

Teaching and Educational Transformation

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As they entered the twenty-first century, most nations around the world undertook major transformations of their governmental and education systems to respond to changing economic, demographic, political, and social imperatives. Nearly all countries are engaged in serious discussion of school reform to address demands for much higher levels of education for much greater numbers of citizens – demands created by a new information age, major economic shifts, and a resurgence and redefinition of democracy around the world. These demands are being imposed upon educational institutions designed a century ago for a different time. In the United States as elsewhere, the need to prepare future citizens and workers who can cope with complexity, use new technologies, and work cooperatively to frame and solve novel problems – and the need to do this for a much more diverse and inclusive group of learners – has stimulated efforts to rethink school goals and curriculum, to better prepare teachers, and to redesign school organizations.

This rapidly changing economic base has stimulated political concerns as well as rapid job changes, industrial restructuring, and the need for many workers to learn new occupations and new roles. Manufacturing industries can no longer pay high wages for low-skilled work. High wages and corporate growth characterize industries that rely on high levels of skill, complex technologies, and new knowledge and information. “An economy in which knowledge is becoming the true capital and the premier wealth-producing resource” means that “once again we will have to think through what an educated person is” (Drucker, 1989, p. 232). The changes demanded of workers and of educational institutions are striking:

The great majority of the new jobs require qualifications the industrial worker does not possess and is poorly equipped to acquire. They require a good deal of formal education and the ability to acquire and to apply theoretical and analytical knowledge. They require a different approach to work and a different mind-set. Above all, they require a habit of continuous learning. Displaced industrial workers thus cannot simply move into knowledge

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work or services the way displaced farmers and domestic workers moved into industrial work (at the turn of the last century). At the very least, they have to change their basic attitudes, values, and beliefs (Drucker, 1994, p. 62).

Furthermore, the nature of work will continue to change ever more rapidly. Whereas during much of the twentieth century, most workers held 2 or 3 jobs during their lifetimes, the US Department of Labor (2006) estimates that today's workers hold more than 10 jobs before they reach the age of 40. The top ten in-demand jobs projected for 2010 did not exist in 2004 (Gunderson, Jones, & Scanland, 2004). Thus, we are currently preparing many students for jobs that do not yet exist using technologies that have not yet been invented to solve problems that we don't even know are problems yet.

Meanwhile, knowledge is expanding at a breathtaking pace. It is estimated that 5 exabytes of new information (about 500,000 times the volume of the Library of Congress print collection) was generated in 2002, more than three times as much as in 1999. Indeed in the 4 years from 1999 to 2003, the amount of new information produced approximately equaled the amount produced in the entire history of the world previously (Varian & Lyman, 2003). The amount of new technical information is doubling every 2 years, and it is predicted to double every 72 h by 2010 (Jukes & McCain, 2002). As a consequence, effective education can no longer be focused on the transmission of pieces of information that, once memorized, comprise a stable storehouse of knowledge. Education must help students learn how to learn in powerful ways, so that they can manage the demands of changing information, technologies, jobs, and social conditions.

Factory Model Schools Confront New Demands

In the United States and many other countries, reaching these new goals will require fundamental transformation of existing school organizations and ways of managing teaching. At the turn of the twentieth century during the last major era of system reform, the prevailing model of school organization that took hold in the United States mimicked the then-popular factory line managed by centralized bureaucracy. Automated means for mass producing goods created specialized divisions of labor and a proliferation of routinized, semiskilled jobs requiring limited knowledge. The "Taylor system," widely adopted in the decade after 1910, provided techniques for using rules and routines to manage the work of people assigned to simplified, discrete tasks. "Scientific management" brought with it a distinct division of responsibility between a new class of managers, who did all the thinking, and the workers, who followed procedures developed by the managers (Callahan, 1962, pp. 37–38).

This approach was carried over from manufacturing industries to schools, which sought to develop standardized procedures engineered to yield standard products. Teachers, like factory workers, were viewed as unskilled laborers who would implement the schemes developed by others, rather than developing lessons tailored to the

needs of their students. For both teachers and students, schools stressed compliance and the capacity for repetitive, rote tasks in response to the demands from industry (Tyack, 1974). Based on faith in the power of rules to direct human behavior, and in the ability of administrators to discover and implement the common procedures that would produce desired outcomes, twentieth-century education policy assumed that continually improving the design specifications for schoolwork – required courses, textbooks, testing instruments, and management systems – would lead to student learning.

The twentieth-century search for a bureaucratic route to the “one best system” of education (Tyack, 1974) was based on the assumptions that students are standardized and that educational treatments can be prescribed. Because most major teaching decisions were to be handed down through administrative channels and encapsulated in packaged teaching materials, teachers were viewed as needing little knowledge or expertise (Darling-Hammond, 1990). In the factory model conception, if it is possible to fix teaching by developing better regulations, there is no incentive to develop better teachers. Because decisions are made at the top of the educational hierarchy, there is no rationale in this kind of organization for substantial teacher preparation or professional development, aside from “in-servicing” designed to ensure more exact implementation of prescribed teaching procedures. The presumption of regularity means that schools are designed to function without major investments in teachers’ professional knowledge and without time for collegial consultation and planning. It is this logic that has allowed policymakers to avoid investing substantial resources in teacher preparation or teacher salaries.

This kind of schooling system may have worked reasonably well many decades ago for helping most students acquire minimal basic skills and prepare for routine work, and for enabling a few to develop higher-order thinking and performance skills. However, it has proved increasingly inadequate to the new mission of schools: teaching large numbers of very diverse learners to think critically, solve complex problems, and master ambitious subject matter content – a task that requires a different, more sophisticated kind of teaching than merely covering the curriculum or “getting through the book” (Darling-Hammond et al., 2008).

In contrast to the assumptions underlying the factory model, a growing body of research suggests that highly skilled teachers are essential to this task, and that perhaps the greatest school influence on student learning is the quality of the teacher. Students lucky enough to have teachers who know their content and how to teach it well achieve substantially more (for reviews, see Darling-Hammond, 2000b; Wilson, Floden, & Ferrini-Mundy, 2002). And the effects of a very good (or very poor) teacher last beyond a single year, influencing their students’ learning for years to come (Sanders & Rivers, 1996). Indeed, expert teachers are the most fundamental resource for improving education.

However, in the United States, teachers are the most inequitably distributed resource. On any measure of qualifications – extent of preparation, level of experience, certification, content background in the field taught, advanced degrees, or scores on college admissions and teacher licensure tests – studies show that students of color, and low-income and low-performing students, particularly in

urban and poor rural areas, are disproportionately taught by less qualified teachers (Darling-Hammond, 2004a; Lankford, Loeb, & Wyckoff, 2002). In many high-minority schools, the most vulnerable students are taught by a revolving door of inexperienced and untrained teachers (NCTAF, 1996).

These disparities are largely a function of the nation's inequitable funding of education, which translates into lower salaries and poorer working conditions for teachers in districts serving the neediest students. The tradition in the United States has been to lower standards rather than to increase incentives when there are too few teachers willing to work under suboptimal conditions. Unfortunately, in these places, especially, the factory model is held in place while other parts of the system strive to create a more productive approach to change.

Cross-Currents in Policy

Over the last 20 years, an alternative vision for education – based on a professional conception of teaching and a more intellectually ambitious conception of learning – has begun to emerge. The profession has engaged in serious standard setting that reflects a growing knowledge base about what teachers should know and be able to do to help all students learn in ways that develop higher-order thinking and performance skills. Some states have successfully launched efforts to restructure schools and to invest in greater teacher knowledge (Lieberman, 1995). New, more effective models of teacher preparation have been created in partnership with schools (Darling-Hammond, 2007; Fullan, 2007). Grassroots networks like the National Writing Project and the Coalition of Essential Schools have helped to support teacher development, reorient curriculum and teaching toward more thoughtful educational goals, and rethink schools. These efforts to build the capacity of teachers differ from past educational change strategies in their concern for building capacity rather than tightening controls over education. In some places, new initiatives are seeking to invest more in the front lines of education – well-prepared and well-supported teachers – rather than in regulations to direct what they do.

Several professionalizing reforms have provided critical linchpins for transforming teaching. The National Board for Professional Teaching Standards (NBPTS) was established in 1987 to certify accomplished veteran teachers through standards and assessments that respect the complex demands of teaching and place student learning at the heart of the enterprise. The board's efforts paved the way for major changes in teacher education, professional development, evaluation, recognition and reward systems, and retention. The prospects for extending these breakthroughs to all teachers are enhanced by the work of more than 30 states and major professional organizations involved in the Interstate New Teacher Assessment and Support Consortium (INTASC). This consortium has established a set of model standards for beginning teacher licensing that are based on the National Board's standards, and is beginning to develop prototype assessments for teacher licensing modeled after those of the board. At least 40 states have adopted these standards

and have begun to invest in stronger teacher education, induction, and professional development systems that could assure learning opportunities for teachers throughout their careers.

Reforms of teacher education have included the creation of hundreds of professional development school (PDS) partnerships between schools and universities, designed to focus on professional preparation for novices and veteran teachers, school-based research linking theory and practice, the improvement of teaching, and the redesign of schooling. The importance of the PDS idea is that it can institutionalize the process of ensuring that entering teachers are supported in learning how to apply complex knowledge in practice in settings that allow for the development of high levels of competence rather than encouraging counterproductive teaching and coping strategies. Such partnership schools also address the age-old problem of educational change: If teacher educators prepare teachers for schools as they are, they will be unable to teach more effectively or help schools become more effective than the status quo permits. PDSs create a means to prepare teachers for schools that do not currently exist in large numbers by combining the work of preservice education, staff development, and school restructuring (Fullan, 1993).

In many of these and other forward-looking schools, pedagogy has become more student centered, and curriculum is aimed at deeper understanding, buttressed by performance assessments of learning that require students to show what they know through applications to authentic problems. Evidence suggests that this kind of teaching – which demands higher-order thinking, consideration of alternatives, and development of intellectual products – develops stronger and more equitable learning on both conventional measures and more complex performance tasks (Darling-Hammond et al., 2008; Lee, Smith, & Croninger, 1995; Newmann et al., 1996). Such teaching is, of course, grounded in a deep understanding of both the demands of disciplined thinking and the learning processes of students.

These promising new initiatives, however, must contend with deeply entrenched barriers. While some states and districts have redefined teaching, learning, and schooling, with strong results for students (see, e.g., Darling-Hammond, 2000b, 2004b; Lieberman, 1995), these efforts have been piecemeal and nonsystematic. Despite recent improvements in some places, teaching as an occupation is still characterized by extremely uneven preparation – some excellent and some very poor; vague and haphazardly enforced standards; submarket wages; chronic shortages in key fields like mathematics and science; high levels of turnover for beginners; and vast differences in resources and performance across classrooms, schools, and communities.

While extraordinary teachers grace many classrooms, others struggle without assistance to learn to teach in ways they themselves have never encountered. The systems responsible for recruiting, preparing, and supporting teachers are generally disconnected from one another and frequently unaware of advances in knowledge that should inform what they do. Teachers in many communities still work in isolation from one another in settings that provide them with little time for collaboration and learning.

Meanwhile, the factory model view of teaching is alive and well, especially in states and districts that have invested the least in high-quality teaching. The view that students are raw materials to be “processed” by schools according to standard specifications has led to a resurgence of policies in many states that seek to drive teaching through standardized tests that are externally developed and scored and tied to tightly scripted teaching materials. In some states and in some of the nation’s largest city school districts, like Chicago, Los Angeles, and Philadelphia, particularly in schools serving the least advantaged students where large numbers of untrained teachers are hired, teacher-proof curriculum attempts have recurred with regularity, despite their lack of success in previous iterations. In the most extreme cases, teachers are supplied with a standardized curriculum outlining the scope and sequence for instruction in each subject in each grade, complete with a pacing schedule showing how much time teachers should spend on each topic and lesson plans for each day of the school year. Grading standards are also prescribed, showing how much weight teachers should give to each type of assignment (also prescribed), and how they should calculate grades. Promotion standards are determined by standardized tests developed to match the curriculum. The assumption is that marching the students through these procedures is all that is necessary to ensure learning. Unfortunately, this kind of teaching cannot address the higher-order thinking and problem-solving skills needed for success in the twenty-first century.

Contrasting Approaches

This lesson has been well learned by societies that top the international rankings in education on such measures as the Program in International Student Assessment (PISA). A study of twenty-five of the world’s school systems, including ten of the top performers, found that investments in teachers and teaching are central to improving student outcomes. These focus on purposeful recruitment; preparation and development; and systemic supports for instruction (Barber & Mourshed, 2007). The highest-achieving countries around the world routinely prepare their teachers extensively, pay them well in relation to competing occupations, and provide them with lots of time for professional learning. They also distribute well-trained teachers to all students – rather than allowing some to be taught by untrained novices – by offering equitable salaries, sometimes adding incentives for harder-to-staff locations.

Supports for High-Quality Teaching

In Scandinavian countries like Finland, Sweden, Norway, and the Netherlands, all teachers now receive 2–3 years of graduate-level preparation for teaching, completely at government expense, including a living stipend. Typically, programs include at least a full year of training in a school connected to the university, like

the professional development school partnerships created by some US programs, along with extensive coursework in pedagogy and a thesis researching an educational problem in the schools. Unlike the United States, where teachers either go into debt to prepare for a profession that will pay them poorly or enter with little or no training, these countries made the decision to invest in a uniformly well-prepared teaching force by recruiting top candidates and paying them to go to school. Slots in teacher training programs are highly coveted and shortages are rare.

Finland has been a poster child for school improvement since it rapidly climbed to the top of the international rankings after it emerged from the Soviet Union's shadow. Leaders in Finland attribute these gains to their intensive investments in teacher education. Over 10 years the country overhauled preparation to focus more on teaching for higher-order skills like problem solving and critical thinking. Teachers learn how to create challenging curriculum and how to develop and evaluate local performance assessments that engage students in research and inquiry on a regular basis. Teacher training emphasizes learning how to teach students who learn in different ways – including those with special needs. The egalitarian Finns reasoned that if teachers learn to help students who struggle, they will be able to teach all students more effectively (Buchberger & Buchberger, 2004).

Policymakers also decided that if they invested in very skillful teachers, they could allow local schools more autonomy to make decisions about what and how to teach – a reaction against the oppressive, centralized system they sought to overhaul. This bet seems to have paid off. Teachers are sophisticated diagnosticians, and they work together collegially to design instruction that meets the demands of the subject matter as well as the needs of their students. Finnish schools are not governed by standardized tests, but by teachers' strong knowledge about how students learn (Laukkanen, 2008).

Top-ranked Singapore, by contrast, is highly centralized, but it treats teaching similarly. Singapore's Institute of Education – the tiny nation's only teacher training institution – is investing in teachers' abilities to teach a curriculum focused on critical thinking and inquiry – the twenty-first-century skills needed in a technologically oriented economy. To get the best teachers, students from the top one-third of each graduating high school class are recruited into a fully paid 4-year teacher education program (or, if they enter after they have already completed college, a 1- to 2-year graduate program) and immediately put on the Ministry's payroll. When they enter the profession, teachers' salaries are higher than those of beginning doctors.

As in other high-ranked countries, novices are not left to sink or swim. Expert teachers are given release time to serve as mentors to help beginners learn their craft. The government pays for 100 h of professional development each year for all teachers in addition to the 20 h a week they have to work with other teachers and visit each others' classrooms to study teaching. Currently teachers are being trained to undertake action research projects in the classroom so that they can examine teaching and learning problems, and find solutions that can be disseminated to others.

And teachers continue to advance throughout the career. With help from the government, Singapore teachers can pursue three separate career ladders that help them become curriculum specialists, mentors for other teachers, or school principals.

These opportunities bring recognition, extra compensation, and new challenges that keep teaching exciting.

In these and other high-achieving countries, schools are organized to support teacher success. Typically, teachers have 15–20 h a week to work with colleagues on developing lessons, participating in research and study groups, and engaging in seminars and visits to other classrooms and schools. Meanwhile, most US teachers have no time to work with colleagues during the school day: They plan by themselves and get a few “hit-and-run” workshops after school, with little opportunity to share knowledge or improve their practice. In their study of mathematics teaching and learning in Japan, Taiwan, and the United States, Jim Stigler and Harold Stevenson (1991) noted that “Asian class lessons are so well crafted [because] there is a very systematic effort to pass on the accumulated wisdom of teaching practice to each new generation of teachers and to keep perfecting that practice by providing teachers the opportunities to continually learn from each other.”

A Focus on Higher-Order Learning

Having well-prepared teachers who focus on continually improving instruction is only part of building an educational system that can respond to twenty-first-century needs. Teachers need to work with students on critical skills that will allow them to transfer and apply their knowledge to new situations, and enable them to learn how to learn. The transmission curriculum that dominated schools for the last 100 years – which assumed a stable body of knowledge could be codified in textbooks and passed onto students who could “learn” it by remembering all the facts – is counter-productive today. Rigid approaches to defining knowledge cannot accomplish what is currently needed. Today’s students need an education that will help them learn how to learn in powerful ways, so that they can manage the demands of changing information, knowledge bases, technologies, and social conditions.

Unfortunately, in the United States, curriculum is still too often defined by standards and textbooks that are, in many states, a mile wide and an inch deep, and by tests that focus on recall and recognition, rather than production and application of knowledge. By contrast, most high-achieving countries teach (and test) fewer topics each year and teach them more thoroughly so students build a stronger foundation for their learning. Their assessments focus on critical thinking and problem solving, whether they are developed nationally (as in the small countries of Japan and Singapore), at the state or provincial level (as in larger countries like Australia, Canada, and China, where Hong Kong and Macao score well on assessments like PISA) or locally (as in top-ranking Finland).

In most cases, these assessment systems combine centralized (state or national) assessments that use mostly open-ended and essay questions with local assessments given by teachers, which are factored into the final examination scores. These local assessments – which include research projects, science investigations, mathematical and computer models, and other products – are mapped to the syllabus and the

standards for the subject and are selected because they represent critical skills, topics, and concepts. They are generally designed, administered, and scored locally. In the United States, by comparison, multiple-choice tests – which focus the curriculum on low-level skills – direct attention to modes of learning that are increasingly out of date. Whereas students in most parts of the United States are typically asked simply to recognize a single fact they have memorized from a list of answers, students in high-achieving countries are asked to apply their knowledge in the ways that writers, mathematicians, historians, and scientists do.

The Road Ahead

These distinctive realities describe a crossroads for American education. There are two futures at hand. One maintains the current features of teaching in the face of major demographic and economic changes and expanding expectations of schools. In the year 2013, 30 years after the issuance of the *Nation at Risk* report, it looks something like this:

Following a brief and familiar flurry of education reform activity in the early 1990s, schools settled back down to business as usual. The education governors had come and gone; educational leaders were relieved to have the proliferation of commission reports shelved and out of the way. A period of teacher shortages was addressed by modest salary increases and increased use of emergency and alternative certification, which brought teachers into classrooms with little initial preparation. Although teacher salaries climbed by 2005 to match the peak levels they had reached in the early 1970s (following the previous teacher shortage), they remained significantly below the salaries of other occupations requiring similar education and training. Many schools of education had substantially improved their programs, producing teachers who were more expert than ever before, but lack of attention to recruitment in high-need fields and locations coupled with continued inequalities in salaries and teaching conditions across states and districts made it difficult to recruit and retain staff in underfunded urban and rural communities.

In rapidly growing, high-immigration states like California that had disinvested in education over many years, tens of thousands of individuals entered teaching on emergency permits, working almost exclusively with low-income and minority students in central city and poor rural school districts. Another 20 states joined the 25 who by then had initiated quick routes into teaching through alternative certification. Many of these programs offered minimal training focused on classroom management and teaching formulas and then assigned recruits as teachers of record, hoping for mentoring that only sometimes materialized. Thus, classrooms, especially in the cities, were staffed. Students' access to highly capable teachers became increasingly inequitable, expanding the already large achievement gap.

Throughout the decade, students in the public education system changed, but schools did not. Great waves of immigration boosted the numbers of poor, minority, and non-English speaking children to more than 40% of public school enrollments.

The vast majority of children in large urban districts were low-income students of color. This made it easier for the broader public to write off these school districts, allowing a steady downward slide in their funding levels while resources were directed to affluent suburbs and private schools.

Because a majority of the teaching staff in city districts had retired, and the large numbers of vacancies were hard to fill at the low salaries offered, shortages led to larger classes and emergency hiring. The many teachers whose formal pedagogical preparation consisted of only a 5-week summer course desperately wanted to address the learning needs of their students, but their knowledge of child development, language acquisition, learning styles, and teaching methods was too skimpy to provide them with adequate ammunition for the job. As schools were increasingly filled with teachers who had never had the opportunity to practice under the guidance of an expert veteran or to study how children learn or how to teach effectively, the quality of practice deteriorated. Because these teachers had so little knowledge about teaching and barely knew how to plan from one day to the next, teacher-proof curriculum packages that had been rejected for their ineffectiveness in the 1980s returned once again to city school systems.

This exacerbated the flight of bright, well-prepared teachers from these systems as they refused to teach according to scripts that they found undermined their ability to teach creatively or to meet individual students' needs. Coupled with the high attrition rates of underprepared teachers, this produced chaotic conditions in many schools, with continuous turnover resulting in the most vulnerable students being taught by a parade of short-term substitutes and untrained, inexperienced teachers for their entire school careers.

The public's periodic concern for low student performance was answered by the enactment of "stiffer" requirements: more frequently administered tests for students to determine promotion, placement, and graduation; more carefully specified grade level objectives and curricular requirements matched to the standardized tests; more rigid procedures for tightening school management; more record keeping requirements for keeping tabs on administration, instruction, and student progress; and more frequent testing of teachers. Accountability systems offered greater sanctions for the growing share of public schools that failed to raise test scores.

Teaching in public schools was increasingly determined by these regulatory requirements rather than by knowledge about teaching and the needs of learners. Teachers taught for the required multiple-choice tests from mandated texts and curriculum packages aligned with the tests. Except in specially segregated programs for the "gifted and talented," affluent public schools, or private schools exempted from state testing requirements, students no longer read books, wrote papers, conducted experiments, or completed projects in class; their learning was structured by worksheets, practice tests, packaged instructional modules, and more practice tests. Businesses looking for high-skilled labor for the growing number of technology jobs increasingly turned to workers educated overseas to fill these positions.

Test-based accountability systems resulted in more students being held back and dropping out. Schools responded to the pressure to raise their test scores by pushing out, holding back, or refusing to admit students who did poorly on the

standardized tests. For many, this increased the appearance of their scores without actually improving the quality of education they provided. Schools that served highly transient students, those with severe learning disabilities, or new immigrants lacking English language skills were increasingly labeled failures in systems that looked at average test scores, rather than the quality of teaching or longitudinal measures of student learning over time. This caused them to lose funding in states that tied dollars to test scores and further undermined their ability to recruit or retain capable teachers. Their students, increasingly treated as society's throwaways, were also unwanted by public schools of choice or the few private schools willing to accept vouchers.

Graduation rates, which had reached nearly 80% by the mid-1990s, began to reverse in the late 1990s and fell to 69% by 2005 and only 60% by 2013. The students who left school were disproportionately African American, Latino, and recent immigrant students who found themselves with few employment opportunities. With less than a high school education, their odds of finding work were less than 1 out of 4 while their odds of being imprisoned were greater than 50%. States with diverse populations and unequal school spending like California, Florida, Georgia, New York, and Texas, where test-based accountability policies were not accompanied by increased school investments, found that their prison populations more than tripled over the decade, further reducing available resources for education. A growing number of states found themselves spending as much on prisons as they spent on higher education. Scores on basic skills tests climbed slowly while scores on tests of higher-order thinking continued to decline. US students continued to perform ever more poorly relative to students in other countries on international assessments; colleges continued to decline in the production of math, science, engineering, and technology graduates; and corporations imported more workers for high-tech jobs, while moving other jobs overseas.

Earlier enthusiasm for reforms gave way to disillusionment and lower school budgets, as middle class parents fled to private schools and the general population, comprised largely of older citizens without children in schools, voted down tax levies for education. Just as the progressive education initiatives of the 1960s had been replaced in the 1970s by a movement to cap taxes for school support and go "back to the basics," so the restructuring rhetoric of the early 1990s gave way to a movement to fund private school vouchers and standardize education in public schools. By the year 2013, public frustration with the schools resurfaced with cries from the business community for employees who could function in an information-based and technological economy. New commissions were born to declare the nation, once again, at risk.

Another future – one that envisions different resolutions of these dilemmas – is possible. In this future, teaching continues its progress toward becoming a profession focused on the needs of students and informed by a growing knowledge base about effective teaching. Efforts to redesign schools to make them more supportive of in-depth learning and strong teacher–student relationships are advanced through public charter initiatives, a small schools movement in big cities, and district-initiated redesign of faltering schools. And strategies to equalize educational

opportunity through litigation and legislation are successful in allocating a fair share of resources to all schools. In the year 2013, a different public education system has emerged. It looks something like this:

Much had changed since the last “crisis” in education during the 1980s. A second wave of reform impelled new coalitions between teachers, school administrators, and teacher educators, all of whom began thinking of themselves as members of the same profession with common goals. They articulated the first professional definition of teaching knowledge through the National Board for Professional Teaching Standards. As more and more teachers undertook the challenge of passing the board’s rigorous assessments and the standards were infused into beginning licensing standards, new assessments for beginning teachers, and teacher education, the board’s vision began to create a consensus about the features of accomplished teaching.

A growing number of teacher education programs, professional development programs, and teacher evaluation strategies began to focus on helping teachers understand and support student learning, rather than marching lockstep through textbooks or implementing routines that were ultimately often ineffective. Over time, teacher educators, teaching mentors, and principals were chosen from among the ranks of board-certified teachers, creating a stronger base of shared knowledge and expertise across the profession as a whole. By returning the role of school leadership to that of the “principal teacher,” it became possible to base decisions in many schools on professional knowledge rather than idiosyncratic beliefs.

The National Board also helped to support the creation of analogous state boards which built upon its standards and assessments to establish more effective systems of teacher preparation and licensure in the states. Universities established 5-year teacher education programs that supported more intense and integrated study of both subject matter content and pedagogy, along with year-long student teaching experiences in professional development schools. Most also created high-quality post-baccalaureate programs of preparation for mid-career entrants into teaching to assure more streamlined coursework and well-mentored entry into teaching for talented individuals who wanted to learn how to make their expertise accessible to young people. Districts created well-supported internships for new teachers, with expert mentors who could continue to guide their on-the-job learning after they had completed their master’s degree in teaching. Many states followed the lead of Connecticut, Vermont, Wisconsin, and California to establish beginning teacher programs that coupled mentoring with portfolio assessments that both boosted teachers’ effectiveness and reduced the early attrition that had long plagued teaching. The new cohort of teachers – over a million of them – was better prepared than any that had preceded them.

Teacher shortages were met with higher salaries and differentiated staffing arrangements. These responses also began to change the shape of school organizations and the allocations of school resources. As bureaucratization had taken hold in American schools after 1950, classroom teachers comprised an ever smaller share of school employees (just over 40% by the mid-1990s, as compared to 60–80% in other industrialized countries), and teachers’ salaries had dipped to only 36% of the total education budget. This trend was reversed as salaries climbed to a level

comparable with other occupations for college-educated workers, and schools began to invest in quality teaching rather than futile efforts at teacher-proofing.

As the supply of prospective teachers willing and able to undergo rigorous preparation programs grew and the qualifications of teachers increased, the perceived need to spend large portions of education budgets on massive control and inspection systems diminished. Long hierarchies that had grown to design, regulate, and monitor teaching flattened out. The plethora of special categorical programs and pullout approaches which had pulled resources to the periphery of the classroom and fragmented the lives of students and schools were replaced by investments in the front lines of the classroom: more and better-trained teachers supported by new technologies and more time with the students they sought to teach. Teachers took on more professional responsibilities for mentoring, curriculum development, school improvement, and assessment design and scoring, and schools took on new shapes conducive to professional teaching.

As in other professions, differentiated roles and responsibilities emerged as a means for balancing the requirements of supply and qualifications. Most practitioners worked in teams which jointly assumed responsibility for groups of students. This supported both collaborative planning, which improved the quality and coherence of instruction across classrooms, and greater accountability for the overall welfare and progress of students. Those less extensively trained practiced under the direct supervision of career professionals, performing more routine tasks for which they had been prepared. Many of these were in teachers-in-training working in the classrooms of expert teachers. In settings where, for example, three professional teachers and two instructors were responsible for 100 students over 2–3 years, many possibilities emerged for developing collegial learning, for assuring effective supervision, for organizing large- and small-group instruction, for consulting about teaching plans and decisions, and for developing strategies to meet individual children's needs. Not incidentally, such structures promoted the kinds of consultation and peer review of practice that are central to a professional role.

Teachers began to insist on selecting and inducting their peers, and on collective decision making in schools over the best uses of knowledge and resources to meet students' needs. Professional knowledge and effectiveness grew as serious induction, sustained professional development, and collaboration in problem-solving replaced the sink-or-swim, closed door ethos of an earlier era.

Instructional practices changed, too. As schools became more learning centered and teachers more skilled, the conveyor belt approach to processing students gave way to more varied and appropriate methods of teaching and learning. All adults in schools served as advisors to small numbers of students for whom they became family liaisons and in-school advocates to assure personalized attention to students' progress and needs. Lectures, text questions, and worksheets were no longer the preponderant school activities: though still used when appropriate, these strategies were augmented by cooperative and experiential learning opportunities, projects, research activities, debates, essays, and exhibitions that encouraged students to construct and solve intellectual problems, engaged students of varied learning styles, and created more meaningful and useful ways by which to assess students' progress.

With the help of their teachers and advisors, students worked intensely on exhibitions of their learning, including graduation portfolios that demonstrated their abilities to conduct scientific inquiries, evaluate and produce works of literature and art, research and understand social science concerns, frame and solve mathematical problems, and contribute responsibly to their communities. Some of these pieces of work were evaluated as part of district and state assessment systems, which also included common tasks that asked students to demonstrate their reading, writing, and mathematical skills in the more authentic ways pioneered by Vermont, Maryland, Kentucky, and Connecticut during the 1990s.

A wide variety of more productive approaches to organizing the school day and the school year and to grouping students gave individual teachers and students more time together, reducing the pull-outs, pass-throughs, start-ups, and wind-downs that had stolen teaching time and decreased teachers' capacity to come to know students well. Like schools in other high-achieving countries, American schools enabled teachers to stay with the same students for longer blocks of time over more than 1 year, structured collaborative planning within and across disciplines, and reduced the total number of teachers students were expected to encounter. Schools became smaller and more personalized. Fewer students fell through the cracks.

Incentives to attract the most expert teachers to the profession's greatest needs and challenges also emerged. Following the lead of the successful new schools movements in New York, Chicago, Cincinnati, San Antonio, and Oakland, master teachers redesigned inner-city schools as smaller, more communal places where partnerships with parents and communities were joined with expert professional practice. In a set of these schools that served as professional development schools, school- and university-based faculties coached new teachers, put research into practice – and practice into research – and put state-of-the-art knowledge to work for children. Equity and excellence became joined with professionalism.

By the year 2013, a renaissance had occurred in American education. The best American students performed as well as students anywhere in the world. The vast majority of students graduated with not only minimal basic skills, but with the capacity to write, reason, and think analytically. Complaints from the business community about the quality of graduates subsided for the first time since World War II. And for the first time since the beginning of the twentieth century, a decade was launched without a chorus of commission reports crying crisis in the American public schools. The road taken, as it turned out, was the one that finally made a difference.

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