools College Success Rubric for each Core Competency.

Each core competency is aligned to a content area. Portfolio artifacts include a research paper (science/history), literary analysis (English), inquiry project (science/history), and creative expression (art). Students write a reflection for each artifact that demonstrates the leadership skills they used in compiling it. For the graduate portfolio, students must also include a detailed description and defense of their workplace learning experience. Once the artifacts are certified and posted online, portfolio students must "defend" their work, dissertation-style, in front of a panel of teachers and before their peers and family members.

Students must meet high standards in their defenses. They may be asked to re-present a defense until their work meets the standards. The senior defense process begins early enough in the year that students can complete the work in time to graduate, and teachers provide significant support. As students prepare their culminating projects, it is not uncommon to find them working with teachers after school and even on weekends. Envision Schools students develop perseverance, resilience, resourcefulness, and "grit" because they are well aware of the high standards their teachers and administrators uphold.

including students, parents, teachers, and administrators, that all students can achieve challenging learning goals. However, to achieve high levels of success for all students, schools must accompany high expectations with the academic supports students need to span any gaps between those expectations and their own preparation levels (Noguera & Wing 2006).

Students often enter high school underprepared for a college preparatory curriculum and lacking confidence in their own abilities. The numerous academic and personal challenges they face provide multiple points for potential failure. In order to overcome these barriers, schools need to clearly communicate their support for every student, use multiple and redundant support strategies, provide teachers with strategies to differentiate instruction and assessment, and offer external supports to address the needs of special populations. Teachers need to balance high expectations for all students with a sensitivity to individual real-life challenges, so they can provide strong support based on their relationships with and knowledge of each student, and within the context of the school's personalization structures. School-wide practices should support high expectations by providing extra help to students who need it and empowering teachers and students to do their best.

STUDENT SUPPORT THROUGH DIFFERENTIATED INSTRUCTIONAL PRACTICES

Student-centered schools emphasize the use of varied instructional strategies that accommodate the wide range of skills young people bring to the classroom. For example, they often provide differentiated materials, extra tutoring in and out of class, and other kinds of individualized support, including the creation of an explicit, personalized learning plan for every student.

The use of personalized learning plans is common in the field of special education, including models such as

Response to Intervention and Multi-Tier Systems of Support. Rather than retaining struggling students in a grade or placing them in remedial classes, these strategies—widely regarded as effective—require teachers to carefully diagnose individual students' learning needs before devising and implementing interventions.

In a small but growing number of schools, educators argue that the only way to ensure that every student has the opportunity to engage in deeper learning is to provide *everyone*—not just students with disabilities—with a personalized learning plan and to train all teachers to modify and adapt their instructional strategies in response to students' particular learning needs (Gregory & Chapman 2013; Lawrence-Brown 2004). This is complicated work, as anyone who has ever attempted to differentiate instruction in a classroom comprised of students with a broad range of abilities and background knowledge can attest. However, a growing number of proven strategies are emerging to enable teachers to differentiate instruction and support a wide range of learners.

Formative assessment plays an especially important role in such schools. For example, to accommodate heterogeneous classes, Envision Schools has come to rely heavily on the use of ungraded assignments, exit slips, and other assessments to determine what sorts of scaffolding individual students need and what supports to provide them. Common scaffolding approaches and supports include peer learning strategies, extended time, and adapted work (tasks that vary by length and difficulty depending on the student, but which require all students to access the same curriculum concepts). As a history teacher at Impact Academy in Hayward, California, explains:

> [For] some students it's executive functioning stuff, for others it's skill deficits, or it's reading—changing how much they are being asked to read, or eliminating elements of a project, creating an alternative

» Teachers need to balance high expectations for all students with a sensitivity to individual real-life challenges, so that they can provide strong support based on their relationships with and knowledge of each student, and within the context of the school's personalization structures.

assignment, or doing lots of scaffolds for writing... I do a lot of literacy stuff with all the students, but basically I try to figure out what is their capacity, if they're working super hard, and just modify and scaffold as appropriate.

Educators committed to equity and to providing all children with the opportunity to engage in deeper learning often think creatively about how to design and implement responsive educational strategies to meet student needs. Such teacher creativity made it possible for a school in Sunset Park, Brooklyn, to arrange its classrooms so that monolingual English speakers (who were mostly African American) and Spanish speakers could work on projects together, thus forming relationships and helping each other in developing literacy skills. (Further, the arrangement has had the added benefit of reducing racial segregation in classrooms, the cafeteria, and the playground.) Similarly, when educators in Rockville Center, Long Island, realized that their practice of tracking students into different levels of Algebra and Geometry had produced racially segregated classrooms, they extended the time allotted to math classes so that teachers would have more time to differentiate instruction and provide students with individualized support.

In both of these examples, rather than lowering standards or expectations, teachers worked creatively to develop a learning context that made it possible for most students to engage in deeper learning and meet the demands of a rigorous curriculum. Similarly, programs like Reading Recovery, which extends time and provides differentiated supports in the early grades, can help educators address the learning needs of students in the critical area of literacy development before children internalize the notion that they can't–or don't like to–read.

ADVISORY PROGRAMS: THE CORE SUPPORT FOR PERSONALIZED LEARNING

Advisory programs, which provide a structure to facilitate deep and lasting relationships between teachers and students, have the power to become the touchstone for the school day, a central component of each student's high school trajectory, and the heart of the conjoined academic and wraparound support system that enables all students to succeed.

Effective advisory programs meet daily for at least 30-60 minutes with a consistent small cohort of students (typically 15-20) who stay with the same teacher for several years. Within advisory, teachers focus much of their attention on building a safe and caring community, which provides crucial peer support. However, the advisors themselves– who come to know their advisees well–also play a critical role in advocating for students and ensuring that they do not slip through the cracks.

Advisors are charged with making sure that students succeed academically, too. When students struggle, the advisor reaches out to their teachers to develop strategies to turn things around. Conversely, when problems arise in class, teachers often look to the advisor for insight and assistance.

Advisors act as liaisons to and partners with students' families as well. To parents and guardians, particularly those who did not have positive experiences in high school, it can be critically important to have a friendly school contact available, someone who knows their child and is invested in their success. Typically, advisors contact parents to check in or schedule formal conferences and meetings, and in some schools they are expected to conduct home visits, serving as the bridge between the student, the family,

> Educators committed to equity and to providing all children with the opportunity to engage in deeper learning often think creatively about how to design and implement responsive educational strategies to meet student needs.

and needed social services and emotional supports. Overall, advisors enable schools and families to work together to provide students with the support they need to navigate the intricacies of school in a productive and positive manner.

Further, strong advisory programs also teach a developmental curriculum that evolves as students progress. For example, advisory classes may focus on the transition to middle or high school; career exploration and organizational strategies; college preparation; and college applications and senior exhibitions by the end of high school. The through line of this curricular development is the guidance and support students need to graduate from high school and enroll in postsecondary education or enter productive careers. Toward this end, advisors help students set and meet short- and long-term goals, monitor schoolwork and grades, review transcripts to ensure that students are meeting college admissions requirements, and collaborate with other teachers and support staff to provide students with the academic and social-emotional support they need to meet their goals.

SUPPORT FOR STUDENTS' SOCIAL-EMOTIONAL DEVELOPMENT

A few major obstacles to the success of low-income students of color are not academic but psychological. In addition to limited access to transportation, violent neighborhoods, a lack of quality physical and mental health care, and inadequate housing and food, all of which can make it difficult even to get to school, these students face the daily injustices of poverty and racism. By the time they are fourteen, according to Preston Thomas, principal of Life Academy, the cumulative effect of these stressors means that students "see barriers in why they can't, why they don't belong, why it's not their right to succeed at things." Overcoming these barriers requires explicit teaching that addresses students' social, emotional, and psychological needs.

Thus, in addition to providing advisors and personalized supports, student-centered schools tend to make proactive efforts to help students learn to manage their emotions, develop an academic mindset, interact with others productively, and persist through obstacles. In many schools, advisory becomes a key setting for such social-emotional learning,[5] and the advisor serves as a counselor, supporting both social-emotional and academic learning and sometimes even weaving together traditional lessons and group counseling.

Practices that Support Educators

Finally, creating and sustaining schools committed to deeper learning will require a substantial investment in staff capacity. This investment could include efforts to create a shared school-wide vision; support grade-level teacher collaboration; build teacher expertise in pedagogy, content, curriculum, and assessment; provide opportunities for staff to reflect on their practice; and foster district and community partnerships.

BUILDING A SCHOOL-WIDE VISION

Creating and sustaining a shared vision of what effective learning and teaching look like is an ongoing process that begins with establishing a school-wide set of norms or habits, as well as competencies educators will work together to develop for students. These are then reflected in the assignments, assessments, rubrics, and feedback students receive, much of which occurs in a public fashion that involves teachers (and often students) scoring work together at public exhibitions or defenses. This begins to build a culture of deeper learning, and a system for defining quality.

SUPPORTING EDUCATOR LEARNING AND COLLABORATION

Opportunities for teachers to learn about inquiry-oriented pedagogy, differentiated instruction, performance assessment, and the teaching of social-emotional skills are critical. These opportunities are most successful when they involve teachers in sustained opportunities to learn and then practice new ideas, with modeling, coaching and feedback, as well as collective planning and reflection.

Time for collaboration is also essential, particularly regular grade-level and departmental team meetings that design curriculum within and across grade levels and caucus about students' needs. Teachers within a grade level team may discuss their concerns about a student's academic progress, share strategies and challenges, and then create a group action plan to engage that particular student. Teams also develop cross-curricular projects and performance-based assessments. They create a space in which teachers can learn from one another and improve their practice.

When teachers understand what their colleagues are teaching, they can learn from each other, connect their instruction, balance student workloads on major

assignments, and reinforce each other's practices so the student experience is more coherent. Many teams set learning and practice goals for themselves and work throughout the year to monitor and address those goals.

Schools must create the time and the space for this collaboration and give teachers a key role in deciding what types of professional development will lead to meaningful changes in practice. As seen in high-achieving nations, time for teacher collaboration boosts the quality of instruction. It allows teachers to know their students better; create common expectations, practices, and assessments; and remove the isolation that discourages them, and instead, create an environment of supportive team efforts toward a common goal.

MAINTAINING A CULTURE OF REFLECTION

A culture of reflection permeates student-centered schools:

Teachers analyze student work, study data, visit each other's classrooms, and reflect together on their observations of what is working and what is not. In this way they expand their instructional strategies by drawing upon

each other's expertise, identifying promising practices, and working together to address shared challenges in the classroom. Videotaping one's own or a peer's teaching is another way to support analysis and reflection about teaching. It can also allow teachers to share demonstration lessons during professional development sessions. This helps build a school-wide culture that is receptive to continuous learning and views improvement as an ongoing priority.

Finally, while in-school teacher collaboration is absolutely critical to successful teaching and learning, school-to-school networks have also been shown to be powerful sources of teacher development. Subject matter networks—such as the National Writing Project, Silicon Valley Math Initiative, and Arkansas Mathematics Network—can enable teachers to expand their repertoire beyond their familiar local practices (Darling-Hammond 2010; Jaquith et al. 2010). And by helping to develop and score performance assessments for their districts and states, teachers tend to become much more deeply knowledgeable about academic standards, what they mean in practice, how their students think and learn, and how to provide more productive assignments and feedback (Darling-Hammond & Falk 2013).

POLICY IMPLICATIONS

When educators and policymakers align educational practices with what they know about child development and neuroscience, and when they adopt strategies to mitigate adverse conditions in impoverished communities, they can significantly enhance the ability of schools to promote equity and deeper learning. Despite the many forces that have limited learning opportunities for low-income students and students of color, some schools have managed to offer all students access to a rich, engaging curriculum and personalized learning.

While much of this work happens in individual schools and networks, the research we have reviewed suggests that three areas of policy support will substantially influence the ability of schools to engage in student-centered practices that support deeper learning:

> **Funding policies** that ensure adequate resources are used productively

> **Human capital policies** that ensure highly effective educators and professional learning opportunities are available to a broad range of schools so they can enact student-centered practices that support deeper learning

> **Instruction and assessment policies** that influence what is taught and how student learning is measured

Funding and Organizing Student-Centered Schools

Across the country, inadequate funding prevents schools serving low-income and minority students from fully realizing their goals and addressing student needs. Insufficient funds impact the ability of schools to hire and retain quality staff, provide services to meet the needs of their students, and provide rich curricular and extracurricular offerings. To address these shortfalls, most states will need new funding formulas. As the National Commission on Excellence and Equity observed:

The common situation in America is that schools in poor communities spend less per pupil—often many thousands of dollars less per pupil—than schools in nearby affluent communities. Underserved schools can't compete for the best teaching and principal talent in a local labor market and can't implement the high-end technology and rigorous academic and enrichment programs needed to enhance

A Policy Agenda for Equitable Access to Deeper Learning

Funding Policies

1. Adequate and flexible K-12 funding based on pupil needs
2. Incentives to develop new school designs that can support deeper learning
3. Resources for wraparound services that support student success

Human Capital Policies

4. Educator standards that focus preparation programs on how to engage students in deeper learning
5. Supports for educator preparation and induction that enable strong pedagogical skills
6. Time for collaboration
7. Meaningful professional development and evaluation

Instruction and Assessment Policies

8. More supports and fewer constraints for instruction so that schools can innovate
9. New systems of assessment and accountability that support deeper learning
10. Systemic learning that enables educators, schools, and agencies to learn from one another

student performance. This is arguably the most important equity-related variable in American schooling today (2013, p. 15).

As we noted earlier, addressing these disparities can have a profound influence on achievement, dramatically reducing gaps in educational and life outcomes (Jackson et al. 2014). In the 1990s, Massachusetts adopted a weighted student

> » The highest performing and fastest improving nations invest a greater share of their education resources in schools serving the most disadvantaged students.

formula funding system that allocates more funding for the education of low-income students, English language learners, and students who require special education services. Along with the state's investments in early childhood education, extensive professional development, and new standards and assessments, this move is credited for large gains in student achievement and a reduction in achievement gaps (Guryan 2001). Similarly, a recent OECD report on international education achievement found that the highest performing and fastest improving nations invest a greater share of their education resources in schools serving the most disadvantaged students (OECD 2013).

Policies must not only ensure adequate funding to schools serving low-income students but also encourage *productive* spending. Consequently we recommend:

1. **Adequate and flexible K-12 funding:** The federal government should make it a condition of federal funding that states make progress toward funding equity as well as educational achievement. States should adopt strategies, like weighted student formula approaches, that fund schools on the basis of the costs of educating students who live in poverty and/or have other risk factors. They should allow schools to use these resources flexibly to implement successful, innovative school models.

2. **Incentives to develop new school designs:** Many current funding policies for school operations and facilities, along with other state regulations, determine staffing, schedules, and credits according to a factory model design that was developed a century ago. Policies at the federal, state, and local level need to be changed to encourage new school designs that support student-centered practices focused on deeper learning–including competency-based or mastery-based approaches to organizing learning, new staffing models that personalize relationships, alternative uses of time, and physical spaces that take advantage of technology and teams. To further encourage change, financial incentives, like the federal Small Schools Grants, should also be created and promoted.

3. **Resources for wraparound services that support student success:** States and the federal government should provide funding for school models that ensure that students in high-need communities receive wraparound services, including adequate preschool education, health and mental health care, social services, summer learning opportunities, and before and afterschool care.

Preparing Educators for Student-Centered Schools that Enable Deeper Learning

States must commit themselves to increasing the supply of educators–including teachers, administrators, counselors, and others–who are prepared to offer high-quality, student-centered instruction in high poverty schools. This means producing educators who understand how students learn, can motivate that learning through engaging pedagogy and real-world connections, and know how to address students'

> » States must commit themselves to increasing the supply of educators—including teachers, administrators, counselors, and others—who are prepared to offer high-quality, student-centered instruction in high-poverty schools.

academic, social, and emotional needs. In addition, states must ensure that such well-prepared educators have incentives to work and stay in schools and districts serving high-need students. Consequently, we recommend:

4. **Educator standards:** States should set standards that require teacher education programs to prepare educators who understand how to support students' academic, social, and emotional development. These standards should be enforced through accreditation and state licensing processes that look carefully at whether candidates have the opportunity to learn these skills and can demonstrate them in practice (through teacher and administrator performance assessments).

5. **Supports for preparation and induction:** The federal government should invest in the creation of high-quality training sites and subsidies for high-need practitioners to receive excellent training, as it does in medicine. This will involve funding high-quality preparation and induction programs that enable teachers and administrators to develop the more sophisticated skills needed to implement deeper learning practices. These programs should provide strong clinical training in teacher residencies or professional development partnerships with schools that use deeper learning practices. To make such training available and affordable, governments should invest in service scholarships for a diverse pool of talented recruits who teach or lead in high-need schools and fields for at least four years. They should also support release time for accomplished mentors who engage in deeper learning practices to coach beginning teachers.

Of course, educators need ongoing support, especially in schools that have not previously been engaged in the sophisticated instructional practices that support deeper learning. As noted above, schools must develop professionally informed, collaborative cultures with a focus on sharing practices to improve supports and student outcomes. In order to support such professional learning, we recommend:

6. Time for collaboration and learning: States and districts should fund collaborative teacher learning, curriculum planning, and problem solving, including peer observations and coaching in classrooms, and schools should redesign schedules to provide time for this important work (Darling-Hammond 2013).

7. Meaningful professional development and evaluation: States and the federal government can support meaningful professional development by developing and supporting teacher and school networks, professional development institutes, and coaching that focus on deeper learning practices within and across content areas. Agencies can use guidelines for high-quality professional development (e.g., Learning Forward n.d.) as a guide for funding effective learning opportunities. In addition, states and districts can design teacher evaluation so that it reinforces student-centered practices and rewards collaboration while encouraging teachers to engage in goal setting and inquiry to support their growth.

Implementing Deeper Learning Instruction and Assessments

Under the greatly expanded state testing requirements of the NCLB era, many schools focused on deeper learning have found that the rich and relevant curriculum they seek to offer is at odds with the multiple-choice expectations of high-stakes standardized tests. As a consequence, they must balance preparing students for these tests with trying to teach them to demonstrate analytical thinking and problem solving in more applied and authentic ways.

》 Analysis of reform policies in New York, Toronto, and London have shown successful change occurs when policymakers focus upon capacity building as the primary driver of change rather than high-stakes testing and top-down accountability.

Hopefully, the new assessments that are emerging with the Common Core State Standards will be more supportive of deeper learning goals, particularly if they are used to inform instruction and improve learning, rather than to sort and label students, teachers, and schools. Such assessments, along with the deeper learning experiences and insights provided by school-level performance assessments, must be part of a capacity-building strategy that supports the goals of equity and excellence.

As Michael Fullan and Maria Langworthy (2014) have shown in their analysis of reform policies in New York, Toronto, and London, successful change occurs when policymakers focus upon capacity building as the primary driver of change, rather than high-stakes testing and top-down accountability. This means that *accountability is mutual*, with clearly delineated responsibilities for each constituency in the system. When schools fail to produce the desired outcomes, as measured by assessments, graduation rates, and other indicators, state and/or district officials intervene to figure out why. They assess state and district policies, along with school conditions, to determine what needs to be changed, and they engage in *collaborative problem solving* with practitioners to devise new approaches to problems and, where necessary, recommend changes in personnel.

The Ministry of Education in Ontario has taken this approach for several years now, with the result that more high-poverty schools have improved their performance in Toronto than in any other large city in North America.

In order to encourage and expand successful student-centered instruction and assessment practices, we recommend:

8. **More supports and fewer constraints for instruction:** Districts, states, and the federal government should limit directives to schools that constrain practice in ways that may not be productive for all students or contexts, and that prevent schools from adopting more successful student-centered practices. Curriculum standards should provide information for instructional planning without pacing guides or other straitjackets that prevent teachers from meeting students' needs. To develop a 21st-century curriculum that is relevant to a new economy and society, states will need to allow schools to rethink curriculum structures, courses, Carnegie units, credits, grading, and assessments. If this work is

to succeed, governments should support it with ideas, materials, training, networking, and evaluation, but they seek to standardize it within a regulatory context. Once states have adopted high-quality standards and provided adequate funding and curriculum resources for educators to draw upon, their role in guiding practice should be modest, while their role in supporting learning should be robust.

9. **New systems of assessment and accountability:** States should create broader accountability systems that emphasize meaningful learning and use multiple measures—including assessments, graduation rates, and postsecondary success—to inform schools and the public about student progress. Assessments should include a limited set of state-level assessments that support deeper learning and more robust locally-developed performance assessments that allow students to inquire, investigate, collaborate, present, think critically, be creative, and defend their ideas.

10. **Systemic learning:** As other successful countries have illustrated, federal, state, and local policies can move practice forward with *system learning* strategies that enable educators, schools, and agencies to learn from one another. States and districts can facilitate this learning by documenting and disseminating successful practices, supporting school-wide learning so that educators can adopt and adapt practices that are successful in their settings, and supporting schools in learning from the research and from each other through conferences, networks, site visits, and other strategies. Governments can also develop and explicitly support networks of like-minded schools that are working on similar problems or strategies, so they can learn with and from each other and share what they learn with the system as a whole.

The research shows that schools can reach all students when districts, schools, and teachers marry powerful and proven instructional strategies, support for student learning and social-emotional needs, wraparound services, and support for teacher collaboration and learning. If the government is committed to its own learning and joins in this work as a collaborative partner, as it has in Toronto, we can create systems in which deeper learning is equitably accomplished.

ENDNOTES

[1] The research on early literacy learning suggests that it is an urgent priority to expand access to high-quality preschool, but investing in early childhood education alone will not be sufficient to ensure students' later success. Several studies on federally-funded Head Start programs have shown that the benefits of such programs are often undermined when children do not receive ongoing support, both within and outside of school, after they enter kindergarten (NICHD Early Child Care Research Network 2015; Karoly et al. 2005).

[2] For video footage of Fullam and his students in the classroom, see: https://www.youtube.com/watch?v=tmFx7CdNRwY; https://www.youtube.com/watch?v=CkAuysBeMB4.

[3] The examples in this section are from Friedlaender et al., 2014.

[4] For a review, see Darling-Hammond et al. 2008.

[5] Many schools use lesson resources from organizations like Educators for Social Responsibility, e.g., *The Advisory Curriculum* and *Conflict Resolution in the High School*.

REFERENCES

Adelman, H.S. & Taylor, L. 1999. "Mental Health in Schools and System Restructuring." *Clinical Psychology Review*. Vol. 19. No. 2.

American Institutes of Research. 2014. *Study of Deeper Learning: Opportunities and Outcomes*. Palo Alto, CA: Author.

Ames, C.A. 1990. "Motivation: What Teachers Need to Know." *Teacher's College Record*. Vol. 91. No. 3.

Ames, C.A. 1992. "Classrooms: Goals, Structures, and Student Motivation." *Journal of Educational Psychology*. Vol. 84.

Au, W. 2007. "High-Stakes Testing and Curricular Control: A Qualitative Metasynthesis." *Educational Researcher*. Vol. 36, No. 5.

Balfanz, R., Byrnes, V., & Fox, J. 2013. "Sent Home and Put Off-Track: The Antecedents, Disproportionalities, and Consequences of Being Suspended in the Ninth Grade." Closing the School Discipline Gap: Research to Practice Conference, Washington, DC.

Barton, P. & Coley, R. 2010. *The Black-White Achievement Gap: When Progress Stopped*. Princeton, NJ: Education Testing Service.

Blackwell, L.S., Trzesniewski, K., & Dweck, C. 2007. "Implicit Theories of Intelligence Predict Achievement Across an Adolescent Transition: A Longitudinal Study and an Intervention." *Child Development*. Vol. 78, No. 1.

Boykin, A.W. & Noguera, P. 2011. *Creating the Opportunity to Learn: Moving from Research to Practice to Close the Achievement Gap*. Alexandria, VA: ASCD.

Bransford, J.D., Brown, A.L., & Cocking, R.R. 1999. *How People Learn: Brain, Mind, Experience, and School*. Washington, DC: National Academy Press.

Brooks-Gunn, J., Fuligni, A.S., & Berlin, L.J. 2003. *Early Child Development in the 21st Century: Profiles of Current Research Initiatives*. New York, NY: Teachers College, Columbia University.

Bryk, A.S., et al. 2010. *Organizing Schools for Improvement: Lessons from Chicago*. Chicago, IL: University of Chicago Press.

Chatterji, M. 2006. "Reading Achievement Gaps, Correlates, and Moderators of Early Reading Achievement: Evidence from the Early Childhood Longitudinal Study (ECLS) Kindergarten to First Grade Sample." *Journal of Educational Psychology*. Vol 98. No. 3.

Civil Rights Project. 2014. *UCLA Report Finds Changing U.S. Demographics Transform School Segregation Landscape 60 Years After Brown v. Board of Education*. Los Angeles, CA: Author.

Coleman, J.S., et al. 1966. *Equality of Educational Opportunity*. Washington, DC: U.S. Department of Health, Education and Welfare, & Office of Education.

Conley, D.T. 2014. *A New Era for Educational Assessment*. Students at the Center: Deeper Learning Research Series. Boston, MA: Jobs for the Future.

Connor, C.M., Morrison, F.J., & Petrella, J.N. 2004. "Effective Reading Comprehension Instruction: Examining Child X Instruction Interactions." *Journal of Educational Psychology*. Vol. 96.

Cortiella, C. & Horowitz, S.H. 2014. *The State of Learning Disabilities: Facts, Trends and Emerging Issues*. New York, NY: National Center for Learning Disabilities.

Darling-Hammond, L., Ancess, J., & Ort, S. 2002. "Reinventing High School: Outcomes of the Coalition Campus Schools Project." *American Educational Research Journal*. Vol. 39. No. 3.

Darling-Hammond, L. 2010. *The Flat World and Education: How America's Commitment to Equity Will Determine Our Future*. New York, NY: Teachers College Press.

Darling-Hammond, L. 2013. *Getting Teacher Evaluation Right: What Really Matters for Improvement and Effectiveness*. New York, NY: Teachers College Press.

Darling-Hammond, L., et al. 2008. *Powerful Learning: What We Know about Teaching for Understanding*. San Francisco, CA: Jossey-Bass.

Darling-Hammond, L., Zielezinski, M.B., & Goldman, S. 2014. *Using Technology to Support At-Risk Students' Learning*. Washington, DC: Alliance for Excellent Education.

Denton, K. & West, J. 2002. *Children's Reading and Mathematics Achievement in Kindergarten and First Grade*. Washington, DC: U.S. Department of Education, National Center for Educational Statistics.

Donovan, S. & Bransford, J.D. 2005. *How Students Learn History, Science, and Mathematics in the Classroom*. Washington, DC: National Academy Press.

Dweck, C.S. 1999. *Self-Theories: Their Role in Motivation, Personality, and Development*. Philadelphia, PA: Psychology Press.

Eccles, J.S. & Gootman, J. 2002. *Community Programs to Promote Youth Development*. Washington, DC: National Academy Press.

Edelson, D., Gordin, D.N., & Pea, R.D. 1999. "Addressing the Challenges of Inquiry Learning through Technology and Curriculum Design." *The Journal of the Learning Sciences*. Vol. 8. No. 3, 4.

Equity and Excellence Commission (EEC). 2013. *For Each and Every Child–A Strategy for Education Equity and Excellence*. Washington, DC: U.S. Department of Education.

Friedlaender, D., et al. 2014. *Student-Centered Schools: Closing the Opportunity Gap*. Stanford, CA: Stanford Center for Opportunity Policy in Education.

Friedlaender, D., & Darling-Hammond, L. with the assistance of Andree, A., Lewis-Charp, H., McCloskey, L., Richardson, N., & Vasudeva, A. 2007. *High Schools for Equity: Policy Supports for Student Learning in Communities of Color*. Stanford, CA: School Redesign Network at Stanford University.

Fullan, M. & Langworthy, M. 2014. *A Rich Seam: How New Pedagogies Find Deep Learning*. London, UK: Pearson.

Goldhaber, D.D. 1999. "School Choice: An Examination of the Empirical Evidence on Achievement, Parental Decision Making, and Equity." *Educational Researcher*. Vol. 28, No. 9.

Gregory, G.H. & Chapman, C. 2013. *Differentiated Instructional Strategies: One Size Doesn't Fit All*. Thousand Oaks, CA: Corwin Press.

Guryan, J. 2001. *Does Money Matter? Regression-Discontinuity Estimates from Education Finance Reform in Massachusetts*. Cambridge, MA: National Bureau of Economic.

Hart, B. & Risley, T.R. 1995. *Meaningful Differences in the Everyday Experience of Young American Children*. Baltimore, MD: Paul H. Brookes Publishing.

Jackson, C.K., Johnson, R.C., & Persico, C. 2014. *The Effect of School Finance Reforms on the Distribution of Spending, Academic Achievement & Adult Outcomes*. Cambridge, MA: The National Bureau of Economic Research.

Jaquith, A., Mindich, D., Wei, R.C., & Darling-Hammond, L. 2010. *Teacher Professional Learning in the United States: Case Studies of State Policies and Strategies*. Dallas, TX: Learning Forward & Stanford, CA: Stanford Center for Opportunity Policy in Education.

Jencks, C. 1972. *Inequality: A Reassessment of the Effect of Family and Schooling in America*. New York, NY: Basic Books.

Jencks, C. & Phillips, M. 1998. *The Black-White Test Score Gap*. Washington, DC: Brookings Institution Press.

Karoly, L.A., Kilburn, R.M., & Cannon, J.S. 2005. *Proven Benefits of Early Childhood Interventions*. Santa Monica, CA: RAND Corporation.

Lareau, A. 2003. *Unequal Childhoods: Class, Race, and Family Life*. Berkeley & Los Angeles, CA: University of California Press.

Lawrence-Brown, D. 2004. "Differentiated Instruction: Inclusive Strategies for Standards-Based Learning that Benefit the Whole Class." *American Secondary Education*. Vol. 32. No. 3.

Learning Forward. n.d. *Standards for Professional Learning*. Accessed on April 16, 2015. http://learningforward.org/standards#.VBTe4GPJaSo

Mehta, J. 2014. "Deeper Learning Has a Race Problem." Learning Deeply Blog, Education Week. Available at http://blogs.edweek.org/edweek/learning_deeply/2014/06/deeper_learning_has_a_race_problem.html

National Center for Education Statistics. 2004. *Early Childhood Longitudinal Study*. Washington, DC: U.S. Department of Education.

National Commission on Excellence and Equity. 2013. *For Each and Every Child: A Strategy for Education Equity and Excellence*. Washington, DC: U.S. Department of Education.

NICHD Early Child Care Research Network, ed. 2005. *Child Care and Child Development*. Results from the NICHD study of early child care and youth development. New York, NY: Guilford Press.

National Commission on Excellence and Equity. 2013. *For Each and Every Child: A Strategy for Education Equity and Excellence*. Washington, DC: U.S. Department of Education.

Noguera, P. 2003. *City Schools and the American Dream: Reclaiming the Promise of Public Education*. New York, NY: Teachers College Press.

Noguera, P. & Wells, L. 2011. "The Politics of School Reform: A Broader and Bolder Approach for Newark." *Berkeley Review of Education*. Vol. 2. No. 1.

Oakes, J. 2005. *Keeping Track*. New Haven, CT: Yale University Press.

Paris, S. & Newman, R. 1990. "Developmental Aspects of Self-Regulated Learning." *Educational Psychologist*. No. 25.

Pascual-Leone, A. et al. 2005. "The Plastic Human Brain Cortex." *Annual Review of Neuroscience*. Vol. 28.

Payne, C. 2008. *So Much Reform, So Little Change: The Persistence of Failure in Urban Schools*. Cambridge, MA: Harvard Education Press.

Pellegrino, J.W. & Hilton, M.L., eds. 2012. *Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century*. Washington, DC: National Academies Press.

Rothstein, R. 2004. *Class and Schools: Using Social, Economic, and Educational Reform to Close the Black-White Achievement Gap*. Washington, DC: Economic Policy Institute.

Syme, S.L. 2004. "Social Determinants of Health: The Community as Empowered Partner." *Preventing Chronic Disease: Public Health Research, Practice, and Policy*. Vol. 1. No. 1.

Venezia, A. & Kirst, M. 2005. "Inequitable Opportunities: How Current Education Systems and Policies Undermine the Chances for Student Persistence and Success in College." *Education Policy*. Vol 19. No. 2.

UNICEF. 2007. *Education in Twenty-five Wealthiest Nations*. Paris, France: Author. Available at http://www.unicef-irc.org/publications/340

Wasley, P. et al. 2000. *Small Schools: Great Strides; A Study of New Small Schools in Chicago*. New York, NY: Bank Street College of Education.

Wood, D. 1998. *How Children Think and Learn*. Oxford, UK: Blackwell Publishing.

Yuan, K. & Le, V. 2012. *Estimating the Percentage of Students Who Were Tested on Cognitively Demanding Items Through the State Achievement Tests*. Santa Monica, CA: RAND Corporation.

JOBS FOR THE FUTURE