

Chapter 2

Closing the Achievement Gap: A Systemic View

Linda Darling-Hammond

“Closing the achievement gap” has become an American mantra over the last decade, as federal and state policies have sought to reduce unequal educational outcomes largely by setting targets and sanctions based on student test scores. And while some progress has been made since 1990, gaps in achievement between affluent and low-income students in the USA have remained large and persistent, while a number of other countries around the world have made stunning strides over the last 30 years in both raising overall achievement and reducing differentials across students and schools, including those from low-income communities and historical minority groups.

What did these nations do? In *The Flat World and Education* (Darling-Hammond 2010), the practices of many nations that have become high achieving and substantially equitable in their education outcomes are reviewed. Among their commonalities are a number of societal and educational factors, including:

- Secure housing, food, and health care, so that children can come to school ready to learn;
- Supportive early learning environments;
- Equitably funded schools that provide equitable access to high-quality teaching;
- Well-prepared and well-supported teachers;
- Standards, curriculum, and assessments focused on twenty-first-century learning goals; and
- Schools organized for in-depth student and teacher learning.

Efforts both outside and inside of the educational system have been key to their success: Outside of school, they have created a functional social safety net and a set of early learning supports for children which allow them to come to school ready to learn. Within the educational domain, they have created a *teaching and learning system* that enables a coherent approach to providing high-quality education in an equitable way. Such a system not only prepares all teachers and school leaders

L. Darling-Hammond (✉)
Stanford University, Stanford, CA, USA
e-mail: ldh@stanford.edu

well for the challenging work they are asked to do, but it ensures that schools are organized to support both student and teacher learning and that the standards, curriculum, and assessments that guide their work encourage the kind of knowledge and abilities needed in the twenty-first century.

This chapter reviews the sources of the achievement gap in the USA and then discusses the policies and practices of three nations that have made particularly noteworthy strides toward high and more equitable achievement over the last 30 years and that now top the international rankings on assessments like the Program for International Student Assessment (PISA) : Finland, Singapore, and South Korea. This chapter also draws on other international data to describe how some of these practices appear in other jurisdictions around the world. In the course of this discussion, the chapter emphasizes that what occurs inside education systems is reinforced or undermined by the contexts within which they operate and that the challenges for the USA are to pursue equity both within schools and within the society as a whole.

The Achievement Gap in the USA

US policymakers have been trumpeting the need for educational reform for nearly three decades, during which there has been no shortage of handwringing or high-blown rhetoric. In 1983, *A Nation at Risk* decried a “rising tide of mediocrity” in education and called for sweeping reforms. In 1989, then-President George H. W. Bush and the 50 governors announced a set of national goals that included ranking first in the world in mathematics and science by the year 2000. No Child Left Behind set targets and created sanctions for schools to drive achievement and to close the gaping gaps in performance between groups of students.

However, by 2006, on the PISA, a test conducted by the Organisation for Economic Co-operation and Development (OECD), the USA ranked 21st of 30 OECD countries in science and 25th of 30 in mathematics—a drop in both raw scores and rankings from 3 years earlier (OECD 2007). When non-OECD members from Eastern Europe and Asia are added to the list, the US rankings dropped to 29th out of 40 developed countries in science, sandwiched between Latvia and Lithuania, and 35th out of 40 in mathematics, between Azerbaijan and Croatia. Although the USA made small gains over the next 3 years, ranking 14th in reading, 20th in science, and 27th in mathematics in 2009 (OECD 2010), it still remained far from those heady aspirations of two decades earlier.

The hidden story about US achievement rankings are the large disparities that are a function of growing inequality—specifically the very different performance of high- and low-income children, Whites and Asians in comparison to African Americans and Latinos, and those in low-poverty schools vs. those in high-poverty schools. In fact, Whites and Asians in the USA score above the OECD average in mathematics, reading, science, and problem solving on the PISA (OECD 2007), and US students in low-poverty schools actually score at the very top of the internation-

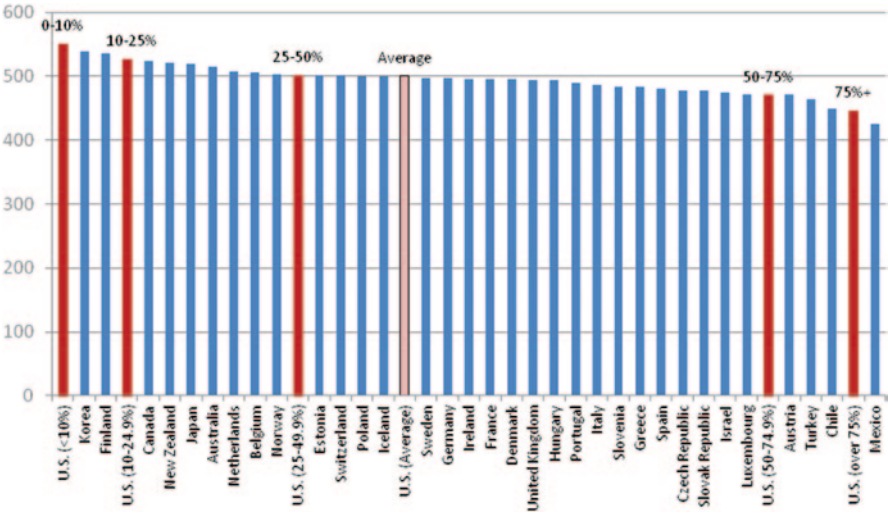


Fig. 2.1 Scores on PISA reading assessments, 2009, by country and poverty rates in U.S. schools

al rankings in reading, while those in schools of concentrated poverty are near the bottom (see Fig. 2.1). Similar patterns are also found in mathematics and science, although overall achievement in mathematics is lower in the USA—a function of teacher recruitment, training, and curriculum policies which will be addressed later.

Five factors create the major building blocks of unequal and inadequate educational outcomes in the USA:

- The high level of poverty and the low levels of social supports for low-income children’s health and welfare, including their early learning opportunities;
- The unequal allocation of school resources, which is made politically easier by the increasing re-segregation of schools;
- Inadequate systems for providing high-quality teachers and teaching to all children in all communities;
- Rationing of high-quality curriculum through tracking and inter-school disparities; and
- Factory model school designs that have created dysfunctional learning environments for students and unsupportive settings for strong teaching.

Poverty and Unequal Resources

The root of inequity in educational outcomes in the USA is growing poverty and re-segregation. US childhood poverty rates have grown by more than 60% since the 1970s and are now by far the highest among OECD nations, reaching 22 % in the last published measures and rising since then due to the economic recession

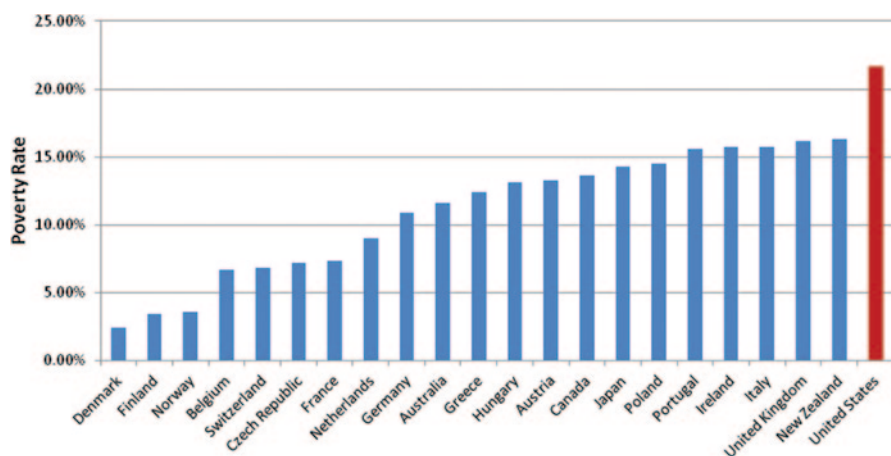


Fig. 2.2 Childhood poverty rates in PISA countries (before government transfers)

(UNICEF 2007) (see Fig. 2.2). The disparity is even greater when poverty rates are calculated after government transfers that support housing, health care, food, child-care assistance, and other essentials: These transfers bring most OECD nations' childhood poverty rates down to well under 10% but, because our safety net for families is so tattered, the recalculation hardly changes the US rate (Bell et al. 2008). American children living in poverty have a much weaker safety net than their peers in other industrialized countries, where universal health care, housing subsidies, and high-quality universally available childcare are the norm.

In addition to the direct effects of poverty on children's home resources, low-income children are much less likely to have access to early learning opportunities in the USA than their more affluent peers. As a result, an estimated 30–40% of children enter kindergarten without the social and emotional skills and language experiences needed to be initially successful in school (Zigler et al. 2006, p. 23). Studies have found that the size of the working vocabulary of 4-year-old children from low-income families is approximately one-third that of children from middle-income families, which makes it much more difficult for them to read with comprehension or to engage in academic learning relying on that vocabulary, even when they can decode text. By first grade, only half as many first graders from poor families are proficient in understanding words in context and engaging in basic mathematics as first graders from nonpoor families (Denton and West 2002).

Although there is significant evidence that high-quality preschool programs improve achievement and attainment, with estimated returns of about \$ 4–\$ 10 for every dollar invested (Reynolds and Temple 2006, p. 50), only a few states have committed to high-quality universally available preschool for all students. Thus, the achievement gap that is already present at the start of kindergarten has not been addressed in most communities.

Beyond the large and growing inequalities that exist among families and communities, profound inequalities in resource allocations to schools have been reinforced by the increasing re-segregation of schools over the decades of the 1980s and 1990s. During that 20-year span, desegregation policies and funding assistance were largely abandoned by the federal government and the courts, and state governments generally followed suit (Rumberger and Palardy 2005). As a consequence, the gains in desegregation made in the 1960s and 1970s were substantially rolled back. By 2000, 72% of the nation's black students attended predominantly minority schools, up significantly from the low point of 63% in 1980. The proportion of students of color in intensely segregated schools also increased. Nearly 40% of African American and Latino students attend schools with a minority enrollment of 90–100% (NCES 2001).

These intensely segregated schools serving concentrations of children in poverty are also located in districts that less well resourced than those serving more advantaged students. Recent analyses of data prepared for school equity cases in more than 20 states have found that on every tangible measure—from qualified teachers and reasonable class sizes, to adequate textbooks, computers, facilities, and curriculum offerings—schools serving large numbers of students of color have significantly fewer resources than schools serving more affluent, White students (Darling-Hammond 2010). Many such schools are so severely overcrowded that they run a multitrack schedule with a shortened school day and school year, lack basic textbooks and materials, do not offer the courses students would need to be eligible for college, and are staffed by a parade of untrained, inexperienced, and temporary teachers (Oakes 2004).

These inequities are in part a function of how public education is funded in the USA. In most cases, education costs are supported primarily by local property taxes, along with state grants-in-aid that are somewhat equalizing, but typically not sufficient to close the gaps caused by differences in local property values. In most states, the wealthiest districts spend at least three times what the poorest districts can spend per pupil, differentials that translate into dramatically different salaries for educators, as well as different learning conditions for students (Adamson and Darling-Hammond 2011). Furthermore, the wealthiest states spend about three times what the poorer states spend (Baker et al. 2010; Darling-Hammond 2010). Therefore, the advantages available to children in the wealthiest communities of high-spending and high-achieving states like Massachusetts, Connecticut, Vermont, and New Jersey are dramatically different from the schooling experiences of those in the poorest communities of low-spending states like California, Mississippi, Alabama, and Louisiana, where buildings are often crumbling, classes are overcrowded, instructional materials are often absent, and staff are often transient.

Although many US educators and civil rights advocates have fought for higher quality and more equitable education over many years—in battles for desegregation, school finance reform, and equitable treatment of students within schools—progress has been in many states over the last two decades as segregation has worsened and disparities have grown. While students in the highest-achieving states and

districts in the USA do as well as their peers in high-achieving nations, our continuing comfort with profound inequality is the Achilles' heel of American education.

Unequal Distribution of Curriculum and Teachers

These inequalities translate into disparities in the number and quality of teachers and other educators available to students, and to unequal access to high-quality curriculum.

In a case brought to challenge school desegregation efforts in Jefferson County, Kentucky, and Seattle, WA, more than 550 scholars signed onto a social science report filed as an amicus brief, which summarized an extensive body of research showing the persisting inequalities of segregated minority schools. The scholars concluded that:

...(M)ore often than not, segregated minority schools offer profoundly unequal educational opportunities. This inequality is manifested in many ways, including fewer qualified, experienced teachers, greater instability caused by rapid turnover of faculty, fewer educational resources, and limited exposure to peers who can positively influence academic learning. No doubt as a result of these disparities, measures of educational outcomes, such as scores on standardized achievement tests and high school graduation rates, are lower in schools with high percentages of non-White students (American Educational Research Association 2006).

As segregation and school funding disparities grew worse throughout the 1980s and 1990s, the practice of lowering or waiving credentialing standards to fill classrooms in high-minority, low-income schools—a practice that is unheard of in high-achieving nations and in other professions—became commonplace in many US states, especially those with large minority and immigrant populations, like California, Texas, Florida, and New York.

In many states where school funding litigation has been brought, plaintiffs have documented the fact that teachers in high-need schools have, on average, lower levels of experience and education, are less likely to be credentialed for the field they teach, and have lower scores on both certification tests and other measures of academic achievement. Furthermore, a growing body of research has shown that these kinds of qualifications matter for student achievement. Studies at the state, district, school, and individual student level have found that teachers' academic background, preparation for teaching, certification status, and experience significantly affect their students' learning gains (Betts et al. 2000; Boyd et al. 2006; Clotfelter et al. 2007; Darling-Hammond 2000; Darling-Hammond et al. 2005; Ferguson 1991; Fetler 1999; Goe 2002; Goldhaber and Brewer 2000; Monk 1994).

In combination, teachers' qualifications can have substantial effects. For example, a large-scale study of high-school student achievement in North Carolina found that students' achievement growth was significantly higher if they were taught by a teacher who was certified in his or her teaching field, fully prepared upon entry (rather than entering through the state's alternative "lateral entry" route), had higher scores on the teacher licensing test, graduated from a competitive college,

had taught for more than 2 years, or was National Board Certified (Clotfelter et al. 2007). Taken individually, each of these qualifications was associated with greater teacher effectiveness. Moreover, the researchers found that the combined influence on achievement growth of having a teacher with most of these qualifications as compared to one with few of them was larger than the effects of race and parent education combined, or the average difference in achievement between a typical White student with college-educated parents and a typical black student with high-school educated parents. While achievement from 1 year to the next is still largely dependent on prior achievement, this finding suggests that the achievement gap might be reduced over time if minority students were more routinely assigned highly qualified teachers, rather than the poorly qualified teachers they most often encounter.

These findings appear to extend around the world. Akiba and Scriber (2007), for example, found that the most significant predictors of mathematics achievement across 46 nations included teacher's certification, a college major in mathematics or mathematics education, and at least 3 years of teaching experience. These same variables—reflecting what teachers have learned about content and how to teach it to a range of learners—show up in study after study as predictors of teachers' effectiveness. This study also found that although the national level of teacher quality in the USA is similar to the international average, the opportunity gap in students' access to qualified teachers between students of high and low socioeconomic status (SES) is among the largest in the world.

These disparities, which have come to appear inevitable in the USA, are *not* the norm in developed nations around the world, which typically fund their education systems centrally and equally, with additional resources often going to the schools where students' needs are greater. These more equitable investments made by high-achieving nations are also steadier and more focused on critical elements of the system: the quality of teachers and teaching, the development of curriculum and assessments that encourage ambitious learning by both students and teachers, and the design of schools as learning organizations that support continuous reflection and improvement. With the exception of a few states with enlightened long-term leadership, the USA, by contrast, has failed to maintain focused investments on these essential elements.

Learning from Others

One wonders what we might accomplish as a nation if we could finally set aside what appears to be our *de facto* commitment to inequality, so profoundly at odds with our rhetoric of equity, and put the millions of dollars spent continually arguing and litigating into building a high-quality education system for all children. To imagine how that might be done, one can look at nations that started with very little and purposefully built highly productive and equitable systems, sometimes almost from scratch, in the space of only two to three decades.

Consider three very different nations—Finland, Singapore, and South Korea—that built strong education systems, nearly from the ground up. None of these nations succeeded educationally in the 1970s, when the USA was the unquestioned education leader in the world. All created productive *teaching and learning systems* by expanding access while investing purposefully in ambitious educational goals using strategic approaches to build teaching capacity.

Equitable Access to High-Quality Schools and Teaching

In this chapter, the term “teaching and learning system” is used advisedly to describe a set of elements that, when well designed and connected, reliably support all students in their learning. These elements ensure that students routinely encounter well-prepared teachers who work in concert around thoughtful, high-quality curriculum, supported by appropriate materials and assessments. These elements also help students, teachers, leaders, and the system as a whole continue to learn and improve. While none of these countries lack problems and challenges, each has created a much more consistently high-quality education system for all of its students than has the USA. While no system from afar can be transported wholesale into another context, there is much to learn from the experiences of those who have addressed problems we encounter. A sage person once noted that, although it is useful to learn from one’s own mistakes and experiences, it is even wiser to learn from those of others.

Although Finland, Singapore, and South Korea are very different from one another culturally and historically, all three have made startling improvements in their education systems over the last 30 years. Their investments have catapulted them to the top of international rankings in student achievement and attainment, graduating more than 90% of their young people from high school and sending large majorities through college, far more than in the much wealthier USA. Their strategies also have much in common which are as follows:

- All three nations fund schools adequately and equitably, and add incentives for teaching in high-need schools. All three nations have built their education systems on a strong egalitarian ethos, explicitly confronting and addressing potential sources of inequality. In South Korea, for example, a wide range of incentives is available to induce teachers to serve in rural areas or in urban schools with disadvantaged students. In addition to earning bonus points toward promotion, incentives for equitable distribution of teachers include smaller class sizes, less in-class teaching time, additional stipends, and opportunities to choose later teaching appointments (Kang and Hong 2008). The end result is a highly qualified, experienced, and stable teaching force in all schools, providing a foundation for strong student learning.
- All three nations organize teaching around national standards and a core curriculum that focus on higher-order thinking, inquiry, and problem solving through

rigorous academic content. Working from lean national curriculum guides that have recommended assessment criteria, teachers collaborate to develop curriculum units and lessons at the school level, and develop school-based

performance assessments—which include research projects, science investigations, and technology applications—to evaluate student learning. In Singapore, these are increasingly part of the examination system. In Finland, the assessments are classroom based, but are guided by the national curriculum, which emphasizes students' abilities to reflect on, evaluate, and manage their own learning.

Unlike in the USA, narrowing the curriculum has not been an issue. Take South Korea: it devotes the large majority of instructional time in every grade to a liberal arts curriculum that includes social studies, science, physical education, music, fine arts, moral education, foreign language (English), practical arts, and a range of extracurricular activities and electives (Huh 2007). Curriculum offerings are similarly comprehensive in Singapore and Finland.

- All three nations eliminated examination systems that had once tracked students into different elementary and middle schools and restricted access to high school. Since adopting national curriculum guidelines, these nations have been committed to helping all students master the same essential skills and content until the beginning of high school—not to devising watered-down versions for some students.
- All three nations use assessments that require in-depth knowledge of content and higher-order skills. All three countries have matriculation exams for admission to college. These are the only external examinations in Finland and South Korea. In Singapore, examinations are given in the sixth and ninth grades as well as at the end of high school. These exams have open-ended questions that require in-depth content knowledge, critical analysis, and writing. Although the matriculation exams are not used to determine high-school graduation, they are taken by nearly all students and they set a high bar for high-school coursework.

In Finland, where there are no external standardized tests used to rank students or schools, most teacher feedback to students is in a narrative form, emphasizing descriptions of their learning progress and areas for growth (Sahlberg 2009). Like the National Assessment of Educational Progress in the USA, Finland uses a centrally developed assessment given to samples of students at the end of the second and ninth grades to inform curriculum and school investments. The focus of these open-ended assessments is to provide information to support learning and problem solving, not to allocate sanctions and punishments.

- All three nations invest in strong teacher education programs that recruit top students, completely subsidize their extensive training programs, and pay them a stipend while they learn to teach. In all three nations, teacher education programs were overhauled to increase teachers' pedagogical knowledge and skills, on top of a deep mastery of the content areas they will teach. Finnish teachers' preparation includes at least a full year of clinical experience in a model school associated with a university. Within these model schools, student teachers participate in problem-

solving groups, a common feature in Finnish schools. All teachers are trained in research methods so that they can “contribute to an increase of the problemsolving capacity of the education system” (Buchberger and Buchberger 2004).

Their problem-solving groups engage in a cycle of planning, action, and reflection and evaluation that is reinforced throughout teacher education and is a model for what teachers will plan for their own students, who are expected to engage in similar kinds of research and inquiry in their own studies.

- All three nations pay salaries that are equitable across schools and competitive with other careers, generally comparable to those of engineers. Teachers are viewed as professionally prepared and are well respected. Working conditions are supportive, including substantial participation in decision making about curriculum, instruction, assessment, and professional development.
- All three nations support ongoing teacher learning by ensuring mentoring for beginning teachers and providing 1,525 h a week for all teachers to plan collaboratively and engage in analyses of student learning, lesson study, action research, and observations of one another’s classrooms, which help them continually improve their practice. All three nations have incentives for teachers to engage in research on practice, and all three fund ongoing professional development opportunities in collaboration with universities and other schools.
- All three nations pursue consistent, long-term reforms by setting goals for expanding, equalizing, and improving the education system and by steadily implementing these goals, making thoughtful investments in a high-quality educator workforce and in school curriculum and teaching resources that build the underpinnings for success. This has been made possible in part by the fact that these systems are managed by professional ministries of education, which are substantially buffered from shifting political winds. Frequent evaluations of schools and the system as a whole have helped guide reforms. In each nation, persistence and commitment to core values have paid off handsomely, as all three are ranked in the very top tier of countries on international assessments and have among the most equitable outcomes in the world.

All three nations have undertaken these elements in a systemic fashion, rather than pouring energy into a potpourri of innovations and then changing course every few years, as has often been the case in many communities in the USA, especially in large cities. While these three small nations—each comparable in size to a midsize US state—have conducted this work from a national level, similar strategies have been successfully employed

at the state or provincial level in high-scoring Australia, Canada, and New Zealand, and regions such as Hong Kong and Macao in China. They demonstrate how it is possible to build a *system* in which students are routinely taught by well-prepared teachers who are given time to collaboratively reflect on and refine the curriculum, supported by appropriate materials and assessments that foster learning for students, teachers, and schools alike.

Closing the Achievement Gap from an International
Perspective

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