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The *Brown* Legacy and the O'Connor Challenge: Transforming Schools in the Images of Children's Potential

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The gap between Blacks and Whites in educational outcomes has narrowed dramatically over the past 60 years, but progress stopped around 1990. The author reviews research suggesting that increasing the quantity and quality of schooling can play a powerful role in overcoming racial inequality. To achieve that goal, he reasons, our knowledge of best instructional practice should drive our conceptions of teachers' work, teachers' expertise, school leadership, and parent involvement. The research agenda supporting this paradigm connects developmental science to instructional practice and school organization and requires close collaboration between practitioners and researchers in a relentless commitment to provide superb educational opportunities to children whose future success depends most strongly on schooling.

Keywords: educational inequality; research on instruction; school effects

We are concerned today with an enduring challenge: making good on Americans' belief that we are all created equal and that all children deserve an equal chance to learn, to work, to contribute, and to prosper. The problem of racial inequality is so enduring that we often forget how much change can happen in a single lifetime. I want to dedicate this lecture to my father-in-law, Lemar Pipkins, born in 1924 and raised on rented land on a plantation in a rural area near the village of Keithville, Louisiana, about 16 miles south of Shreveport. At that time the school system there was, of course, entirely segregated by race. And separate was not equal. Schools for Black children were open 6 months per year, as contrasted to the schools for White children, open 9 months per year. Black children were expected to work in the fields during those extra 3 months. The Black schools used worn-out textbooks handed down from the

White schools—sometimes decorated with racial slurs scribbled into the margins. Schools for Black children in Keithville went up to the 8th grade, while schools for White children went to 12th grade. However, at some sacrifice, Lemar's parents sent him to nearby Shreveport, a city where a Black youth could attend high school.

After graduating from Central Colored High School in Shreveport, Lemar joined the U.S. Army Air Corps during World War II. He stayed on and helped desegregate the Air Force in 1947. After 22 years in the Air Force, he settled in Buzzard's Bay, Massachusetts, where he enrolled in Cape Cod Community College and received his associate's degree. His work was so outstanding that he was admitted to Boston University. He took the bus 1 hour each way every day for 3 years, studied hard, and in 1982, at the age of 58, he received his bachelor's degree with honors from Boston University in communications.

During those years, he and Maggie, his beloved wife of 65 years, raised and educated their own five children, two grandchildren, and one great-grandchild. She cut hair, picked cranberries, and raised and sold worms; he sold baby furniture, managed the local motel at night, and worked in the Coast Guard cafeteria until the age of 83. Together, they raised money to send three generations of their descendants to private schools when the local public schools were bad, and they contributed to many a college tuition. Their grandchildren graduated from a wide array of colleges: Tuskegee University, Princeton, Harvard, Regis College, Vassar College, and Temple University, among others.

Historical Background: Good News and Bad

It is hard to identify the effect of the 1954 *Brown* decision in helping realize the American dream of equal opportunity. So many things were happening around that time: Black GIs like Lemar, raised on Southern plantations, fought racism in Europe and came home to fight it in the United States. They moved from the South to the North and from the farms to the cities in huge numbers and took factory jobs. They and millions of others fought for equality in schools, in jobs, in housing, and in public accommodations. So

pinpointing the impact of any one major event is hard, but we know that from the end of World War II until about 1990, there was a dramatic reduction in racial inequality in educational attainment. Articles by Collins and Margo (2003), Allen and Farley (1986), and Neal (2006) tell the history of Black–White gaps in educational attainment from 1900 to the present.

Consider two men, one White, one Black, both born when Lemar was born, in the early 1920s. At the age of 30, right around the time of *Brown*, we would expect the White man to have attained almost 2.5 years more of schooling than the Black man. Now consider two men born in 1965, after *Brown* had begun to take effect and 1 year after the historic Civil Rights Act of 1964. By the time these men were 30, in 1995, we would expect the gap between them to be 0.8 years—still intolerably large but one third of what it had been. For women, the story is similar. The Black–White gap was almost 2 years. For women born in 1965, the average gap was just over half a year. A somewhat similar story emerges when we look at college graduation rates. In 1960, White males were almost 4 times more likely to receive a 4-year college degree than were Black males. By 1990, White males were about twice as likely to do so. So, although a large gap in college graduation rates persisted from 1960 to 1990, the gap was dramatically reduced. The gap in college graduation for females was never as large as for males, but it too became narrower during those years.

Neal (2006) shows clearly, moreover, that since the landmark civil rights victories, there was a remarkable reduction in the achievement gap between Blacks and Whites as measured by standardized test scores. And Donohue and Heckman (1991) make a strong case that the dramatic changes in civil rights law and policy had large impacts on reducing racial inequality in the workplace.

So the good news is that from the time *Brown* started to take effect until 1990, there was a dramatic reduction in the gap between Blacks and Whites in educational attainment and academic achievement, with strong implications for labor market success. The bad news is that by all credible accounts, the process of convergence stopped around 1990. And there is even some evidence that the gap has widened since 1990.

Data from the National Assessment of Educational Progress show a very large Black–White achievement gap in reading for 13-year-olds born around the time of *Brown* and tested in 1971. The gap then was a little more than a full standard deviation, meaning that a typical African American child would score below 82% of all White children. For children tested 17 years later, in 1988, this gap was reduced almost by half. However, for children of the same age tested in 1999, the gap had increased again to about two thirds of its original size (Neal, 2006). Data on math achievement show a similar trend although not quite so dramatic. Analyses of other nationally representative samples using other tests show strikingly similar results.

The O'Connor Challenge

Let's fast-forward now to 2003 and another landmark civil rights case. In 2003, the U.S. Supreme Court upheld the right of the University of Michigan Law School—and hence of all U.S. universities—to continue its affirmative action program, using race as one factor in making admissions decisions (*Grutter v. Bollinger*, 2003). I testified in that case on behalf of the university after analyzing 6 years of admissions data.

We were able to show that the university's policy was crucial in maintaining a diverse student body—and also that the policy had very little effect on White applicants. How could this be? This was a question our opponents asked: If a policy was crucial to sustain diversity, how could that policy not strongly reduce the chance of Whites to be admitted? The answer was simple: Comparatively few minority students with strong qualifications actually applied for admission to the University of Michigan. Essentially, all of those strong candidates could be admitted—or rejected—without having much effect on the prospects of White applicants.

The Supreme Court found that the university had a compelling educational interest in admitting a diverse student body. In essence, the Court found that diversity contributes to educational quality and segregation restricts it—for everyone. Moreover, the university's policies were narrowly tailored to achieve that goal: Only strong minority applicants were admitted, and the policy had little impact on White admissions. So the success of the university's case rested on a troublesome truth: Prestigious universities are not able to attract large numbers of strong minority applicants because our education system doesn't produce large numbers of strong minority applicants.

In the majority opinion, O'Connor wrote that the Court expected that in 25 years, affirmative action would no longer be necessary. Her assumption was that our education system ought to be producing enough strong minority applicants by then to achieve diverse student bodies at prestigious universities without the aid of affirmative action policies. This finding in effect makes progress in reducing racial inequality something of a legal mandate if our best universities are to remain diverse.

Can we meet the O'Connor challenge? Six years have gone by, and our best evidence suggests that the march to educational inequality was halted back in 1990. Two related questions emerge: Why did progress in reducing inequality stop? And what is the role of schools in getting us back on track?

Why Did Progress in Reducing Inequality Stop?

Social scientists have offered several explanations for the halt in the march toward educational equality.¹ In my view, the most powerful explanation comes from William Julius Wilson's (1987) seminal book *The Truly Disadvantaged*. Despite critics, the broad outlines of Wilson's argument have stood the test of time.

At the time that *Brown* and other landmark civil rights decisions were beginning to take hold, many African American workers had begun to enjoy unprecedented access to the American dream through employment in comparatively high-paid jobs in U.S. cities. Many of those were industrial jobs in big cities like Chicago, Detroit, Cleveland, St. Louis, and Buffalo. The hours were long and the work hard, but the pay was often good enough to buy a modest home and car and—important for our current discussion—to pay the next generation's tuition at a local public college. African Americans lived in segregated sections of these great cities, but the cities were economically strong and some had respectable public school systems. Black and White workers lived apart, but they often worked side by side, and some of their children were beginning to attend college side by side.

For these cities and especially for low-income African Americans, the next decades were disastrous. Wilson (1987) describes the massive decline in industrial jobs and, with it, dramatic increases in

unemployment, loss of income, disruption of families, and a dramatic decline of schools in central cities. Ironically, Wilson claims that the equal opportunity emanating from the civil rights era, while benefiting many, had a perverse and unexpected effect on many in Black communities in the nation's largest cities.

Recall the great suburban migration of the 1960s and 1970s, sometimes labeled the era of White flight. Wilson (1987) cites research showing that many Black families, taking advantage of new opportunities for upward mobility and desegregated housing markets, also moved from the central city. He labeled those left behind as "the truly disadvantaged." Several factors undermined the educational opportunities of their children: loss of income, reducing the investments parents could make in their children; delays in family formation, leading to dramatic increases in the numbers of children growing up in single-parent families; social isolation of poor Black children growing up in sections of cities that were hypersegregated not only by race but also by social class; and decline in school quality.

Neal (2006) provides evidence that loss of income and changes in family formation help account for racial inequality in educational outcomes. Social isolation deprived poor children and their families of contact with others who had benefited from education—badly needed role models and badly needed sources of information about schools, jobs, and routes to upward mobility. Social isolation separated the poorest African Americans from contact with people who used academic English—the language of instruction in schools—likely making it more difficult for such children to benefit from instruction when they got to school.

The difficulties of growing up poor in a single-parent family were likely multiplied by the fact that such children were concentrated in resource-deprived sections of cities where virtually all of their neighbors were also members of poor, single-parent families. The collective capacity of such a community to monitor and supervise children and to generate what sociologists call "informal social control" or "collective efficacy" (Sampson, Raudenbush, & Earls, 1997) created a climate that supported the rapid escalation of gang activity, drug abuse, and crime. These negative forces generated further incentives to move out, but of course, only those with means could do so, further intensifying the social isolation and concentration of disadvantage among those who remained. Finally, school improvement efforts in these areas, where schools were greatly disadvantaged, encountered an array of challenges, discussed in detail by Bryk, Sebring, Allensworth, Luppescu, and Easton (in press).

The cumulative effect of the concentration of disadvantage among those living in the poorest neighborhoods—including lost income, family disruption, social isolation, criminal victimization, and the erosion of school quality—appears to have substantially reduced opportunities for growth in academic learning, educational attainment, and upward mobility.

A recent study (Sampson, Sharkey, & Raudenbush, 2008) presented evidence that living in a neighborhood characterized by severe concentrations of disadvantage—high poverty, high unemployment, high levels of welfare receipt, and single parenthood—substantially reduces the verbal abilities needed for academic advancement and good jobs. The study found that in its Chicago sample, only African American children were at risk of living in such neighborhoods—and most African American children had some substantial risk of doing so.

Transforming the Amount, Quality, and Organization of Schooling

One interpretation of the history sketched above is that broad changes in political, legal, and economic structures have driven trends—the good and the bad—affecting inequality in educational outcomes. In this view, school quality follows in the wake of broad social change rather than promoting it. If that is true, then perhaps school improvement by itself can have little effect on racial inequality.

In contradiction to such a notion, my claim here is that school improvement by itself has potential to make an enormous difference in the lives of children even if broader social change is slow in coming. The children who depend most on good schooling for academic growth are the least likely to receive it. If school improvement begins early in life and is sustained, the most disadvantaged children stand to benefit most. This reasoning suggests that increasing the amount and the quality of schooling to which these children have access would reduce inequality in academic achievement.

Increasing the Amount and Quality of Schooling

Over the past 20 years or so, we have learned that schools have powerful effects on learning and that improving the quality of schooling can be especially beneficial to low-income minority youth. My focus here will be confined to prekindergarten and elementary schooling, although I believe a parallel argument can readily be made with respect to secondary and postsecondary schooling.

One set of studies I review below shows that attending school dramatically increases children's academic achievement. The simplest explanation for these findings is that most children receive more effective academic instruction when they are in school than when they are not in school. This finding may seem so obvious that it is hardly worth mentioning, but it is essential for understanding why schools have great potential to reduce inequality.

For any child at any moment in time, we can conceptualize the schooling effect on academic achievement as the difference between what a child would learn if in school and what that child would learn if at home (or in some other nonschool environment, such as home day care). It follows that for any child, the schooling effect will be greatest when the contrast between the effectiveness of the academic instruction in school and in the home is greatest. Decades of research show that the effectiveness of the academic instruction parents provide at home, particularly instruction in academic English, varies enormously from family to family. To some considerable extent, this variation is associated with variation in parent use of academic language at home (Huttenlocher, Haight, Bryk, & Seltzer, 1991), parent teaching of reading, and parent provision of school-related general knowledge (McLloyd, 1998). Such differences are strongly correlated with socioeconomic status (SES)—particularly maternal education—as well as with ethnicity and, in particular, with race (Heath, 1983).

In contrast, schools, while far from equal in their instructional effectiveness, are much less variable in effectiveness than are homes. The seminal work of James Coleman and colleagues (1966) brought this fact to light, which came as a shock to those who believed that variation in children's academic achievement

resulted primarily from variation in school quality.² However, every assessment of educational attainment since 1966 has replicated this finding.

If school instructional quality varies less than home instructional quality, and if home instructional quality is strongly associated with social background, it follows that for children of low SES, the contrast between the quality of instruction they receive in school and the quality of instruction they receive at home is, on average, larger than the same contrast for high-SES children. This would imply that low-SES children stand to gain more from schooling than do high-SES children, particularly if educational policy removes the correlation between student SES and school quality.

However, our reasoning assumes that low- and high-SES children have equal capacity to benefit from a given “dose” of instruction (defined as a given contrast between instructional quality in school and at home). Carneiro and Heckman (2003) hypothesize that as children’s academic ability grows early in life, their capacity to benefit from instruction expands. It follows that if high-SES parents are especially effective in teaching academic skills, and if their young children’s academic skills therefore grow more rapidly, these children will benefit more, on average, than low-SES children from the same “dose” of instruction they receive at school. It might then be that social and racial inequality in academic learning opportunities early in life creates a basis for increasing inequality later on. This reasoning supports an argument for especially intense schooling interventions early in life. It follows that one of the most important ways to increase the amount and quality of schooling is to provide more and better schooling for very young children and, in particular, for low-SES children.

Yet continued exposure to high-quality instruction during the K–12 years would be required to sustain any gains achieved through early childhood intervention. This is because high-SES children would tend to experience more favorable academic instruction at home—especially during the summer recess—while in Grades K–12. Such reasoning may help explain the “fade-out” of the effects of early intervention on low-SES children’s cognitive skills after those children enter elementary school (McCarton et al., 1997; Schweinert, Barnes, & Weickart, 1993).

This reasoning lays the basis for education policy that aims quite dramatically to improve the amount and quality of schooling to which low-SES students have access as a strategy for reducing inequality in academic skills. There is strong reason to believe that doing so would disproportionately benefit African American children, who are far more often exposed to severe socioeconomic disadvantage than are White children.³

The Organization of Instruction

The claim is that schooling can reduce racial inequality. To achieve dramatic reductions will depend on the presence of excellent instruction in school settings for minority children. We don’t have that now, and I shall argue that transforming the quality of instruction will require a transformation of how we organize the schoolhouse. I will argue that the most powerful reforms are conceptualized from the bottom up: One begins with a vision of a community of practitioners dedicated to the success of their students and determined to relentlessly appraise and reappraise their instruction to ensure that every student stays on track for success. One then reorganizes the schoolhouse to support and reward

such instruction. And one crafts broader policies to support such forms of the school organization.

Key to this view is a coherent notion of instruction in particular subject matter domains. Drawing on the best available science on children’s cognitive development, one constructs a shared *instructional regime* (Connor, Morrison, Fishman, Schatschneider, & Underwood, 2007; Kerbow, 2006; Murphy, 2003): a system of assessments and instructional interventions that a community of teachers share to produce clearly defined aims for student learning. Such explicit notions of instruction define the work of teaching, the expertise required for classroom success, and the role of incentives and accountability in motivating expert instruction. A transformed view of teaching, in turn, redefines the role of school leadership in mobilizing and deploying the expertise, materials, time, and incentives required for successful enactment of the intended instruction.

Viewing reform in this way, one soon confronts the problem that received notions of teachers’ work and traditional notions of teacher professionalism stand in the way of reforms that would drive educational improvement and educational equity. Educational sociologists have long understood the loose coupling between schoolwide aims and teaching practice, the pervasive assumption that teachers should operate with high autonomy, and the corresponding implication that instructional practice will rarely be open to public inspection (Bidwell, 1965; Lortie, 1975). For short, I shall call this received notion *privatized, idiosyncratic practice*.

In contrast, powerful instructional systems require shared aims, shared assessment tools, shared instructional strategies, active collaboration, routine public inspection of practice, and accountability to peers. I base this idea in part on the work of Lampert (2003). In this view, variability in teachers’ expertise is highly visible and widely recognized, and novice teachers have strong incentives to seek out expert teachers’ advice to advance their own expertise. School principals have incentives to increase the leadership responsibilities of the most expert teachers and to encourage growth in teacher expertise. Increased teacher expertise leads to greater responsibilities and higher compensation. I shall refer to this alternative notion of teaching as *shared, systematic practice*.

Using this frame as a guide, we can see that most school improvement efforts have produced small effects because they have not been devised to support explicit notions of powerful classroom instruction. Instead, the dominant paradigm starts by considering tools that policy makers can use to influence schooling within the received notion of privatized, idiosyncratic practice. Common school policy options include increasing resources, increasing accountability, and changing school governance (Payne, 2008). The implicit assumption is that such top-down changes will in some unspecified way come to transform interactions in classrooms, leading to improved student learning. But without a clear conception of the teaching practice these reforms are intended to support, one cannot judge whether their early implementation is moving in the right direction. Instead, one waits to see student outcomes and then infers retrospectively whether something good was happening in classrooms. This approach can give no assurance about whether a reform that works in one place will work elsewhere or whether a reform will in fact degrade instruction.

Organization of the Literature Review

In the next two sections, I review recent research suggesting that increases in the amount and quality of schooling can reduce social and racial inequality. The review suggests potential for school reform, but it also reveals that current conceptions of teaching and school organization are barriers posed to school improvement. The final section of this lecture sketches an alternative view in which the schoolhouse is organized to motivate and support ambitious and effective instruction.

Increasing the Amount of Schooling

Three recent sets of studies reveal powerful effects of schooling: studies that use the “age cutoff” method to identify the impact of attending school, early-childhood intervention studies, and studies of academic-year versus summer learning. In each case, we see that schools have large effects, especially for low-SES students, with the suggestion that expanding schooling would reduce inequality.

Age Cutoff Studies

Powerful evidence about schooling effects comes from studies that exploit the cutoff age for enrollment. Fred Morrison (2000) has pioneered this method and replicated it on a number of samples. Morrison compares children who are legally too young to enter kindergarten with those who just barely meet the legal cutoff age for attending school. He then follows these two samples over the first few years of school. The two groups appear identical except for a trivial difference in age. These studies reveal dramatic effects of schooling on literacy skills. It is clear from the results that many children who were regarded as too young for compulsory schooling and therefore stayed home would have benefited from schooling.⁴ The benefits presumably would be larger for the children whose home environments are least conducive to academic learning.

Early Childhood Interventions

Perhaps the most dramatic evidence of the potential long-term impact of formal schooling comes from research on early childhood interventions (see review by Carneiro & Heckman, 2003). The most famous study is the Perry Preschool Study, in which children were randomly assigned to receive an intensive program of instruction in school readiness skills (Schweinhart et al., 1993). Exposure to the intervention produced immediate effects on children’s cognitive test scores, although the effects faded during the early elementary years. The long-term results were remarkable: Children assigned to the preschool intervention were found to have higher educational achievement, lower rates of special education placement, lower propensities to commit crimes, and higher earnings as adults. Encouraging as these results are, generalizations from a single, small-sample study are unwarranted. However, since then, several additional randomized studies have essentially replicated the results.

Academic-Year Versus Summer Learning

Striking evidence of the impact of elementary schools comes from a series of studies that test children in the fall, near the beginning of the school year, and in the spring, at the end of the

school year (see review by Krueger, 2003). Such studies allow us to compare children’s learning rates during the summer and the academic year. Growth rates are dramatically higher during the school year than during the summer, especially in math, for which summer growth rates are effectively nil. In reading, children do make gains during the summer, not surprisingly, because they encounter text at home from a variety of sources. However, growth rates in reading comprehension are far greater during the academic year than during the summer.

Moreover, there is growing evidence that low-income children benefit more from schooling than do other children. What we see is that high-income children gain more (or lose less) in the summer than do low-income children. In contrast, academic-year growth rates are similar. So if we define the school effect as the difference between the growth rate while in school and the growth rate during the summer, we see that school effects are greatest for the lowest income children. And this is true despite the current ineffectiveness of schools serving low-income and minority children.

Policy Implications

One obvious strategy for reducing inequality is to provide more schooling, particularly to children who need it more (Krueger, 2003). We can ensure that far more children receive more pre-K instruction. Second, we can ensure that more children, particularly low-income children and children who demonstrate a need for more instruction, have access to good instruction during the summer months.

Increasing School Quality

The proposition that investments in schools can substantially increase student learning has been surprisingly controversial in social science. As was shown a few years ago (Cohen, Raudenbush, & Ball, 2003), this skepticism is rooted in almost 50 years of research showing mostly weak effects of improving conventional resources, such as per-pupil spending, school facilities, and teacher credentials. Recent new evidence, however, demonstrates that variation in instructional quality is strongly linked to variation in student learning. Moreover, there is new evidence that three kinds of conventional resources make a difference: small class sizes, teacher experience, and teacher knowledge. Taken as a whole, a reasonably coherent picture emerges: The conventional resources that appear to matter most are those that are most proximally linked to instructional quality.

In reviewing this evidence, one immediately sees that although instructional quality matters, schools are not currently organized well to mobilize effective instruction. This insight will lead me later on to propose ways in which changes in school organization might be reframed to support ambitious instruction.

Value-Added Studies

We now have good evidence that teachers vary dramatically in their effectiveness. Many “value-added” studies work as follows: Identify children who look similar at the beginning of a study in terms of prior outcomes and social origins and take note of which teachers they are assigned to; next, follow those children for a year, test the children again, and compute, for each teacher, the average gain. The average gain is called the *value added* for that teacher, after correcting for the inevitable errors of measurement

and sampling. If value added varies a lot, then the impact of teacher assignments must be substantial. And that is just what researchers from a variety of disciplines using a variety of tests have found. The approach can be made more efficient by following children over multiple years and multiple teachers and comparing multiple cohorts.

A criticism of this method is that children are not assigned to teachers at random, and it may well be that controlling for prior test scores and social background is not adequate to remove what statisticians call unobserved selection bias. For example, it may be that highly motivated parents work especially hard to ensure that their children are assigned to the best teachers and that parent motivation is actually driving part or even most of the apparent teacher effect. It's hard for researchers to measure and control for such motivation, so the results of value-added studies may be biased.

To overcome this problem, Nye, Hedges, and Konstantopoulos (2004) reanalyzed data from the Tennessee Class Size Study, where teachers were assigned at random to large or small classes, and children were assigned at random to teachers. The researchers compared the value added of teachers, controlling for the assignment to large or small classes. Because the children were randomly assigned to teachers, concerns about selection bias were eliminated. These researchers found very large differences in teacher effects, differences, in fact, that were very similar in size to those found in the earlier, nonrandomized value-added studies.

So value-added studies clearly reveal that the classroom to which a child is assigned matters a great deal. But these studies tell us little or nothing about how to ensure that children get excellent instruction. There is an irony here. Value-added studies show dramatic differences in teacher effectiveness, and we know from careful surveys of instruction (Hong & Hong, in press) that elementary teachers vary remarkably in such basic features of their work as the amount of time they devote to literacy instruction, the amount of time they devote to math instruction, whether they group children for instruction, and whether and how they use diagnostic assessments to gauge their children's progress. But with some exceptions that I will mention, we have precious little knowledge about how these core elements of instructional practice are linked to outcomes—or, more important, how these core elements can be combined to produce a coherent instructional system that we can train teachers to enact reliably to optimize the impact of schooling.

Such a situation seems intolerable. Imagine if I were to say, "We know that doctors vary dramatically in their effectiveness in treating your disease: Whether you live or die depends enormously on the doctor to whom you are assigned. And we know that some doctors use surgery while others prefer medicine. We have no idea, however, whether surgery, medication, or simple lifestyle changes are best for you. You just have to leave it up to the doctor!"

In such a scenario, the public and the medical profession would demand to know more about whether surgery or medical treatment is essential to getting better. And given that one clinical approach is optimal, we would want to ensure that every physician has adequate training to choose best practice and to enact it competently. Once such a standard of practice is in place, failure to achieve it could be regarded as malpractice.

Why do educators tolerate dramatic, unexplained differences in the effectiveness of teaching practice while physicians insist that medical practice be subject to rigorous research and conform to common standards? In part, the difference reflects differences in the knowledge base that underlies practice. Vastly more is spent to study cell biology, disease transmission, and trials of the efficacy of new drugs and surgical procedures than is spent to understand how children learn, how they respond to instruction, or how well new models of instruction work.

Perhaps for this reason, contradictory notions of professionalism have evolved in the two domains. In medical practice, professionalism requires that practitioners know the science underlying practice and that their decisions are guided by shared, explicit notions of best practice. Autonomy is not the highest virtue: The practice of residents is scrutinized by attending physicians, and decisions are open to professional and legal challenge.

In contrast, teachers find their work subject to frequent interventions—shall I say, disruptions—that typically are not based on credible knowledge of student learning and classroom organization. Teachers then understandably assert autonomy to protect their work from these intrusions and to ensure that they can respond flexibly to the high levels of uncertainty they face every day. This response is quite rational at the level of the individual. However, the collective effect of privatized, idiosyncratic practice is largely unexplained variation in teaching effectiveness, leading to amplified inequality in student outcomes.

Class-Size Reduction

The late Fred Mosteller, a revered statistician and a leader in the invention of the modern clinical trial in medicine, regarded the Tennessee class-size experiment (Finn & Achilles, 1990; Krueger & Whitmore, 2001) as the most important study in the history of educational study research. Teachers and children in 80 school districts in Tennessee were assigned at random to small or large classes. The results settled one of the most enduring questions in education: Can the reduction of classroom sizes in elementary schools significantly improve educational achievement? The answer was a definitive yes. The effects on test scores appeared modest in magnitude, but they were sustained and led to significant long-term differences in college attendance. Moreover, African American children especially benefited. Indeed, a sophisticated analysis by Krueger and Whitmore (2001) suggested that class-size reduction can significantly reduce the Black–White gap in college attendance.

Perhaps even more remarkable, this result was achieved with no deliberate attempt to modify instruction to capitalize on the reduced class size. Presumably, the impact could have been much larger if teaching practice had fully capitalized on the smaller classes (Cohen et al., 2003).

The major limitation of the Tennessee study is that without knowing anything about how class size influenced instructional practice (or how to tailor instructional practice to benefit from reduced class size), it is hard to know whether the benefits of class size reduction found in Tennessee would be reproduced elsewhere. When California invested massive amounts of money in class-size reduction, school districts competed for a limited pool of teachers, and many perceived a rather substantial deterioration of teacher quality, particularly in hard-pressed districts. Observers

concluded that California failed to reap the benefits of reduced class size achieved in Tennessee, perhaps because of this reduction in teacher quality.

Class-size reduction can work only if it leads to better interactions between teachers and students surrounding the subject matter. Without knowing the other resources required to make better interactions occur (e.g., teacher knowledge), and without in fact ensuring that these instructional changes do happen, it is simply an educated guess as to whether reducing class size will boost achievement in any particular setting.

In a system of privatized, idiosyncratic practice, each teacher uses a small class size to do what that teacher thinks is best. Class-size reduction is an innovation without a known technology, and therefore without a strategy for quality control. Moreover, it's a rather expensive innovation. To make such an expensive innovation without any handle on quality control risks wasting the investment. In a system of shared, systematic practice, teachers use reduced class size in explicit ways, the enactment of which is open to public inspection. Thus, with a known technology, teachers and school leaders can meaningfully assert quality control and ensure that resources such as small classes are used sensibly.

Teacher Experience

There is growing evidence that teachers with 2 or more years of experience are, on average, more effective than teachers with 1 year of experience or less (Clotfelter, Ladd, & Vigdor, 2007). Moreover, low-income children are less likely than high-income children to have access to such experienced teachers, as experienced teachers frequently use their seniority to transfer out of challenging schools. Taken together, these findings suggest that creating incentives for experienced teachers to stay in high-poverty schools would reduce social and ethnic inequality in outcomes.

Obtaining an equitable social distribution of teacher experience is fair and just. But if inexperienced teachers are ineffective, perhaps no children should simply be left alone with them! The privatized, idiosyncratic system thus condemns unlucky students somewhere to suffer poor instruction. In contrast, the system of shared practice, rooted in a common system of instruction, holds potential to provide substantial collegial support for the novice teacher. Mutual observation and feedback, along with on-the-job training in the use of assessment and instruction, at once compensate for teacher inexperience and advance the rate of learning. Just as an attending physician assists a resident, so an experienced teacher with a high level of expertise supports a novice teacher.

The aim of shared, systematic practice, from the student's point of view, is to eliminate the statistical association between teacher inexperience and poor teaching rather than to distribute inexperience and poor teaching more equitably. The aim is to increase the mean quality of instruction while reducing the variance—leading, by hypothesis, to better outcomes, particularly for disadvantaged children.

Teacher Knowledge

There is evidence that teacher knowledge affects achievement, especially in mathematics (Brewer, 1997; Hill, Rowan, & Ball, 2005), and that low-income children are less likely than high-income children to have access to teachers with high levels of

knowledge (Raudenbush, Fotiu, & Cheong, 1998). The implication is that a policy that creates incentives for well-prepared teachers to take jobs in high-poverty schools will increase equity in outcomes. So it makes great sense to recruit knowledgeable teachers and to ensure that low-income children have equal access to such teachers. Once again, however, teacher knowledge ought to have entirely different effects in a system of privatized, idiosyncratic practice as contrasted with a system of shared, systematic practice.

Consider an example of privatized, idiosyncratic practice so extreme that in the teaching of mathematics, every teacher would be required to invent his or her textbook, assessments, and instructional strategies. Clearly, only the most knowledgeable teachers could produce decent instruction. The association between teacher subject-matter knowledge and student achievement would be extraordinarily high; and given the current level of mathematical thinking of most elementary school teachers in the United States, most students would suffer a terrible mathematical fate.

In contrast, consider MaPing Li's (1999) study of elementary mathematics instruction in China. The teachers she studied did not have 4-year college degrees, but they had a good working knowledge of the mathematics they needed to teach and somewhat beyond. They had a common curriculum, common assessments, common instructional strategies—a shared, systematic instructional system. They collaborated closely, sharing knowledge, expertise, and teaching plans. They tested their students frequently and generated common strategies to overcome student misconceptions and to drive instruction to the next level. Their students displayed uniformly high levels of achievement. Access to expert teachers supported the least expert teachers and developed the leadership capacities of the most expert.

Studies of Instruction

Studies of instruction have enormous potential to improve school quality because they focus on the proximal cause of student learning in schools. Moreover, there have been major advances in research on instruction in recent years. However, schools are not currently organized well to capitalize on this work, as is clear in a brief review of studies of instruction in reading, science, and mathematics.

Early reading instruction. For years, researchers battled over whether to emphasize phonics versus "whole language" in elementary school reading instruction. However, a series of careful studies in the 1990s, many funded by the National Institute of Child Health and Human Development (2000), have led to a consensus. The consensus is that explicit instruction in phonemic awareness and word decoding is essential to achieve high levels of reading literacy, especially for disadvantaged children. The operative word, *essential*, however, does not imply sufficiency. We have known for many years that the ability to decode familiar text (in Grades 1 and 2) is foundational for learning to read new text (Chall, 1983). We also know, however, that children with parents of high educational attainment generally come to school ahead in terms of skills in academic English vocabulary and syntax. These language skills, along with a high level of culturally valued knowledge, combine with word decoding skills to enable children by

Grades 3 and 4 to read new text with high comprehension. The implication is that early elementary instruction must aspire much higher than simply to teach decoding skills. Thus much more instructional time in literacy is required than is generally observed in U.S. elementary schools, particularly if the most disadvantaged children are to read with high comprehension by Grade 3.

Age cutoff studies once more. I mentioned earlier the findings of Fred Morrison (2000). Using the age cutoff method, he has repeatedly found that although children typically learn a great deal about word decoding during the early elementary years, they appear to learn very little vocabulary. This finding is consistent with the inference that early elementary instruction teaches the decoding of familiar text, one of the foundations of successful reading instruction. However, these findings suggest that current teaching practice does not sufficiently emphasize the acquisition of oral language, which would drive the acquisition of vocabulary, an essential component of reading comprehension that is often lacking among the most disadvantaged children.

Early elementary science instruction. A series of studies suggests that effective science instruction not only enhances children's knowledge about science content but also can drive large gains in the vocabulary and the syntax of academic discourse, with positive spillover effects on reading comprehension (Romance & Vitale, 2001; Guthrie, Wigfield, & Percenevich, 2004; Stein, Anggoro, & Hernandez, in press). The logic is straightforward: Good science teaching is remarkably effective in engaging young children's interest. If well structured, such instruction encourages children to use causal reasoning and causal language, to state explicit predictions, to evaluate new evidence, and to consider alternative explanations. In short, it gives children a compelling reason to use the language of critical thinking and academic discourse, undergirding advances in reading comprehension and vocabulary development.

To make this happen, it is essential that all key concepts and the relations among them be made explicit and that the instructional system meticulously uncover and correct children's misconceptions. As a result, a highly systematic and explicit approach to instruction is required, one that uses frequent assessments of student misconceptions followed by correct, targeted feedback. This is an instructional regime of the type rarely implemented in a world of privatized, idiosyncratic practice. Moreover, the approach is most likely to be powerful when explicitly linked to language arts instruction, a task that requires close collaboration among teachers.

Finally, results indicate that this approach enables children to learn high-level subject matter (such as Newtonian mechanics and thermodynamics) at much younger ages than is typical and that the approach is successful for children who vary greatly in socioeconomic background. In contrast, science instruction based on incomplete representation of subject matter or inexplicit connections between concepts requires that children fall back on their background knowledge to make sense of the instruction. Because older children and children of highly educated families tend to have more background knowledge to fall back upon, the less explicit approaches to science instruction will presumably exacerbate rather than overcome inequalities in age and social background.

Early mathematics instruction. There are fewer rigorous studies of mathematics instruction than of reading instruction. Nevertheless, a National Academy of Sciences report (National Research Council, 2004) summarizes reasonably convincing evidence, based on a series of rigorous studies, that new, conceptually driven early mathematics curricula developed by the University of Chicago School Mathematics Project produces, on average, better math learning than do more traditional curricula. A limitation of this research is that it provides a curriculum alone rather than a systematic approach to instruction. Such an approach would include not only a curriculum but also formative assessments and shared approaches for using the assessments in instruction (Li, 1999). In short, the approach was developed for dissemination within a paradigm of privatized, idiosyncratic instruction, constraining the potential power of the approach.

In the next and final section of this lecture, I shall sketch an attempt to refashion the organization of the elementary school to ensure that every child will have access to ambitious instruction capable of supporting ambitious intellectual work.

Hypothesis: Mobilizing Schools in the Service of Ambitious Instruction Can Transform Outcomes for Low-Income Minority Children

Broad questions about instruction and school organization come sharply into view when one attempts to use the best available research to create an outstanding school. I believe that experience in doing so in Chicago offers fresh insights that can be useful elsewhere.

In the early 1990s, Anthony Bryk, Sharon Greenberg, and Sara Spurlark launched the Center for Urban School Improvement—better known as USI—at the University of Chicago. Their aim was to work closely with a small network of South Side schools to improve literacy instruction. The work was inspiring and frustrating: inspiring because of what it revealed about children's intellectual energy and potential for dramatic growth, frustrating because systemic norms and bureaucratic rules seemed constantly to get in the way of the ambitious instruction the children needed.

In 1998, therefore, USI adopted a new strategy for school improvement by starting a new elementary charter school, the North Kenwood Oakland School (NKO). This was a Chicago public school, chartered by the city's school district. Because charter schools have relaxed rules, USI had pretty much free rein in designing and running NKO, although within quite limited resources. The school was free to shape teacher recruitment, curriculum design, and—particularly important—instructional time, to pursue ambitious intellectual goals for the student body, which was nearly all African American and about 75% low income.

An Instructional Regime to Enhance Literacy

Over the next couple of years, USI, working closely with a number of outstanding practitioners and researchers, built NKO's literacy instruction around a schoolwide formative assessment system known as STEP (Strategic Teaching and Evaluation of Progress). Every child was assessed every 10 weeks on a broad array of literacy skills, hierarchically arranged. Associated with each level was one

or more required books for children to read, calibrated for difficulty. And associated with each level of STEP was a series of instructional strategies designed to get to the next level.

How this system of “instruction–assessment–instruction” works is an interesting but quite complicated story that I don’t have time to tell. Nor do I have time to explain how student work on word decoding, reading aloud, text comprehension, and lots of writing combine to create a coherent instructional system. For today’s purpose, the key points are the following:

1. A student who is at STEP 12 by the end of third grade is believed capable of serious critical engagement with texts that are actually beyond what we commonly regard as “grade-level reading.” Such a student is well on the way to being capable of ambitious intellectual work in secondary schools and beyond.
2. Every student in the school is expected to be at least at STEP 12 by the end of third grade. Working backward, every second grader should be at STEP 9, every first grader at STEP 6, and every kindergartner at STEP 3 by the end of each year.
3. It is the collective responsibility of the faculty to ensure that the children reach these benchmarks.
4. If children show signs of getting off track, faculty tailor instruction to ensure that they get back on track and achieve the desired STEP. This may involve an extended day or summer school.

Implications for the Teachers’ Work

In the central office at NKO is a STEP wall, where the progress of every child and the history of every instructional intervention is recorded. The STEP wall reveals to the principal and staff how well every child is doing in every class and pinpoints the need for intervention not only at the level of the child but also at the level of the teacher.

When I asked a teacher what her reaction would be if the children in her class seemed to be lagging behind, she said, “My reaction would be to get help from the literacy coordinator, who would ensure that one or more experienced and expert teachers would work closely with me.” The literacy coordinator is one of several expert teachers who, working closely with the principal, exert instructional leadership on a day-to-day basis.

Instruction and assessment were not always so public and systematic at NKO. In its early days, the school looked more like a highly committed set of people working within what I have called the privatized, idiosyncratic view of teaching. However, the development of STEP and its routine application revealed that instruction could not be left to chance or to the judgment of the singular teacher. Of course, some teachers would do well under such a loose system, but such a system could not ensure quality control for all children. Some children in every class would thrive, but not every child would receive the high level of explicit instruction needed. So, gradually, NKO developed what I have called a shared, systematic approach to instruction.

Central to this approach is that teachers vary in their expertise in using it. At the most elementary level, teacher expertise involves an understanding of STEP assessment and how its results should be linked to instruction. At a more advanced level, teachers more deeply master the developmental theory behind the

assessments so that they can skillfully “assess and instruct” moment by moment. At a still more advanced level, teachers whose students reliably progress to high levels will have gained expertise about how to help other teachers improve their practice. They then become instructional leaders, with formalized leadership roles and appropriate increases in compensation. At the highest level, teachers are able to revise the instructional system to promote higher levels of student learning.

School leaders are accountable for evidence of academic progress schoolwide. This accountability motivates them to identify and promote the most expert teachers as instructional leaders. Because the STEP results of every child in every classroom are known to staff, teaching results are open to inspection, and each teacher is motivated to promote high levels of student learning—and to seek assistance if some children are not doing well. Variation in teacher expertise is public knowledge, and teachers have an interest in having their most expert colleagues as mentors. The system rewards advances in expertise, as it accords more responsibility to the more expert teachers.

Teacher expertise is not a generic quality but rather a set of attainable skills and knowledge embedded in a well-defined instructional system. To be expert is to understand that system, to demonstrate skill in enacting it, and to develop the capacity to help other teachers enact the system effectively.

Extending Time and Engaging Parents

In 2004, Timothy Knowles, who had been the chief academic officer in the Boston Public Schools, became the executive director of USI. The next year, Knowles and his team opened the Donoghue School, located, like NKO, on the South Side of Chicago. Donoghue, also a charter school, drew students who were similar to those at NKO, all African American but nearly 85% low income. It was farther from the university than NKO was, in an area with many vacant lots and a fairly high crime rate.

Nicole Iliev, the principal of Donoghue, was shocked when she saw the literacy assessment results for the incoming students. The school started as a K–3 school, with the aim of adding a grade each year. The initial results for the third graders, whose experiences in Grades K–2 had apparently been quite unsatisfactory, were especially worrisome. Iliev drew on the strengths of NKO, adopting its system of assessments and strategic instruction. But she felt that would not be enough. She took several additional steps.

First, she dramatically expanded instruction time—in three ways:

- literacy instruction for 3 to 5 hours per day—a mixture of explicit word decoding, directed reading, teacher read-aloud with discussion, and writing, ensuring that vocabulary and syntax were woven in to supplement explicit decoding work;
- extended day with tutoring for those who needed it; and
- summer school for those who needed more help to make their STEP.

Second, she launched an ambitious parent outreach program. The aim was not to organize bake sales but to make sure parents understood the STEP tool, what STEP their child was on, what

the next STEP would be, what the school was doing to achieve it, and what the parents' role would be in helping their child reach the next goal.

Parent responses were heartening. Even parents who themselves had very limited education made sure to participate actively and became convinced that they could play a powerful role in their children's learning. However, not every family had the resources to participate. For the children of those families, the school set up a within-school support network of staff to take up the slack.

The parent outreach aspect of this work was sufficiently ambitious that it required a shift in school organization. The position normally called "vice principal" became "director of parent and community engagement." Todd Barnett took this job. Barnett was intimately familiar with STEP and with how the instructional system worked. He knew all the parents, met them at the door in the morning, frequently reached out to them for help, and organized myriad events. He knew the children's older siblings—all of whom were encouraged to come for the after-school program and many of whom helped with tutoring.

NKO developed the instructional system; Donoghue borrowed it and developed it further, making it more ambitious and creating a powerful role for parents and families.

Summary

In sum, the shared assumption is that college success is a natural outcome of continuous engagement in ambitious intellectual work from early preschool through secondary school. The central premise is that nearly all children will thrive intellectually if exposed to ambitious instruction carefully tailored to frequent, objective assessments of student progress throughout the schooling years. Such instruction requires that the privatized, idiosyncratic notion of teaching that characterizes U.S. schools give way to a shared, systematic approach that emphasizes teacher accountability and schoolwide collaboration. In such a system, teacher expertise in using the system will vary, and schools will be organized to motivate and support advances in expertise. This conception of the effective school has broad implications for school leadership, parent engagement, social services, and teacher preparation. Clarifying how such an approach can be conceived, implemented, tested, and broadly shared requires a novel sense of how practitioners and researchers should interact, with implications for how universities should best organize themselves to support powerful urban schooling.

Does It Work?

We don't yet know whether the system is working. Informal evidence suggests that most of the NKO children are thriving, with 80% of the first graduating class on their way to a 4-year college—in a system where most African American children don't even finish high school. However, a good estimate of how well these children would have done had they not had the opportunity to attend one of our schools is not yet available. But that evidence will come. Many more families apply to these schools than can be accommodated. Every year, in each oversubscribed grade, each school holds a lottery to determine who will be admitted. And the Consortium on Chicago School Research maintains a longitudinal data set on all children flowing through the system. This data set—and the

powerful analytic capacity of the consortium—enable a comparison of two statistically equivalent groups: those who win the lottery and those who do not. This is the best value-added system one can build. The aim is to assess the impact of attending these charter schools on reading and mathematics achievement as well as on attendance, high school completion, college completion, and involvement in the criminal justice system. The idea is to continuously study school processes and impacts using the most rigorous methods available.

The ongoing assessment of the charter schools parallels the ongoing assessment of the students and their teachers, holding accountable the directors of the schools while suggesting areas for future improvement. Such broad external accountability, closely aligned with the accountability systems internal to the schools, appears to be an essential feature of any ambitious attempt to mobilize schooling to reduce inequality.

Can Such an Approach Travel?

How do you take a model based on two university charter schools and use the results to boost achievement and reduce inequality nationwide? Do you package the model and somehow sell it to other schools? Probably not. If other schools are organized around a system of privatized, idiosyncratic instruction, the approach can't likely take root. So does the university go around the country and start new schools everywhere? Definitely not. Universities are good at generating and sharing knowledge. They are not good at single-handedly making social change.

Instead, the aim is to work with other school leaders, teachers, and researchers around the country to produce rigorous evidence that educators can take clearly defined action at a reasonable cost to help the nation's historically most neglected children reliably achieve truly outstanding outcomes. To ignore such evidence would be unconscionable. Educators around the nation must be as relentless in generating this evidence as Lemar Pipkins was when he sought to provide education for himself and his descendants. As we build this base of evidence, working with millions of teachers and families, we shall overcome the legacy of racial inequality, meet the O'Connor challenge, and fulfill the promise of *Brown*.

NOTES

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¹One explanation emphasizes continued discrimination in the labor market. Neal (2006) does not deny the existence of discrimination in the labor market. But he shows that the labor market provides strong incentives to obtain degrees—and these incentives are even stronger for minority youth than for White youth. Hernstein and Murray (1994) argued that once civil rights laws eliminated legal barriers to educational access, the remaining gaps between racial and ethnic groups then reflected real differences in intellectual ability and that these differences are inherited. Three kinds of evidence refute this argument. First, as Dickens and Flynn (2006) show, Black–White gaps in IQ test scores have substantially diminished over time, "faster than genes can travel" (Rosenthal & Rubin, 1982, p. 711). Second, studies show that Black–White gaps in IQ are

small to negligible when Black children raised by White parents are compared with White children raised by White parents (Nisbett, 1998). This finding gives interesting new support to the claim that IQ tests measure cultural capital rather than some kind of culture-free, innate intelligence. Third, the passage of civil rights laws did not eliminate barriers to equal opportunity. A large body of social science evidence refutes this assumption (see Loury, 2002).

²It is likely that unequal school quality has contributed enormously to inequality in outcomes through an intergenerational mechanism whereby parents transmit inequality in their benefits from schooling to their children, who then pass down to their own children the unequal benefits of the instruction they received at home. Such an intergenerational accumulation of inequality would be most pronounced when school quality and home instructional quality are positively correlated, as all research suggests they are. However, for any given generation, variation in cognitive skills is explained far more by variation in home environments than by variation in schooling environments.

³A similar argument can be made with respect to other ethnic gaps, such as the gap between Hispanics and Whites. However, given the focus here on Black–White inequality since the *Brown* decision, this lecture confines itself to Black–White inequality.

⁴Oreopoulos (2006) provides parallel evidence about the powerful impact of compulsory schooling during adolescence.

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