

Sound Basic Education for All: An Action Plan for North Carolina

Best Practices to Recruit and Retain Well-Prepared Teachers in All Classrooms

Linda Darling-Hammond, Ryan Saunders, Anne Podolsky, Tara Kini,
Daniel Espinoza, Maria Hyler, and Desiree Carver-Thomas



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Introduction


One of the most pressing issues facing policymakers and leaders across school systems is how to staff classrooms with a stable and well-prepared teaching force responsive to complex student needs and the growing demands of the knowledge economy.¹ Demographic trends and economic changes have led to a surge in demand for new teachers, but the supply of new teachers has diminished at the same time that a steady stream of teachers is fleeing the profession each year.² Since 2014–15, teacher shortages have been growing across the country, reaching crisis proportions in some teaching fields — such as mathematics, science, and special education — and in locations where wages and working conditions are least attractive.³

The growing challenges with maintaining a sustainable workforce have real impacts for students. The shortages highlighted above disproportionately impact students from low-income families and students of color and undermine state and district efforts to ensure a college-, career-, and citizenship-readiness education for every child. How school leaders and policymakers address this challenge will have long-term impacts on student learning. Further, as student populations become increasingly diverse,⁴ districts are focusing on recruiting new teachers who better reflect the racial, ethnic, gender, and linguistic backgrounds of their students.⁵ The benefits of a diverse teacher workforce extend to all students, providing students with diverse role models meant to support their participation and collaboration in a diverse and global society.⁶

Fortunately, a great deal of research illuminates both the underlying challenges in recruiting, developing, and retaining a well-prepared workforce and the range of solutions at hand to help tackle the problem. The challenges are myriad and exist across the teacher career continuum, from recruitment into preparation programs to the working conditions and leadership across schools. In fact, a focus on retention is vital, given 9 out of 10 new teachers each year are hired to replace those who have left, with two thirds leaving for reasons other than retirement.⁷ This report synthesizes a body of research and best practices meant to support efforts to recruit, develop, and retain a diverse, sustainable, and quality teacher workforce.

Research has identified three major factors influencing teacher recruitment and retention:

1. Compensation (salaries and other forms of compensation, e.g., housing)
2. Working conditions
3. Professional learning, including preparation, induction, mentoring, and professional development



Effective solutions address these factors, and each factor influences the nature of the teaching force and the distribution of teachers.

Further, beyond these three factors, there is a need to address persistent inequities across our education system. For potential solutions to have the greatest impact in addressing historical and systemic inequities in educational opportunity and for all students to fully reap the benefits of improved teacher recruitment and retention, attention must be paid to ensuring an equitable distribution of qualified teachers. In addition, given the demonstrated benefits of a racially diverse teacher workforce, solutions meant to address the four key factors listed above must also support the increased racial diversity of the workforce.⁸

This paper begins by first exploring the importance of compensation to both recruitment and retention and the myriad of forms such compensation can take. Following this exploration of compensation, the next section looks at the impact of working conditions on teacher efficacy, effectiveness, and retention. The final section considers the supports that span a teacher's career and fall under the umbrella of professional learning, including teacher preparation, mentoring, induction, and ongoing professional development. Each section includes a review of current strategies, along with relevant examples of implementation.

Compensation

Adequate and Stable Compensation

Compensation matters to teachers throughout their careers. Teachers' salaries impact their decisions to enter the profession, as well as their decisions to remain in a particular district or to remain in the profession. In addition, the costs of preparation can serve as a barrier for many prospective teachers.

How Compensation Matters

A large body of studies over many decades has shown that teachers' salaries can affect the supply of teachers in terms of the quality and quantity of individuals preparing to be teachers and their distribution across districts.⁹ Research finds that teachers are more likely to choose to enter the occupation when teacher salaries are competitive compared with other occupations.¹⁰

Salaries also appear to influence teacher attrition: Teachers are more likely to leave when they work in districts with lower wages.¹¹ Starting salaries and salary growth have an impact not only on recruiting individuals into the profession and retaining them, but also on recruiting and retaining individuals in particular states or districts.¹² Recent data from the National Center for Education Statistics (NCES) show a 10 percentage point attrition gap between beginning teachers whose first-year salary was \$40,000 or more as compared with those earning less.¹³ Both beginning and veteran teachers are more likely to quit when they work in districts with lower wages and when their salaries are low relative to alternative wage opportunities, especially in high-demand fields like mathematics and science.¹⁴

Despite the evidence that salaries influence teachers' decisions to stay in the profession (and the quality of teachers attracted to the profession), teachers' salaries are not competitive in many labor markets. Even after adjusting for the shorter work year in teaching, beginning teachers nationally earn about 20% less than individuals with college degrees in other fields — a wage gap that widens to 30% by mid-career.¹⁵ And the difference between teachers' compensation as compared with other workers with a college degree has grown over time. In 1994, public school teachers earned a similar compensation (including salary, health benefits, and pension) as other workers with a college degree.¹⁶ In 2015, teachers earned 11% less.

Salaries vary widely from state to state, with more competitive wages in New England and Wyoming and less competitive wages in much of the South and parts of the West. A study published by the Center for American

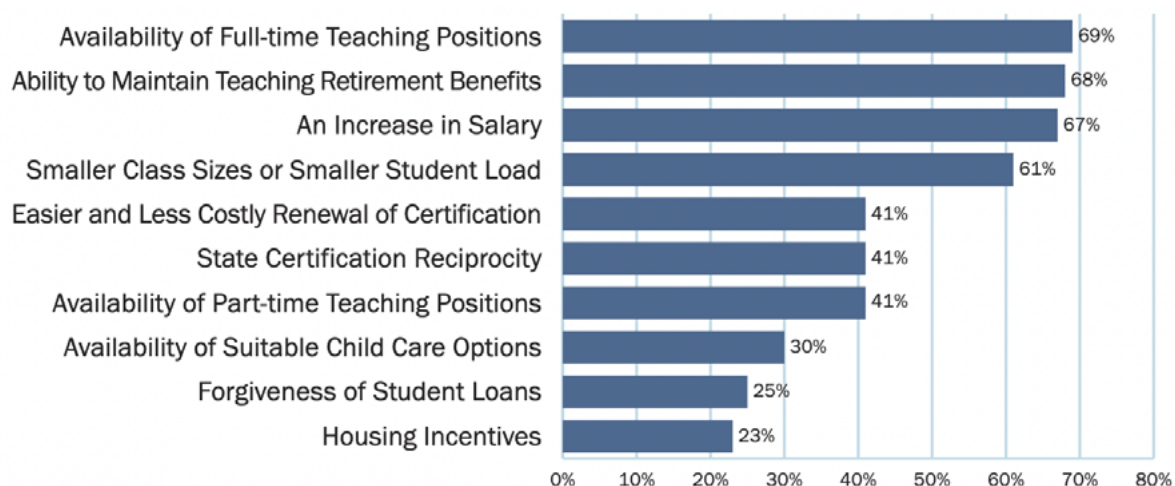
Progress (CAP) examining salaries nationally for mid- and late-career teachers found that experienced teachers with 10 years of teaching experience make less than unskilled workers in a number of states.¹⁷ In 30 states, mid-career teachers who head families of four or more qualify for three or more public benefit programs, such as subsidized children’s health insurance or free or reduced-price school meals.

Increasingly, the CAP study found, a teacher’s salary in much of the United States is too low to support a middle-class existence. In 11 states, more than 20% of teachers work second jobs to supplement their incomes (not including those who work a summer job when schools are typically closed). For example, Uber — the ride-sharing service — now actively recruits teachers to supplement their incomes as taxi drivers.¹⁸ Even in higher-paying states, such as California, many teachers struggle with the higher cost of living and lower purchasing power.

Other Compensation

A number of factors that former teachers say would make them consider returning to the classroom are related to compensation in one way or another. According to the NCES, 53% of teachers who left the profession said they would consider returning to the classroom. When asked what would bring them back to teaching, aside from the availability of jobs, leavers’ responses included salary increases and the ability to maintain retirement benefits (both at 67%), as well as student loan forgiveness and housing incentives (about 25% each). Some former teachers who said they would consider returning to the profession listed factors that would allow them to balance home and work life, such as the availability of part-time teaching positions and having child care options (41% and 30%, respectively) (see Figure 1).

Figure 1. The Percentage of Leavers Who Rated the Factor as Extremely or Very Important in Their Decision to Return



Note: Survey responses from public school teachers who left after the 2011–12 school year and said that they would consider returning to the teaching workforce. Percentages do not add to 100 because teachers can select multiple reasons.

Source: Learning Policy Institute analysis of the Teacher Follow-up Survey, 2013, from the Schools and Staffing Surveys, National Center for Education Statistics.

Evidence also suggests that there are a number of ways of providing compensation supports and that different approaches are differentially effective. In addition to salary hikes, states and districts can consider multiple strategies for making teaching more financially viable. Other forms of compensation are incentives that support teachers' ability to stay in or reenter the profession, such as:

- » Mortgage guarantees, down payment assistance, or other housing supports in exchange for service commitments
- » Child care supports
- » Opportunities to continue teaching and mentoring after retirement

About 25% of teachers nationally point to housing incentives as an important factor in their potential decision to return to teaching, and some districts are developing housing solutions as part of their recruitment and retention initiatives. For example, San Francisco recently passed a measure to provide stabilized housing for 500 teachers by 2020 and is building housing units on district-owned land. Texas provides eligible teachers with low-fixed-rate home loans and grants for down payment assistance.¹⁹ Districts, sometimes with support from the U.S. Department of Housing and Urban Development, have offered money for housing-related expenses (e.g., rent, relocation costs) targeted to teachers in high-need fields,²⁰ as well as down payment assistance,²¹ discounted homes,²² and subsidized teacher housing.²³ One local model of this type of program is Chicago Public Schools' Teacher Homebuyer Assistance Program. Launched in April 2005 with the goal of improving teacher retention, the program existed through 2013 and helped 524 teachers buy homes in Chicago by offering forgivable loans as long as teachers remained employees of the school system for five years.²⁴

As shown in Figure 1, another 25% of prospective reentrants point to child care supports as a potential enticement to return to teaching. One district in Skokie, Illinois, responded to consistent requests for child care from teachers by establishing a district center in 2013. The district has since expanded access to its birth-to-4-years child care by building an additional center.²⁵

Beyond housing incentives and child care supports, two thirds of those who have left note that the ability to maintain retirement benefits if they returned could encourage them to reenter the profession. In response, several states have considered or enacted changes to retirement systems to allow retired teachers to return without suffering any penalties.²⁶ Recruiting more retired teachers back into teaching to fill shortages or mentor novice teachers could be a boon to many schools, since evidence shows that teachers, on average, continue to improve student outcomes with each year of experience, including into the second and third decades of their careers.²⁷

Support for Preparation

Many teachers, too, are saddled with college debt incurred while undergoing their teacher training.²⁸ The more college debt that students incur, the less likely they are to choose to work in a lower-wage profession such as teaching. One study of students at a highly selective undergraduate institution found that incurring debt increased the odds that students chose "substantially higher-salary jobs" and "reduce[d] the probability that

students [chose] low-paid ‘public interest’ jobs.”²⁹ The influence of debt on job choice was “most notable on the propensity to work in the education industry.” As discussed below, studies of loan forgiveness programs for teachers have found that those who receive loan forgiveness — which has the effect of increasing their overall compensation — are more likely to remain in the profession.³⁰

Salaries and Other Compensation in Hard-to-Staff Schools

Compounding the problem of low wages in the teaching profession overall are great inequities in teacher salaries among districts within the same labor market, leaving some high-need, under-resourced districts at a strong disadvantage in hiring. An analysis of the Schools and Staffing Survey found that the best-paid teachers in low-poverty schools earned 35% more than their counterparts in high-poverty schools.³¹ Also, teachers in more advantaged communities usually experience much better working conditions, including smaller class sizes and more control over decision-making in their schools.³² Given these salary differences among districts, high-poverty districts consistently struggle to attract and retain effective teachers, who can often take a less demanding, higher-paying job in another district down the road.³³

A study analyzing funding and salary disparities in California and New York documented large differences in school funding within both of these states and corresponding inequities in teacher salaries, teacher qualifications, and student achievement.³⁴ After controlling for cost of living, New York districts with large proportions of students from low-income households paid teachers nearly \$3,000 less on average than districts with fewer low-income children. Disparities were similar for high-minority and low-minority districts. Low-salary districts in both states had higher proportions of students of color and English learners. Even within a single region or labor market, more affluent districts can pay teachers significantly more than those receiving less funding — especially those districts that have to stretch their limited resources to meet the needs of students living in poverty or those who are newly learning English or who have other special needs. This study and others³⁵ found that wage disparities within labor markets are a significant factor in explaining the prevalence of underprepared teachers in districts paying below the market wages.

In addition, districts in California with the lowest adjusted salaries had more than twice as many teachers without permanent credentials, inexperienced teachers, and teachers with lower levels of education. In a regression elasticity analysis, which enables researchers to examine how a percentage change in one teaching characteristic (e.g., salaries) is associated with a percentage change in another teaching characteristic (e.g., experience), the authors found that increases in salaries were associated with decreases in the proportion of uncredentialed, nonpermanent, and inexperienced teachers, as well as decreases in turnover rates.

Compensation — Potential Policy Solutions

Competitive and Equitable Salaries

A key potential policy strategy to help facilitate an equitable distribution of quality teachers across districts and schools involves creating more competitive and equitable salaries across a state. In an earlier era of reform,

Connecticut used this strategy to great success, coupling major increases in teacher salaries — allocated on an equalizing basis — with higher standards for teacher education and licensing, as well as substantial investments in the preparation, mentoring, and development of beginning teachers. By raising minimum salaries to a state-recommended level and providing state equalization aid to incentivize districts to voluntarily do so, the state leveraged a \$300 million state investment to level the playing field among districts and enable low-wealth districts to compete in the labor market for qualified teachers. With local bargaining, the new minimum salaries created a floor that then raised veteran salaries as well. Over the five years from 1986 through 1991, the average teacher’s salary in Connecticut increased by 30%, from \$36,581 in 1986 (inflation-adjusted to 1991) to \$47,823 in 1991 — a level that was, 25 years ago, above that of a number of states even today.

These incentives were combined with other strategic initiatives to bring high-quality candidates to Connecticut’s classrooms: licensure reciprocity with other states as well as scholarships and forgivable loans targeted to individuals preparing to teach in high-demand fields. This comprehensive package quickly eliminated teacher shortages, even in urban districts, and created surpluses of teachers within three years. With these initiatives, plus investments in the mentoring and professional development of beginning teachers, student achievement sharply increased. By 1996, the state was ranked first in reading, writing, mathematics, and science achievement on the National Assessment of Educational Progress.³⁶

Even today, amid teacher shortages nationwide, Connecticut has had an increase in the number of qualified applicants per position since 2005.³⁷ Unfortunately, between 2005 and 2010 the state allowed the salary gap between teachers in high-spending districts and those in low-spending districts to widen, along with the achievement gap.³⁸

In the mid-1980s and again in the 1990s, North Carolina implemented reforms similar to those in Connecticut, increasing and equalizing salaries across the state using the statewide minimum salary schedule. These efforts brought North Carolina’s salaries to the national average while making them more equitable. North Carolina also adopted a groundbreaking salary increase — 12% of base salary — for teachers who achieved National Board for Professional Teaching Standards (National Board) certification. In doing so, North Carolina became the first state to link teachers’ compensation to the National Board certification process, requiring applicants to demonstrate teaching expertise through a standards-based performance assessment requiring submission of a teaching portfolio, videotapes of teaching, reflections on teaching, lesson plans, and evidence of student learning.³⁹ These investments have led North Carolina to have the highest number of National Board certified teachers of any state.⁴⁰ Approximately one in five North Carolina teachers is National Board certified, nearly 20% of all National Board certified teachers in the United States.⁴¹

With improvements in teacher education, the introduction of teacher mentoring, and intensive professional development, North Carolina also saw achievement gains — the steepest in the country during the 1990s, with the most progress of any state in closing the achievement gap. A comprehensive study of North Carolina’s teaching workforce found that student achievement gains were significantly greater for students whose teachers were National Board certified, as well as for those whose teachers had the strong academic and teaching preparation the state’s strategic policy investments have tried to leverage.⁴²

In recent years, unfortunately, North Carolina has not sustained these efforts, and its salaries have slid back to among the lowest nationally.⁴³ This has contributed to the large number of North Carolina teachers who are leaving the state to teach elsewhere. That number has tripled over the past five years, as has the number of North Carolina teachers leaving the profession.⁴⁴

When states are slow to invest in compensation adjustments to help high-need districts attract and retain high-quality teachers, individual districts can take matters into their own hands. As one example of this, in 2008, San Francisco passed an innovative local parcel tax specifically for the purpose of investing in teachers, with widespread support from the local teachers' union, the business community, parents, and grassroots community organizations.⁴⁵ The additional revenues, about \$500 per student per year, allowed for an overall salary increase — varying by placement on the salary schedule, but targeting newer teachers — as well as bonuses for teaching in a hard-to-staff school or hard-to-staff subject area, retention bonuses after completing the fourth year and the eighth year of teaching, and stipends for mentor teachers working with novices.

The overall salary increase was much larger than surrounding districts during the same time period and helped make San Francisco's salaries more competitive with neighboring districts in Silicon Valley. A 2013 study found that the compensation reforms improved the district's attractiveness within its local teacher labor market and increased both the size and quality of the teacher applicant pool, leading to an increase in the quality of new hires.⁴⁶

Targeted Bonuses

In some cases, added stipends for teachers working in high-poverty schools have been used successfully to retain teachers. However, when implemented in isolation, this strategy appears to have a limited effect. For example, one study in North Carolina found that higher salaries (provided through bonus payments) were able, on average, to reduce teacher turnover rates by 17% in hard-to-staff subject areas in high-poverty and/or low-performing schools during the three years the incentives were in operation.⁴⁷

Another study found that a one-year \$5,000 bonus program (approximately a 10% salary increase) targeted to high-performing teachers working in the lowest-performing schools (i.e., Priority Schools) in Tennessee was somewhat effective at retaining teachers.⁴⁸ The study found that the bonus, which required teachers to remain in their Priority School for the 2014 school year, increased the rate of teacher retention for teachers in tested subjects and grades within Priority Schools by approximately 20%. However, the study did not find that the bonus affected the retention of teachers in nontested subjects.

In California, statewide stipend payments of \$20,000 to teachers who had earned National Board certification and worked in low-performing schools may have contributed to California's having a much greater share of National Board certified teachers in schools serving concentrations of low-income and minority students than other states.⁴⁹ The state stipend was paid out over four years only to teachers who stayed in the high-need schools, and many teachers from these schools applied for and were supported in achieving National Board certification by support groups designed to help them reach this goal. Moreover, Los Angeles provided a 15% salary boost to teachers who became National Board certified and agreed to take on additional district-determined responsibilities. In California, the targeted incentives appeared to be more successful in increasing both the expertise of teachers in

high-need schools and their commitment to remain there than in recruiting expert teachers away from non-high-need schools to high-need schools.

Finally, a study of the Talent Transfer Initiative offered in 10 school districts in seven states — a program that provided a \$20,000 bonus paid over two years to teachers with high value-added scores to transfer and teach in schools with low-average test scores — found the initiative to be associated with increased transfer and retention rates during the two-year period that teachers received the bonus. Importantly, though, attrition rates for these teachers climbed significantly after the bonus program ended and, after the two-year period, there was no difference between the retention rates of bonus recipients and the retention rates of those who did not receive the bonus.⁵⁰ This suggests that the bonus may have been effective only while teachers received the additional money.

Career Advancement Opportunities

Many professions have institutionalized career ladders and upward trajectories that enable their high performers to count on increased responsibility, salary, and status. In contrast, teaching is a relatively “flat” profession in which the typical way to move up is to enter school administration — a role that many excellent teachers may not be interested in pursuing. The leadership positions that do exist in schools, such as mentor, coach, and department chair, are generally limited and often not associated with a commensurate increase in salary.

Opportunities to participate in career ladders, assume leadership roles, and share expertise appear to be associated with teachers’ interests in remaining in the profession. For example, one national survey of 1,210 Pre-K through 12th grade teachers found that holding multiple leadership roles was associated with increased intentions to remain in teaching for the upcoming three years.⁵¹

A study of Missouri’s 25-year-old career ladder program found that after controlling for district characteristics (e.g., wealth, size, level of urbanization), teachers (especially mid-career teachers) in districts with career ladder programs were less likely to leave their district than those in non-career ladder districts.⁵² Teachers in career ladder districts were also less likely to leave the profession overall and reported increased job satisfaction due to their participation in the program.⁵³

Not all career ladder programs result in teachers leaving the classroom. Many expert teachers can and want to provide professional support to their colleagues while remaining in the classroom teaching, and teachers with formal leadership positions are more likely to provide advice or information to colleagues.⁵⁴ Bolstering such leadership opportunities could offer a way for districts and schools to recognize in-house talent and retain high-quality teachers who can provide additional support to colleagues while also increasing professional growth and job satisfaction. Further, these systems of recognizing and supporting teacher expertise hold value in supporting teacher development and evaluation systems.

One well-established approach for recognizing teacher expertise is the National Board certification (NBC) process, which has enabled tens of thousands of teachers to remain in the classroom while pursuing greater recognition, career and leadership opportunities, and increased compensation. Teachers who pass the rigorous NBC process — 112,000 in total⁵⁵ — are widely recognized as experienced, accomplished teachers. It is important to

note that one study showed that the introduction of numerous state and district incentives for NBC teachers in 2008 in the state of Washington (e.g., bonuses, conditional loans, awards of professional development credit) increased the number of NBC teachers from 2,703 in 2008 to 6,739 in 2012.⁵⁶ Several studies have found that teachers who become nationally certified are, on average, more effective teachers (as measured by their students' standardized-test score gains) than non-NBC teachers with similar experience when controlling for student and classroom characteristics.⁵⁷ Other studies have found that NBC teachers appear to offer even greater educational benefits to low-income students than to their more affluent peers.⁵⁸

Although not yet widely practiced, many districts use NBC teachers as mentors to new and struggling teachers, as experts in curriculum design and support, and as instructional leaders in their schools. In some states and districts, NBC teachers also are eligible for salary increases as well as bonuses or other incentives, and teachers are reimbursed for the costs they incur in undergoing the NBC process.⁵⁹ A disproportionate number of NBC teachers work in locations offering these financial incentives and supports.⁶⁰

Another variation of a career ladder policy is a peer assistance and review model that provides “a program of structured mentorship, observation, and rigorous, standards-base[d] evaluation of teachers by teachers.”⁶¹ For example, Rochester, New York, and Cincinnati, Ohio, have developed career ladders using this model in which the accomplished teachers, identified through more advanced evaluations of practice, serve as mentors for beginning teachers, among other leadership roles. These evaluations depend both on standards-based assessments of teaching — through local evaluations and/or National Board certification — and, in the case of Rochester's career ladder, on evidence of student learning assembled by the teacher in a portfolio.⁶²

Career ladder models, which offer both increased responsibilities and compensation for expert teachers while filling a need for additional instructional leadership in schools, have been a recurring, but under-researched policy for decades.⁶³ Building on promising models such as the NBC process and peer assistance and review, states and districts can support the development of career ladders through financial incentives and support for productive performance-based assessments.

Service Scholarships and Loan Forgiveness Programs

As an additional form of compensation, service scholarships and loan forgiveness programs are particularly attractive policy solutions because the programs have an impact on the quality of preparation individuals receive prior to entering the teacher workforce and can help support teacher retention. Typically, service scholarship and loan forgiveness programs underwrite the cost of teacher preparation in exchange for a number of years of service in the profession — most commonly, three to five. Individuals who do not complete the service requirement must repay the loan amount with modest interest. Such financial supports frequently target high-need fields (e.g., math, science, special education) and/or high-need locations (e.g., rural areas, low-income schools), thereby providing a tool that help supports both the supply and the distribution of well-prepared teachers within and across districts.

A recent review of research on service scholarship and loan forgiveness programs in both medicine and teaching found that when such strategies cover a significant portion of tuition and/or living costs, they are effective in

recruiting and retaining high-quality professionals into the fields and communities where they are most needed.⁶⁴ In addition, successful programs target high-need fields and schools; recruit academically strong, committed, and well-prepared candidates; and commit recipients to teaching through the use of reasonable financial consequences for not fulfilling the commitment.⁶⁵

Research also suggests that loan forgiveness programs may be an important lever for bringing individuals who have left the teaching profession back to the classroom. In a recent national survey by the U.S. Department of Education, one in four former public school teachers who left teaching and said they would consider returning to the profession identified loan forgiveness as extremely or very important to their decision to return.⁶⁶

These types of service scholarships and loan forgiveness programs are particularly important because more than two thirds of individuals entering the field of education borrow money to pay for their higher education, resulting in an average debt of about \$20,000 for those with a bachelor's degree and \$50,000 for those with a master's degree.⁶⁷ Compared with professions such as law or medicine, in which future high professional salaries better justify large upfront training costs, teaching pays a relatively low salary. In this context, individuals may rationally forgo teaching in favor of a career that does not require incurring debt that must then be repaid on a low salary. Although research demonstrates that a teacher's level of preparation is associated with his or her effectiveness⁶⁸ and likelihood of remaining in the profession,⁶⁹ the cost of preparation is increasingly difficult for candidates to afford.

Further, the high costs of teacher preparation programs appear to disproportionately deter people of color from entering the profession. Even expecting the same debt burden and post-graduation salary, undergraduate and graduate Black, Latinx, and Asian American students were more likely than White students to report that loans limited their choice of educational institution. And Latinx students were most likely to report feeling limited by loans. Black students were more likely to report that they wished they had borrowed less to fund their post-secondary education, that they changed their career plans because of their loans, or that their loan payments were burdensome.


In addition to the impacts on future career choices, student loan debt is also much greater for Black students than for White students, and both the amount of debt and the gap between Black and White borrowers grows substantially over time.⁷⁰ Based on an analysis of administrative loan data and the U.S. Department of Education Baccalaureate and Beyond data, Black college students graduate with about \$7,400 more debt than White graduates, but have more than \$25,000 more debt than White graduates four years after graduation. This debt gap between Black and White college graduates is due to greater undergraduate borrowing, greater graduate school borrowing, and greater loan interest accumulation among Black graduates. Latinx college students can also incur high student loan debt. With an average debt of \$36,000, Latinx graduates borrowed more than Black and White graduates for a bachelor's degree from a private, nonprofit college in 2012.⁷¹ Scholars argue that the rising trend in student tuition and loans dissuades students of color from enrolling in teacher preparation programs.⁷²

Given the broad financial barriers for aspiring teachers, service scholarship and loan forgiveness programs for teachers can be effective in attracting and retaining new, quality candidates to the profession. Studies in three different states — North Carolina, California, and Nebraska — have described how these programs work.

A longitudinal study of the North Carolina Teaching Fellows Program, a long-standing scholarship program that recruited high-ability high school graduates and provided them with an enhanced teacher preparation program in exchange for a commitment to teach for at least four years in the state, found that Teaching Fellows not only had high rates of retention in teaching, but also were generally more effective than their peer teachers, as measured by test score gains of their students.⁷³ The program provided scholarships of \$6,500 annually for four years to high-ability high school students to attend one of 12 public and 5 private in-state universities to participate in an enhanced teacher preparation program.⁷⁴ From 1986 to 2015, the program recruited nearly 11,000 candidates into teaching, representing approximately 10 percent of all North Carolina teachers credentialed each year.⁷⁵ The program actively sought participants for the Teaching Fellows program from diverse backgrounds, involving the local community in the selection process. Twenty percent of applicants were accepted as Teaching Fellows, 20% of Teaching Fellows were candidates of color, and 30% of Teaching Fellows were men.⁷⁶ As undergraduate students, Teaching Fellows participated in enrichment activities beginning freshman year, including tutoring and field experiences in public schools, summer retreats, and seminars to reflect on pedagogy and professional development. The success of the North Carolina Teaching Fellows Program at attracting, preparing, and retaining high-quality teachers in the state has been well documented. In the 2013–14 school year, more than 4,600 Teaching Fellows were teaching in public schools in all 100 counties in North Carolina. Many Teaching Fellows have gone on to become principals and even superintendents in North Carolina.⁷⁷

A study of California’s Governor’s Teaching Fellowship (GTF) program, which also looked at participants in California’s Assumption Program of Loans for Education (APLE), a loan forgiveness program, found that both programs had attracted teachers to low-performing schools and kept them in these schools at rates higher than the state’s average retention rate, despite the fact that such schools usually have much higher attrition.⁷⁸ In exchange for teaching for at least four years in a low-performing school, APLE provided the participant with loan forgiveness of \$11,000 to \$19,000.⁷⁹ The GTF program provided \$20,000 scholarships to a more selective group of prospective teachers. The study authors suggest that the GTF recipients “had weaker predispositions” to teach in low-performing schools than the non-GTF recipients in their study (i.e., individuals who only received APLE loan forgiveness) and that about two of every seven fellowship recipients would not have taught in such schools in the absence of the incentive.⁸⁰

Nebraska’s teacher loan forgiveness program also reflects several of the research-supported design principles: It incentivizes teaching in high-need fields and schools and covers a meaningful portion of preparation costs. The state recently expanded its loan forgiveness program for teachers, investing more than \$1.4 million in 2016–17. And its ESSA state plan proposes to leverage federal funds under Title II of ESSA to further support the program.⁸¹ The state’s Attracting Excellence to Teaching loan forgiveness program provides Nebraska teacher candidates seeking certification in shortage areas with access to a \$3,000 forgivable loan annually for up to five years (\$15,000 total).⁸² After earning certification and teaching full-time for two years at a Nebraska school, candidates’ loans are forgiven at a rate of \$3,000 per year. The loans do accrue interest, but program participants are only required to pay the interest in the event that they do not complete their service commitment. The program further encourages students to teach in high-need areas by offering accelerated loan forgiveness — twice the normal rate, or \$6,000 per year — for teachers in high-poverty or very sparse (i.e., rural) school districts.⁸³ The program has a long-standing track record of effectively recruiting and retaining educators in shortage areas.



Since it began in 2006, it has recruited more than 1,100 new Nebraska teachers, more than 85% of whom have already completed or are on track to complete their service commitment.⁸⁴

Beyond these examples, several states currently offer service scholarship or loan forgiveness programs aimed at increasing the number of teachers of color, including Florida's Fund for Minority Teachers, the Missouri Minority Teaching Scholarship, the Tennessee Minority Teaching Fellows Program, and the Kentucky Academy for Equity in Teaching. These programs offer candidates \$3,000 to \$5,000 per year for two to four years in exchange for a commitment to teach, often for the number of years they received funding.⁸⁵

Working Conditions

Supportive Working Conditions

Research has long shown that teachers' working conditions affect their ability to teach well. The same conditions can also have direct implications on teachers' attitudes about their work and on their decisions to remain at their school or in the profession. A 20-year public school teacher in Minneapolis noted,

For the past decade, I've worked at a school where 97% of the children qualify for free and reduced-price lunch. I stay because the school climate is good for children and teachers alike. I stay because my principal is wonderful, supports us, does what's best for children, and because I trust her. I stay because my colleagues are gifted teachers and good company and because I continually learn from them.⁸⁶

As noted by the Minneapolis teacher, teachers' working conditions are also students' learning conditions. When teachers and students are in schools with weak leadership, little collaboration time, punitive accountability systems, inadequate facilities, and limited instructional resources, students often struggle to learn, and teachers are less likely to experience professional success.

Working conditions are often much worse in high-poverty than in low-poverty schools. Teachers in more economically advantaged communities often experience smaller class sizes and pupil loads and have greater influence over school decisions.⁸⁷ Teacher turnover is 50% higher in high-poverty schools than in low-poverty schools. However, multiple studies suggest that teachers are not leaving high-poverty schools because they do not want to teach high-need students, but because of lower salaries and more stressful teaching conditions.⁸⁸ Higher attrition rates in these schools have been linked to poorer facilities, fewer textbooks and supplies, fewer administrative supports, and larger class sizes.⁸⁹

These factors also impact the retention of teachers of color, who most often work in the quartile of schools that serve the most students of color.⁹⁰ Research shows that schools serving the most students of color often contend with a range of challenges, including accountability pressures and a lack of resources and support.

At least four interdependent factors consistently rise to the top as being among the most important teaching and learning conditions for teachers and being the most strongly related to their decision to remain teaching in a given school:

1. School leadership and administrative support

2. Opportunities for professional collaboration and shared decision-making
3. High-stakes accountability systems
4. Resources for teaching and learning⁹¹

School Leadership

The quality of administrative support is often the top reason teachers identify for leaving or staying in the profession, often more important than salaries.⁹² Several studies have found that support from principals and other school leaders is one of the best predictors of teacher attrition.⁹³

Research identifies three major factors in school leadership that contribute to teachers' decisions about whether and where to stay in teaching:

- » First, teachers are more likely to remain teaching when they feel supported by administrators.⁹⁴
- » Second, teachers are more likely to remain in their school and in the profession when school leaders effectively communicate with them.
- » Third, a principal's leadership style is associated with a teacher's decision to leave the school or profession.⁹⁵

In addition, relationships among teachers and administrators significantly contribute to teacher retention decisions in hard-to-staff schools. As one study described, "In schools where students' needs are greater — as they often are in high-poverty schools — it is plausible that teachers depend on one another even more than they do in other schools."⁹⁶ For example, one longitudinal study in the Chicago Public School District between 2003 and 2007 found that more than 75% of the variation among schools' teacher retention rates was explained by teachers' reports of the "climate and organization of work at their school."⁹⁷ Teachers reported that they were more likely to remain in their schools when they felt a collective responsibility in their school to ensuring that all children learn and when they perceived that their colleagues "have a 'can do' attitude and work together on improving the school."

Professional Collaboration and Shared Decision-Making

A combination of teaching conditions related to the quality of school leadership, the caliber of collegial relationships, and specific aspects of school culture most greatly influence teachers' job satisfaction and their anticipated or actual career decisions.⁹⁸ As with other professions, teachers' job satisfaction — and therefore career decisions — is shaped by their connectedness to a team working toward a common shared purpose.⁹⁹ The amount of voice that teachers have in decision-making on issues directly affecting their ability to do their job well also contributes to teachers' satisfaction. The most important factors identified in a survey of more than 2,000 current and former California teachers about why they chose to stay were the opportunity to participate in school decision-making and the quality of relationships among the staff.¹⁰⁰ These factors are especially important for teachers of color. The high rates of turnover for teachers of color are strongly associated with lack of classroom autonomy and school influence.¹⁰¹ Also important was adequate time for planning and adequate teaching and learning resources.

The nationally representative Schools and Staffing Survey shows that 13% of teachers who voluntarily left the profession after the 2011–12 school year cited a lack of influence over school policies and practices as extremely or very important in their decision to leave.¹⁰² Schools that create the necessary conditions for productive working relationships within and across academic departments or grade levels often provide numerous benefits, in addition to increased teacher retention. These benefits include greater consistency in instruction,¹⁰³ more willingness to share practices and try new ways of teaching,¹⁰⁴ more success in solving problems of practice,¹⁰⁵ increased job satisfaction,¹⁰⁶ and increased student achievement.¹⁰⁷ In addition, teachers who work in schools with these strong professional environments improve at much faster rates than their peers working in schools with weaker professional environments.¹⁰⁸ Moreover, strong professional environments also can have a positive effect on teacher attitudes and fuel a desire to remain in the profession.¹⁰⁹ This is mirrored in an international study finding that “in all countries, when teachers reported more positive relationships with students and collaborative relationships with other teachers, they also reported significantly higher levels of self-efficacy.”¹¹⁰

Accountability Systems

A recent development in the literature on teacher retention is the impact of federal and state accountability systems on teachers’ career decisions. As noted earlier, of the teachers who voluntarily left the profession after the 2011–12 school year for reasons other than retirement:

- » Approximately 25% reported that dissatisfaction with the influence of school assessment and accountability measures on their teaching or curriculum was extremely or very important in their decision to leave teaching; and
- » Approximately 17% reported that dissatisfaction with support preparing students for assessments was extremely or very important in their decision to leave teaching.¹¹¹

With the passage of the No Child Left Behind Act (NCLB) in 2001, the federal government required a testing and accountability system that outlined a series of annual targets for increases in test scores, followed by sanctions for schools not meeting “Adequate Yearly Progress” overall or for any single student group. Under the Race to the Top and NCLB waiver programs, many states adopted policies to use test scores as a basis for evaluating teachers. Consequently, in some cases the stakes attached to students’ standardized test scores grew even higher and the number of tests expanded. A recent study from the Council of the Great City Schools that reviewed testing for more than 7 million students in about three dozen states found that students in the 66 surveyed districts were required to take an average of 112 districtwide tests between Pre-K and the 12th grade.¹¹²

Some scholars have hypothesized that hallmarks of the high-stakes accountability systems — mandated curricula and test preparation activities — “de-skill” teachers and serve students poorly, pushing many enterprising and effective teachers to seek out schools better organized for student learning where they can do their best work.¹¹³ One 25-year veteran kindergarten teacher explained how the effects of high-stakes accountability policies contributed to her resignation:

I have watched as my job requirements swung away from a focus on the children, their individual learning styles, emotional needs, and their individual families, interests, and strengths to a focus on testing, assessing, and scoring young children, thereby ramping up the academic demands and pressures on them. ... I have changed my practice over the years to allow the necessary time and focus for all the demands coming down from above. Each year there are more. Each year I have had less and less time to teach the children I love in the way I know best — and in the way child development experts recommend. I reached the place last year where I began to feel I was part of a broken system that was causing damage to those very children I was there to serve.¹¹⁴

Even though many teachers report dissatisfaction with increased accountability, the research about the effect of accountability on teacher retention is limited, with mixed results. One study of the impact of accountability policies on teachers in Florida found that teacher attrition increased in schools that experienced a negative accountability “shock” due to a change in the grading system, even when controlling for student demographics, socioeconomic status, test scores, and disciplinary incidents.¹¹⁵ The study found some evidence that teacher attrition decreased in schools that experienced a positive change in their rating.

A study that looked across states during the 1990s, when accountability systems were generally less focused on sanctions than after the introduction of NCLB, found that teachers in states with what the authors identified as stronger accountability systems were just as likely to indicate that accountability reforms were important in their attrition decision as teachers in states with weaker accountability systems.¹¹⁶ The study did not find an increase in attrition rates after state accountability systems were introduced between 1993–94 and 1999–2000. In a review of the studies exploring attrition and accountability, the authors note that the research to date “suggests that accountability has not dramatically changed the career choices of teachers overall, but that it has likely increased attrition in schools classified as failing relative to other schools” and that the teachers leaving are not the least-effective teachers.¹¹⁷

Accountability Systems in Hard-to-Staff Schools

The literature suggests that attrition appears higher in schools designated as low performing under accountability systems, which are very likely among those already struggling most to retain teachers. A study in North Carolina found that the state’s accountability system made it more difficult for all schools to retain staff, but that the negative effects on teacher retention were greater in low-performing schools.¹¹⁸ These studies suggest that, ironically, a policy intended to improve education for low-achieving students may have had the opposite effect by making it harder for their schools to retain teachers. Moreover, other studies suggest that teachers may worry about the security of their jobs, particularly if they teach in schools with low-performing students, which are more likely to encounter repercussions from the state.¹¹⁹

Accountability systems and their impact on schools designated as low performing have also had a negative impact on the ability to retain teachers of color. In 2012, in an era of school closings and layoffs in many cities, the rate of involuntary turnover was much higher for Black teachers than for all other teachers, constituting nearly a

third of all turnover — about 30% of all who left their schools did so involuntarily, but the percentage was higher for Black teachers, with more than 50% leaving involuntarily.¹²⁰

A report on One Newark, a school restructuring plan led by the New Jersey Department of Education to improve Newark Public Schools, found that schools targeted for closure, turnaround, or replacement by charter schools in 2012–13 — processes often involving massive staffing changes — served higher shares of Black children and were disproportionately staffed by Black and Latinx teachers. They were not, however, necessarily the worst-performing schools. Based on the analysis in the report, Black teachers were twice as likely to have to reapply for a teaching position as were White teachers in similar school settings. Latinx and Native American teachers also were more likely to have their employment disrupted. The teachers employed in charter schools in the district were far more likely to be White than Black, Latinx, or Native American and were more likely to have fewer than five years of experience.

Resources for Teaching and Learning

Schools with sufficient instructional materials and supplies, safe and clean facilities, reasonable student-to-teacher ratios, and adequate support personnel can positively affect teacher retention rates.¹²¹ Studies have found that the availability of adequate instructional resources (e.g., books, paper, student supplies, technology access) influences morale and teachers' self-perceived effectiveness.¹²² A recent analysis of the 2011–12 Schools and Staffing Survey found that of the public school teachers who left the profession and said they would consider returning, 61% reported that smaller class sizes would be extremely or very important in their decision to return.¹²³ Such factors as extremely large pupil-staff ratios and smaller levels of expenditures for teaching materials have been found to be associated with higher staff turnover.¹²⁴ Similarly, inadequate and unsafe facilities contribute to teachers' job dissatisfaction and attrition.¹²⁵

Inevitably, a lack of books, a library, computers, Internet access, reliable photocopier machines, and other resources limits the kind of teaching and learning that can occur.¹²⁶ Although many teachers do their best to cope with resource deficits — often spending hundreds of dollars of their own money to backfill shortages — many also become demoralized when required to teach in such conditions.¹²⁷ Although these factors are not typically the primary reason for teachers' decisions to change schools or leave the profession, they do influence school morale and teachers' self-perceived effectiveness and career decisions.¹²⁸ As Rebecca Fulop, a science teacher in California, described her frustration:

I signed up for reduced pay in my life to make a difference in students' lives. And the worst thing that I deal with is this daily frustration that I can't be there for all of my students the way I want to, because I don't have enough time, resources, and capacity to do it.¹²⁹

Brenda, a mid-career entrant into the profession who taught Spanish in an urban middle school, agreed:

You know, it's not like I'm in awful conditions, like rats running around the room or anything. But [in the nonprofit I came from], if I needed to photocopy something, there was a photocopier there. There were computers. There were phones. And to think that we expect to educate kids

not having any — we have one copier at the school. And of course, no phone in the rooms, that goes without saying. So put that together with just feeling kind of beaten down and so exhausted at the end of the day, every day. I think it's a wonder that anyone stays.¹³⁰

Resources in Hard-to-Staff Schools

Hard-to-staff schools also tend to suffer from inadequate school resources that contribute to teacher retention, albeit not as significantly as school leadership and climate. Nonetheless, one study using survey data from K–12 public school teachers in Washington, D.C., found that teachers' plans to leave their school were associated with the teachers' rating of their school's facilities.¹³¹ Another study noted that high-poverty schools tend to lose teachers when they are assigned large classes.¹³²

Working Conditions — Potential Policy Solutions

Investing in the Development of High-Quality Principals

Improving principal preparation may contribute to more effective school leaders who are able to attract and retain talented teachers. Because of the importance of school leadership in teachers' recruitment and retention decisions, local and state policies can invest in the development of high-quality principals who work to include teachers in decision-making, foster positive school cultures, and create learning communities that can have a significant positive impact on teacher retention.¹³³ A rigorous study of a principal preparation program aimed at developing such leaders found that it reduced both teacher and principal turnover.¹³⁴ The randomized control trial of 126 public schools serving third through fifth grade in Michigan's rural schools analyzed schools that received either McREL's Balanced Leadership Professional Development (BLPD) program or whatever the district typically provided to principals. The BLPD program, for school leaders, including principals, focuses on the following:

- » Shaping a vision of academic success for all students
- » Creating a climate hospitable to education
- » Cultivating leadership in others
- » Improving instruction
- » Managing people, data, and processes to foster school improvement

The program was staffed by a full-time team of training consultants with school-level experience. The independent study found a "16 percentage-point reduction in principal turnover and a five percentage-point reduction in teacher turnover in treatment schools," meaning that teachers and principals who did not participate in BLPD but worked with those who did were less likely to leave their school. The study found even greater effects for teachers and principals who participated in the program, with a "seven percentage-point reduction for teachers and a 23 percentage-point reduction for principals."

State and federal policies can also support the development and analysis of principal preparation programs. Research has established the core features of effective principal preparation programs include research-based content, curricular coherence, problem-based learning methods, field-based internships, the existence of cohort groups, and close collaboration between programs and districts.¹³⁵ Effective programs provide principals with an opportunity to learn by practicing aspects of the daily tasks of the principalship, such as learning to listen to and include teachers in school-site decision-making. States could encourage the widespread development of these high-quality principal preparation programs by incorporating these elements into policy through program accreditation or state licensing standards, a practice that several states have already undertaken.¹³⁶

States also can provide funding for principals to receive training. States such as Mississippi have funded training grants for principals through a sabbatical program that enables them to participate in internships that strengthen their preparation, leveraging funds from the U.S. Department of Education's Fund for the Improvement of Postsecondary Education program.¹³⁷ States also can leverage funds under Title II of ESSA, which provides funding to support high-quality programs for principal preparation, including school-leader residency programs, offering a full year of clinical training.¹³⁸ In a notable change, the law now permits states to set aside 3% of their Title II formula funds to strengthen principal quality, including by investing in principal recruitment, preparation, induction, and development.¹³⁹ As states continue to revise and refine their state plans under ESSA, they may want to consider taking advantage of these potentially more targeted funds to make strategic investments in their school-leader workforce.

State and federal policies also can support efforts to recruit promising candidates for school-leadership positions, something that has become increasingly important as the challenges of the job often discourage strong candidates from entering the field.¹⁴⁰ State and federal entities could offer grant funding and technical assistance for competitive service scholarship programs for principal preparation to attract exemplary candidates to the field.¹⁴¹ For example, the North Carolina Principal Fellows Program offers \$20,000 annually in scholarship loans to attract outstanding aspiring principals to the field, providing two years of preparation that encompasses both coursework and a yearlong, full-time internship under the mentorship of an expert principal.¹⁴² In exchange, principal candidates commit to four years of service as a principal or an assistant principal in one of the state's public schools.¹⁴³ The program has trained more than 1,200 Principal Fellows since its inception in 1993; as of 2007, more than 12% of the state's principals and assistant principals were graduates of the program.¹⁴⁴ One source of funds to support these types of programs is ESSA's School Leader Recruitment and Support Program, which authorizes competitive grants to recruit and train principals for high-need schools.¹⁴⁵

Data to Guide Improvements in Working Conditions

Surveys and additional data collection tools can help district and school administrators better understand current teacher perceptions of their professional environment. More than 18 states and many school districts have implemented teacher surveys to determine the quality of a school's environment.¹⁴⁶ The Teaching, Empowering, Leading, and Learning (TELL) survey is one of the most commonly used assessment tools. Although there is limited research on the impact of these types of surveys on improving teaching and learning conditions, an analysis of the TELL survey's impact on policy and practice in North Carolina shows promising results.¹⁴⁷ For example, the

results of North Carolina’s TELL survey spurred statewide education initiatives ranging from providing five hours of weekly planning for teachers to increasing funding for professional development.

Another study of a representative sample of 25,135 K–12 teachers in 2008 used a subset of questions from the TELL survey in Massachusetts to identify the elements of working conditions that predicted teacher satisfaction, teacher career intentions, and student achievement growth.¹⁴⁸ The study found that teachers’ responses to TELL questions about the school’s culture, the principal’s leadership, and relationships among colleagues most strongly predicted teachers’ job satisfaction and career plans. The study also found that the responses on this subset of TELL questions were associated with student achievement growth even when controlling for student demographics. This finding suggests that responses from survey questions, such as those from the TELL survey, could help districts identify and work with schools whose working conditions do not support teacher retention and student achievement.

The use of these kinds of tools is encouraged under ESSA, which allows states to select additional indicators beyond test scores for measuring student outcomes, school functioning, and students’ opportunities to learn. Surveys on teaching and learning conditions may be considered one measure in a multiple-measure school accountability system.¹⁴⁹ In addition, funding under Title II of ESSA can be used to develop “feedback mechanisms to improve school working conditions, including through periodically and publicly reporting results of educator support and working conditions feedback.”¹⁵⁰ As the federal government and the states work to implement ESSA over the coming years, accountability systems may begin to have a positive, rather than a negative, impact on teacher retention, depending on what states decide to do in setting up these systems.

Incentivize and Provide for Greater Collaboration

Schools that foster collegial and professional working environments typically empower teachers to direct and collaborate in their professional learning. A survey of teachers in their first three years of experience in Michigan and Indiana found that novice teachers who intended to remain in their schools were generally working in schools characterized by a good professional fit in terms of interests and goals, relational trust, and collective responsibility among colleagues for setting expectations, maintaining discipline, and helping one another.¹⁵¹

Smaller qualitative studies of rural STEM (science, technology, engineering, and mathematics) teachers¹⁵² and teachers in Teach for America¹⁵³ have similarly found that close relationships with supportive school colleagues and administrators strongly contributed to teachers’ decisions to remain in the profession.

More collaborative work environments in which professional learning is emphasized can have a positive effect on teacher retention. For example, a study surveying urban teachers in a Midwest city with four, five, or six years of teaching experience found that relationships with coworkers, support, and collaboration with fellow teachers positively influenced job satisfaction and teachers’ decisions to remain teaching at their school.¹⁵⁴ As a teacher in the study explained,

[We are] a shared learning community. We are very involved with each other in planning, learning, ... lots of team preparation. We all hold the same vision. We believe in our mission and work together to achieve that.

In a qualitative study of novice teachers, one teacher, Victoria, described the formal and informal school structures that contributed to the collegial and supportive school environment that encouraged her to remain in the school, including schoolwide and grade-level meetings about topics ranging from how to handle bullying to how to assess learning.¹⁵⁵ Victoria also described that she met with her grade-level team weekly to review the prior week and plan for the next. Victoria emphasized the importance of teamwork in establishing the supportive, professional school culture:

We have a good team. The third grade team. We try to plan together. We teach pretty much the same curriculum, but we, within our own room, we do our own style of teaching it. So we stay with the same units, and we plan the same field trips. So that part is good. You feel like you're supported. So that was good, especially last year. ... And then this year, I feel like I can stand on my own two feet ... and the team is good; it's strong. ... I do my own thing, but I'm also a team player, and that's what you need here. And you can't come here and say, "Well, I'm going to do everything my way" and survive here. It's a lot of teamwork and you have to be a team player.

A culture of collaboration and shared decision-making does not spontaneously occur within schools. Instead, schools that foster these types of professional working environments typically empower teachers to direct and collaborate in their professional learning through thoughtfully designed school structures. Schools with lower retention rates have been found to do the following:

- » Cultivate a "strong sense of collective responsibility, where there is a shared commitment among the faculty and staff to improve the school so that all students can learn."¹⁵⁶
- » Promote a school culture "characterized by mutual trust, respect, openness, and commitment to student achievement."¹⁵⁷
- » Establish time for teachers to collaborate, plan, examine student work, and engage in self-reflection.¹⁵⁸
- » Provide expanded roles for teachers.¹⁵⁹
- » Support shared decision-making so that "teachers feel they have control over various aspects of their work."¹⁶⁰

Collegial Relationships in Hard-to-Staff Schools

In addition to the principles meant to support collaboration across all schools, research highlights factors that are important for teachers in high-poverty, collegial schools:

- » An inclusive environment characterized by respect and trust among colleagues
- » Formal structures that promote collaboration
- » The presence of a shared mission among teachers¹⁶¹

Because working conditions are learning conditions, both teachers and students are impacted when schools struggle to support collegial and collaborative culture among staff and work under accountability pressures. Further, working conditions can play an outsized role in supporting teacher retention and can be impacted by efforts to build the capacity of school leadership.

Systematic and sustained collaboration among teachers requires changes in school design, scheduling, and resource allocation so that teachers have the time necessary for productive collaboration.¹⁶² Schedules must allow for regular blocks of time (e.g., common preparation periods) for teachers of the same subject or who share groups of students to collaborate and plan curricula together.¹⁶³ For example, redesigned high schools have secured 7 to 10 hours of shared time per week by hiring more teachers and fewer nonteaching personnel; offering a more streamlined curriculum with fewer low-enrollment courses; organizing time in longer blocks, thus requiring reduced teaching loads; and using time when students are involved in other activities (e.g., a club activity) for teacher collaboration.¹⁶⁴

Extra resources may be required to hire additional staff and/or compensate teachers for professional-learning time scheduled to take place after their contract day or school year has ended.¹⁶⁵ The federal government could consider reinstating the former federal Smaller Learning Communities grant, which provided funds to public high schools with more than 1,000 students to, among other things, offer common planning time for teachers who share the same students or teach the same subject.¹⁶⁶ The grant also funded projects that provided collaborative professional development for teachers, including coaching and classroom observations amongst teachers.

New Jersey is an example of how states can support schools in developing greater collaboration.¹⁶⁷ The state enacted a series of regulations that required 100 hours of professional learning for teachers annually, along with mentoring and induction for beginning teachers. Since 2009, all New Jersey schools have a School Professional Development Committee, which includes three teachers and an administrator that create professional development plans for the school. The state has supported schools to create professional learning communities and has offered training to principals for this purpose. New Jersey's State Action for Educational Leadership Project supports professional development for school leaders and focuses on how to create productive, collaborative school environments that foster continuous improvement.

Professional Learning

Both teacher effectiveness and an individual teacher's sense of efficacy play an important role in supporting teacher retention. Teachers who are effective and feel successful in their work are more likely to stay in the classroom and more likely to support the work of other teachers within a school.¹⁶⁸ The different supports provided throughout a teacher's career play important roles in supporting the continued effectiveness and efficacy of that teacher. Specifically, preparation, induction, mentoring, and professional development all work in tandem to develop teachers' skills along a career arc that supports their continued impact on student learning.¹⁶⁹

This section seeks to make the connections across the systems of supports for teachers clearer by conceptualizing each of these phases under the umbrella of ongoing professional learning. It begins by looking at the research underlying quality teacher preparation, induction, mentoring, and professional development, and then it highlights the impacts each can have on teacher effectiveness and teacher retention. Further, special attention is paid to how specific supports can be utilized to better recruit and retain a more racially diverse teacher workforce. Finally, this section presents research showing that sharing best practices provides impactful learning experiences for novice and experienced teachers.

Teacher Preparation

The first step in an arc of professional learning is the preparation experiences provided to new teachers.¹⁷⁰ Research demonstrates that better-prepared teachers are both more effective and more likely to stay longer. Graduates of quality teacher preparation programs are often rated higher by their supervisors and contribute more to student learning.¹⁷¹ Further, research highlights the importance of teachers' feelings of self-efficacy in supporting both their effectiveness and retention, as well as the role of preparation in supporting feelings of self-efficacy among new teachers.

One study that explored the connections between preparation experiences, feelings of self-efficacy, and plans to remain in teaching found that the extent to which teachers felt well prepared when they entered teaching was significantly correlated with their sense of teaching efficacy and their plans to remain in teaching. Further, the study found that teachers who were prepared in preservice programs felt significantly better prepared across most dimensions of teaching than those who entered through alternative programs, usually lacking student teaching, or without preparation.¹⁷²

In addition to the impacts of feelings of self-efficacy on new teacher retention, several studies have found that teacher turnover is higher for those who enter the profession without adequate preparation. Studies of the relationship between teacher preparation and teacher turnover suggest teachers with little to no pedagogical preparation are two to three times more likely to leave the profession than those with the most comprehensive preparation, which includes student teaching, formal feedback on their teaching, and multiple courses in student learning and teaching.¹⁷³ These studies highlight that there is a continuum of preparation along which individuals enter the profession that is associated with lower levels of teacher attrition and that the best-prepared teachers are also, typically, those who stay the longest.

Despite the prevailing evidence that preparation does indeed impact teacher retention, there remains large variation in the types of preparation experiences available to individuals seeking to enter teaching. Not all of these experiences are predictive of future teacher quality or retention. A recent large-scale analysis that controlled for school and teacher characteristics, subject area, workplace conditions, and district salaries found that teachers who enter the profession through alternative certification pathways are 25% more likely to leave their schools than are teachers who entered the profession through a regular certification program, even after all the other factors are taken into account.¹⁷⁴ Although alternative certification programs come in a range of models, some of them fairly rigorous, research shows that teachers who are alternatively certified typically receive less preservice coursework preparation than those who enter through traditional programs and are less likely to have done any student teaching before they are placed as teacher of record in the classroom. Those who did have some student teaching experience typically taught under the wing of an expert for only a few weeks.

As a consequence, most studies find that teachers who enter without having completed preparation are less effective with students when they begin teaching than teachers who have been fully prepared before they begin. Those who stay long enough to complete a preparation program typically grow in effectiveness (as do most teachers over the first few years of teaching); however, large proportions leave in the first three years, before they have had a chance to become effective.¹⁷⁵ Studies comparing outcomes across alternative routes have found that, overall, preparation programs with more coursework and student teaching have stronger outcomes than those that offer less training and support.¹⁷⁶

Quite often, teachers enter on emergency permits or choose alternative certification pathways because, without financial aid, they cannot afford to be without an income for the time it takes to complete a teacher training program.¹⁷⁷ This may be particularly true for teachers of color, who are more likely to enter the profession through an alternative route. State data reported in compliance with Title II of the Higher Education Act show that enrollments in both traditional and alternative certification programs have been declining over the last decade and also that candidates of color were 44% more likely to enroll in an alternative certification program in 2014–15 than in 2008–09. In 2014–15, more than 1 in 5 candidates of color enrolled in an alternative certification program, compared with about 1 in 10 White candidates.¹⁷⁸ To best support quality teachers and a more racially diverse teacher workforce, a focus on strengthening teacher preparation is needed across all institutions and preparation programs.

Features of Teacher Preparation That Support Retention

Recent research points to key features of quality teacher preparation that not only promote teacher effectiveness and impact student learning, but also support teacher retention. In a study from the University of Pennsylvania, Ingersoll and colleagues found that the amount and type of pedagogical preparation new teachers had experienced was strongly associated with retention. Teachers who took more courses in teaching methods and strategies were significantly less likely to depart, and teachers who took three or four method courses were 36% less likely to leave than those who took no such courses. Researchers also found that first-year teachers who had a minimum of 12 weeks or more of practice teaching prior to their employment were more than three times less likely to depart than those who had no practice teaching at all. In addition, having any of the four other types of pedagogical preparation — preparation in how to select and adapt instructional materials, coursework in learning theory or child psychology, observation of others' classroom teaching, and formal feedback on their own teaching — was significantly and strongly related to whether or not new teachers left teaching.

In summary, although degree, route, and certificate were not, by themselves, significant predictors of retention, the kind of training program was. New teachers who received more training in teaching methods and pedagogy, with a particular emphasis on practice teaching and observation of other classroom teaching, and received feedback on their own teaching were far less likely to leave teaching after their first year.¹⁷⁹ A final finding from this study worth highlighting within the context of teacher shortages is that, of all subject area teachers, mathematics and science teachers were the least likely to have received these retention-supporting experiences during their preparation.

Features of Teacher Preparation That Support Student Achievement

Additional research has helped draw out the features of quality preparation associated with improved student achievement in both math and English language arts (ELA). In a study that estimated the effects of features of teachers' preparation on teachers' influence on student test score performance in math and ELA, researchers found that preparation directly linked to practice demonstrated the strongest benefits to teachers in their first year. Specifically, in looking at the preparation of teachers working in a large, diverse urban school district, researchers found that teacher preparation that focuses more on the work of the classroom and provides opportunities for teachers to study what they will be doing produces teachers who are more effective in their first year. Specifically, programs that provided more oversight of student teaching experiences, required a capstone project, or provided teachers with the opportunity to study the district curriculum and engage in the actual practices involved in teaching all produced teachers that could show greater student gains during their first year.¹⁸⁰

In looking across the research exploring the connections between teacher preparation and teacher achievement and retention, specific preparation experiences become much more salient. Specifically, the following types of opportunities significantly increase the impact of new teachers on student achievement and support their continued work in the profession. These preparation experiences include:

- » Opportunities to practice teaching and develop important knowledge and skills through actual classroom activities

- » Opportunities to build the knowledge of teaching, specifically teaching methods and strategies, and study actual classroom practice
- » Opportunities to learn under the guidance of engaged program faculty and expert cooperating mentors who support a tailored classroom learning experience

Additional Features of Teacher Preparation That Support Achievement and Retention

In addition to these core features that support new teacher effectiveness and retention, research has also highlighted key features of quality teacher preparation that include additional practices connected to the three core opportunities highlighted above. These practices help bring together the depth and vision behind intentional coursework and interwoven clinical practice experiences. Specifically, preparation that promotes teacher quality includes the following:

- » A shared vision of good teaching that is consistent in courses and clinical work
- » Well-defined standards of practice and performance that are used to guide the design and assessment of coursework and clinical work
- » A common core curriculum grounded in substantial knowledge of development, learning, and subject matter pedagogy, taught in the context of practice
- » Carefully mentored, extended clinical experiences (at least 30 weeks) that reflect the program's vision of good teaching interwoven with coursework
- » Strong relationships, based on common knowledge and beliefs, between universities and reform-minded schools
- » Extensive use of case study methods, teacher research, performance assessments, and portfolio examinations that relate teachers' learning to classroom practice.¹⁸¹

A shared vision of good teaching that is consistent in courses and clinical work

At the foundation of all high-quality and comprehensive teacher preparation is a clear understanding of what good teaching looks like. Across high-quality teacher preparation programs, program faculty and leadership connect their shared vision for quality teaching with the daily learning opportunities for new teacher candidates. Faculty and professors model effective pedagogies throughout coursework and fieldwork that align with the expectations for quality teaching. In addition to designing learning experiences that reflect this broader vision, programs ensure coursework and opportunities to learn in classrooms also support the development of quality teaching practices. Both the vision for quality teaching and the standards that help make this vision salient are important program elements that support getting quality new teachers into the profession.

Well-defined standards of practice and performance that are used to guide the design and assessment of coursework and clinical work

Well-designed standards of practice and performance can both articulate the shared vision of quality teaching and shape the design of program coursework, clinical placements, and performance assessments meant to assess candidate progress.

Research on the use of standards to shape teacher development and assessment suggests that the clarity and salience of standards and performance tasks against which candidates are judged and the extent to which they represent research-based elements of teaching may help organize teacher learning in effective ways. In addition, the level of rigor imbedded in the expectations a program holds for teacher candidates — as represented by program standards and course expectations — may signal program quality.¹⁸²

A common core curriculum grounded in substantial knowledge of development, learning, and subject matter pedagogy, taught in the context of practice

Effective teacher preparation coursework is deeply connected to the design and implementation of a candidate's fieldwork and centers on three key principles grounded in the science of learning and research into effective teaching practices:

- » Knowledge of learners and how they learn and develop within social contexts
- » An understanding of the subject matter and skills to be taught in light of the social purposes of education
- » An understanding of teaching in light of the content and learners to be taught, as informed by assessment and supported by a productive classroom environment

Carefully mentored, extended clinical experiences (at least 30 weeks) that reflect the program's vision of good teaching interwoven with coursework

Research points to the key role significant clinical training plays in comprehensive preparation, and for preparation programs, there are specific elements to attend to in designing fieldwork meant to work in tandem with a program's coursework.¹⁸³ Elements of this significant and quality clinical training include opportunities to observe and experience high-quality teaching practice and to enact those practices over an extended period of time with students. In addition, candidates in these training experiences have the opportunity to work with a more expert mentor and receive close guidance and feedback.¹⁸⁴ Teachers who receive this kind of preparation are more effective and more likely to stay in the profession.¹⁸⁵

Strong clinical training is an essential element of high-quality teacher preparation and strongly associated with lower rates of teacher turnover. An analysis of the nationally representative Schools and Staffing Survey found that new recruits who had a semester or more of practice teaching prior to employment were more than three times less likely to leave teaching after a year than those who had no practice teaching.¹⁸⁶ Further analysis that examined other aspects of new teacher preparation found that beginning teachers who had received comprehensive preparation (i.e., observing others teaching, student teaching a full semester, receiving feedback, taking courses in teaching

methods, learning theory, and selecting instructional materials) were two-and-a-half times less likely to leave teaching after a year in the profession than teachers with little or no pedagogical training or practice teaching.¹⁸⁷

The impacts of comprehensive preparation and the strong clinical training that is a fundamental feature of such preparation go beyond helping to stem turnover in schools. Research shows strong clinical training is also associated with teacher effectiveness and improved outcomes for students. Candidates are more likely to learn from clinical practice experiences that are tightly connected to their coursework and that allow them to reinforce, apply, and synthesize concepts learned through their coursework.¹⁸⁸ In addition, clinical experiences can further support preparation program coursework and goals by providing candidates with the opportunities to get to know diverse learners and families well and to build their skills in meeting the needs of all students. Clinical practice can further enrich coursework that happens alongside the experiences gained working with students and an expert mentor or cooperating teacher.¹⁸⁹

Further, because teachers of color are more likely to enter the profession through alternative routes that typically offer limited — if any — student teaching, a focus on improved clinical experiences holds increased promise for candidates of color.¹⁹⁰ Ensuring that all routes into the profession include intensive clinical practice increases the likelihood that new teachers will have received the kind of training and support required to help keep them in the classroom long term and buoys efforts to prepare and retain more teachers of color.¹⁹¹

Strong relationships, based on common knowledge and beliefs, between universities and reform-minded schools

Increasing evidence demonstrates the importance of partnerships in supporting strong teacher preparation.¹⁹² Specifically, in building reciprocal relationships with K–12 districts, preparation programs can help support more intensive and enriching clinical practice experiences. Learning to practice in practice, with expert guidance, is essential to becoming a great teacher of students with a wide range of needs. Many programs create this possibility through professional development schools (PDSs) that, like teaching hospitals, offer yearlong residencies under the guidance of expert teachers. The PDSs seek to develop state-of-the-art practices in novices and to train them in the classrooms of expert teachers while the novices are completing coursework that helps them learn to teach diverse learners well. These schools also engage in intensive professional development for veteran teachers and may become hubs of professional development for their districts. This support for professional learning across a school, for new and veteran educators, includes elements of high-quality professional development cited later in this report.

In highly developed PDS models, curriculum reforms and other improvement initiatives are supported by the school and often the district; school teams involving both university and school educators work on such tasks as curriculum development, school reform, and action research; university faculty are typically involved in teaching courses and organizing professional development at the school site and may also be involved in teaching children; school-based faculty often teach in the teacher education program. Most classrooms are sites for clinical experience placements, and cooperating teachers are trained to become teacher educators, often holding meetings regularly to develop their mentoring skills. Candidates learn in all parts of the school; they receive more frequent and sustained supervision and feedback and participate in more collective planning and decision-making among teachers at the school.

Research on PDSs associated with both four- and five-year teacher education programs has also shown some promise in improving teacher retention.¹⁹³ A longitudinal study of about 1,000 graduates compared the retention rates of teachers prepared in PDS programs versus traditional elementary education programs over eight years, between 1996 and 2004.¹⁹⁴ The study found that, controlling for teacher background and academic qualifications, teachers prepared in PDS programs had higher rates of entry into teaching and retention in the teaching profession. Given the range of PDS models included in this and other studies, such findings are suggestive only, and more research is needed to evaluate what kinds of models and features influence teacher commitment and practice for various kinds of prospective teachers. In addition to the promise shown in retaining new teachers, veteran teachers working in highly developed PDSs have reported changes in their own practice and improvements at the classroom and school levels as a result of the professional development, action research, and mentoring that are part of the PDS.¹⁹⁵

The importance of these types of reciprocal partnerships, as reflected in the practices of PDSs, are indicative of a broader need across the teacher preparation system to build relationships between the institutions that prepare teachers, the schools the help train the candidates and employ the new teachers, and the policy institutions that set the parameters under which the system operates. Beyond the relationships, incorporating these preparation practices into all programs ensures that all new teachers have access to quality learning opportunities and are prepared to support the learning of all students.

Extensive use of case study methods, teacher research, performance assessments, and portfolio examinations that relate teachers' learning to classroom practice¹⁹⁶

In combination with the design of clinical experiences and integrated coursework, recent research into the practices of high-performing teacher preparation programs highlights how teacher preparation performance assessments help candidates bring together and practice what they are learning and help instructors see what their candidates can do as well as what they know. These assessments — which typically require a candidate to plan a lesson mapped to the state's learning standards, teach it, assess students' learning, differentiate for diverse students' needs, and reflect on their teaching — enable instructors, supervisors, and cooperating teachers to ensure that learning is focused and appropriate supports are provided in the learning-to-teach process.¹⁹⁷

In addition, preparation programs utilize performance assessments as a key measure of progress toward competencies that support the learning of students from diverse backgrounds and support long-term retention of quality teachers. When implemented well, preparation program faculty report strong benefits from using results of teacher performance assessments to improve their practice and their programs.¹⁹⁸ Beyond serving as a predictor of future teacher quality, performance assessments have also been shown to help beginning teachers develop their practice well beyond the actual assessment experience.¹⁹⁹

Teacher Preparation — Potential Policy Solutions

To support the adoption of the programmatic features outlined above and closely associated with teacher retention and effectiveness, teacher preparation systems should prioritize licensure and accreditation policies that ensure all future teachers will have access to the knowledge they need in order to teach all learners well.

The Role of Professional Standards

Strong standards for professional licensing and program accreditation form a foundation for the alignment of systems that connect teacher preparation, early career development, and continued growth and advancement. A model of these strong standards for teachers comes from the National Board, which was created in 1987 and began certifying accomplished veteran teachers in the 1990s. The National Board built on research about learning and teaching — and the wisdom of highly respected practitioners — in developing standards articulating what expert teachers should know and be able to do.

The standards — and the associated performance assessments, which include teacher plans, classroom videotapes, commentaries about practice, and evidence of student learning — support a view of teaching as complex and responsive to students' learning pathways. By examining teaching in the light of learning, the National Board put teacher effectiveness at the center of practice. Many studies have since found that the National Board's assessment process identifies teachers who are more effective than others²⁰⁰ and that teachers' participation in the assessment process stimulates changes in their practice.²⁰¹ Although more than 100,000 teachers have been certified through the National Board's assessment, this voluntary process has reached only about 3% of the teaching force.

Carrying these kinds of standards and assessments into the licensing process for beginning teachers could have much more systemic effects. The National Board's standards were carried into initial teacher licensing standards by the Interstate New Teacher Assessment and Support Consortium (INTASC), a consortium of state education agencies and higher education institutions. These were recently revised to incorporate the implications of new student standards across the states.

The INTASC standards have been adopted or adapted by more than 40 states and integrated into licensing and accreditation standards for candidates and programs. The standards, developed by the National Board and the INTASC, take into explicit account the need for teachers to respond to a student body that is multicultural and multilingual and that includes diverse approaches to learning. They define teaching as a collegial, professional activity that responds to considerations of subjects and students. In addition, the move toward performance-based standards placed the focus on what teachers should know, be like, and be able to do rather than listing the courses that programs should offer or that teachers should take in order to be awarded a diploma, license, or certificate. This shift toward performance-based standard-setting is in line with the approach to licensing taken in other professions, which have used licensing tests and accreditation practices to clarify what competence means, placing more emphasis on the abilities professionals should develop than on the hours they spend taking classes.

Performance-based accreditation

Stronger standards for beginning teacher preparation aligned with the programmatic qualities identified by research to support new teacher retention and effectiveness can further inform shifts in the way preparation programs gain approval to operate and begin training teachers. Accreditation, designed a century ago as a process in which institutions describe their work in relation to common questions or standards (typically at great length) and display it in brief site visits, has value as a means for guiding self-assessment and reflection. However,

in most states and nationally, it has not been a powerful tool for setting a floor on the quality of teacher education or for moving the field forward in a common way to more powerful practices.

Although all states approve programs and a few require or encourage national accreditation, neither process has incorporated and enforced clear requirements for the kinds of practices identified with teacher preparation that supports teacher retention and effectiveness. Even when these practices are present in some university programs, those same universities often operate other, weaker programs that do not offer the same features. Despite the fact that the achievement of goals is not universal across programs, accreditors commonly approve the program provider, allowing low-quality programs to get a free pass.

Two needed changes in accreditation, then, are the much clearer incorporation of these features of quality teacher preparation programs into the requirements for approval and the application of these standards universally to all programs. In California, for example, new standards for teachers require more extensive and better-supported clinical experiences for interns and student teachers, as well as stronger preparation for all teachers, including those who enter through alternate routes. These standards require:

- » Content pedagogy focused on deeper learning
- » Classroom management focused on educative and restorative practices, including social-emotional learning
- » How to teach diverse learners, including English learners and students with disabilities
- » How to work effectively with parents
- » How to reflect on and continuously improve one's own practice²⁰²

Further, to enforce standards universally, it is critical to know whether the standards have indeed been met, a challenging feat when the evidence consists of reams of paper describing self-reported practice and a short visit that is guided by the institution being reviewed. Because of this challenge, there is currently a move across professions — ranging from medicine and engineering to occupational health and safety — toward a form of performance-based accreditation, which depends on demonstrations that graduates have the required knowledge, skills, and dispositions — usually through surveys about their training and observations of their practice.

These approaches are also beginning to take hold for teacher education accreditation. For example, in California, a newly launched accreditation system will take into account candidate pass rates on the new performance assessments that examine what candidates can do to support student learning, rather than merely what courses they have taken; results from graduate surveys about whether they have experienced strong learning opportunities like those we have described (both as they graduate from preparation and after they have been teaching for two years); and results from surveys of mentors and employers. The new system will examine the conditions of clinical work — including the kinds of supports, coaching, and learning opportunities provided — as well as the specific content of courses, including candidates' views of their quality. Already, some programs have changed substantially or ceased operating as a result of the standards.

Teacher preparation standards and accreditation in North Carolina

Stretching back to 1983, North Carolina undertook reforms through the Elementary and Secondary School Reform Act, which increased standards for entering teaching and school administration. In addition, the state increased standards for educator certification and for the approval of schools of education. This bill laid the groundwork for a series of initiatives throughout the 1980s, which were expanded in the 1990s.

Following the Elementary and Secondary School Reform Act, the state increased licensing requirements for teachers and principals, requiring tests of subject matter and teaching knowledge, as well as stronger training. In addition to these more rigorous standards for teachers, the state also required all publicly funded schools of education to become professionally accredited by the National Council for the Accreditation of Teacher Education, which caused many colleges to have to improve their curriculum and increase their investments in preparing teachers in order to stay in business.

Studies in North Carolina have found that teachers prepared in the state university system subject to these reforms are more effective than those who enter from out of state or through the state's lateral-entry route, which requires no preservice training. They are also most likely to stay in teaching.²⁰³ Another North Carolina study joined studies in several other states in finding that student achievement gains were significantly greater for students whose teachers had the strong academic and teaching preparation and lengthier experience in teaching that the state's policies have tried to leverage.²⁰⁴

High-Retention Pathways

In addition to expanding the impact of all teacher preparation programs by ensuring they provide a high-quality preparation experience for all new candidates grounded in the best practices proven to promote new teacher efficacy and to have a positive impact on student achievement and long-term retention, there exist opportunities to expand the availability of pathways into the profession that have been proven to promote the retention of new teachers. These high-retention pathways take different shapes, but, in general, they incorporate many of the elements highlighted above in high-quality teacher preparation programs and add financial supports and service requirements that promote retention.

The growth of pathways that can support retention is fundamental to supporting high-quality preparation for all future teachers. The following section explores teacher residencies and other Grow Your Own (GYO) programs as a means to expand pathways into the profession that support long-term teacher retention and effectiveness.

Teacher residencies

Newly emerging teacher residencies, which recruit candidates to work as paid apprentices to skilled expert teachers while completing highly integrated coursework, have been successful in recruiting talented candidates into high-need fields and school districts and helping them become effective and stay. By combining comprehensive, financially supported preparation with a post-program service requirement, teacher residency programs can keep candidates in teaching longer, thereby reducing high rates of new teacher attrition and the subsequent need to hire more new teachers.

Teacher residencies are rigorous teacher preparation programs modeled on medical residencies; they offer an accelerated path to teacher certification through district-university partnerships that ensure high-quality pedagogical training and clinical practice. Residents receive funding for tuition and living expenses, plus a stipend or a salary, while they apprentice with a master teacher in a high-need classroom for an entire school year and take related courses that earn them a credential and often a master's degree. They repay this investment by committing to teach in a hard-to-staff position in the sponsoring district for at least three to four years after their residency year while they receive additional mentoring.

Research on the impact of the residency model suggests that graduates of teacher residency programs are effective in the classroom as judged by principals who hire them and as evidenced by their students' performance.²⁰⁵ Research also suggests that, on average, residents are more racially diverse than other new teachers and are much more likely to stay in teaching, especially in the high-need districts that sponsor them.²⁰⁶ The following paragraphs highlight additional positive outcomes from teacher residencies.

Student Outcomes: Because most residency programs are still in their infancy, only a few studies have examined program impact on student achievement. A 2015 study of the New Visions Hunter College Urban Teacher Residency (UTR) in New York City found that students of UTR participants and graduates outperformed those taught by other novice teachers on 16 out of 22 (or 73%) comparisons of state Regents exam scores.²⁰⁷ A value-added analysis of the Boston Teacher Residency (BTR) suggested that graduates were initially comparable with other novice teachers in raising students' English language arts and math scores, but BTR graduates' effectiveness surpassed that of new and veteran teachers in math by the fourth year of teaching.²⁰⁸ A study of the Memphis Teacher Residency program found that residency graduates had higher student achievement gains than other beginning teachers and larger gains than veteran teachers on most of the Tennessee Comprehensive Assessment Program exams.²⁰⁹

Recruitment: Many residency programs have specific goals around recruitment: diversifying the teacher workforce (attracting more candidates of color, bringing in mid-career professionals) and/or hiring for shortage subject areas like mathematics, science, special education, and bilingual education. Research suggests that residencies bring greater gender and racial diversity into the teaching workforce. Across teacher residency programs nationally, 45% of residents in 2015–16 were people of color.²¹⁰ This proportion is more than double the national average of teachers of color entering the field, which is 19%.²¹¹ In-depth studies of some residencies find that these programs attract and prepare a more diverse pool of candidates, with anywhere from one third to two thirds of residents identifying as people of color, a far larger proportion than other novice teachers in their districts.

In addition to attracting a more diverse workforce, residencies aim to staff high-need schools and subject areas. Nationally, 13% of residency graduates in 2015–16 taught in mathematics, science, or technology fields, and 32% taught English learners and/or students with special needs.²¹² A study by the National Center for Teacher Residencies of the Denver and Aspire teacher residency programs found that more than 50% of graduates teach in secondary mathematics, science, linguistically diverse, or special education classrooms.²¹³

Retention: National studies of teacher retention indicate that around 20% to 30% of new teachers leave the profession within the first five years and that attrition is even higher in high-poverty schools and in high-need

subject areas, often reaching 50% or more.²¹⁴ Studies of teacher residency programs consistently point to the high retention rates of their graduates, even after several years in the profession, generally ranging from 80% to 90% in the same district after three years and 70% to 80% after five years. In two of the most rigorous studies to date, researchers found statistically significant differences in retention rates between residency graduates and nonresidency peers, controlling for the residents' characteristics and those of the settings in which they taught.²¹⁵ Higher retention rates may be attributable to the combination of program quality, residents' commitment to teach for a specific period of time in return for financial support, and induction support during the first one to two years of teaching.

Urban districts or consortia of rural districts with nearby universities often sponsor these programs. The partnerships between universities and districts are formed often with the goal of fulfilling the partner district's hiring needs. Sometimes multiple universities partner with one or more districts to create a residency program. Some residency programs also include a community-based or nonprofit organization as an additional partner, which serves as a third party in the partnership.

Although each teacher residency program is unique, there are a few key common characteristics shared by high-quality residencies. Based on research from the Learning Policy Institute,²¹⁶ the programs typically:

- » Are strong partnerships between school districts and universities
- » Recruit high-ability candidates to meet specific district hiring needs, especially in fields where there are shortages
- » Provide a full year of clinical practice teaching alongside an expert mentor teacher
- » Provide relevant coursework that is tightly integrated with clinical practice
- » Recruit and train expert mentor teachers who co-teach with residents
- » Place cohorts of residents in "teaching schools" that model good practices with diverse learners and are designed to help novices learn to teach
- » Offer ongoing mentoring and support for graduates
- » Offer residents financial incentives — for example, living stipends, student loan forgiveness, and tuition remittance — in exchange for committing to teach in the sponsoring district for a minimum number of years

In addition to the focus on teacher residencies as a tool to help build an adequate supply of well-prepared teachers, GYO pathways that are emerging as teacher preparation programs and as high school career and technical education programs have continued to spread across communities seeking more localized solutions to addressing challenges with the supply of qualified educators.

Grow Your Own

GYO programs include a broad array of programs that recruit teacher candidates from nontraditional populations who are more likely to reflect local diversity and are more likely to continue to teach in their communities. Drawing on the pull of home,²¹⁷ recruiting local graduates and community members can present a sustainable solution to teacher shortages while also increasing the diversity of the teacher workforce.²¹⁸

GYO teacher preparation programs recruit local community members, career changers, paraprofessionals, after-school program staff, and others currently working in schools. Participants receive support such as financial aid, coaching, assistance in navigating credential requirements, counseling, and programmatic support as they complete their bachelor's degree and earn their teaching credential.

These programs have shown positive results in recruiting and retaining diverse teachers in the hardest-to-staff schools, in part by leveraging participants' existing connections to the community and prior experience working closely with the student population.²¹⁹ A report from the Urban Institute found that graduates from [the Pathways to Teaching Careers Program](#), a national GYO program, remained in teaching longer than the typical beginning teacher and taught in high-need urban and rural schools at a very high rate.²²⁰ For rural districts in particular, which often struggle to recruit teachers from outside the community, GYO programs provide a local and potentially sustainable source of educators in the near and long term. Given these initial positive findings on recruitment and retention, additional research investigating the effectiveness of GYO graduates is warranted.

GYO programs come in all shapes and sizes, as described in the examples below. Common variants include paraprofessional teacher training programs, as well as 2+2 programs, which allow candidates to begin teacher preparation at a community college, with clear course articulation agreements in place that the candidate will complete teacher preparation and credentialing requirements at a four-year institution. Teacher residency programs, which are often one-year accelerated post-baccalaureate programs, offer another GYO model. High school cadet programs, teaching academies, and other strategies to interest secondary school students in teaching can also be considered GYO models, though these programs operate on a longer timeline, and, of course, not all participating high school students will become teachers. Through high school pathways that embed career-focused courses on education topics alongside work-based experiences, states work to elevate teaching and lay the groundwork for future recruitment by helping high school students understand and connect with the profession before they have entered college and started on their career path.

[California's Paraprofessional Teacher Training Program](#) (funded 1995–2011) provides an example of the effectiveness of GYO programs in growing and retaining a more diverse teaching force: 65% of the program's participants were people of color and bilingual. By its 13th year of operation, sponsors reported that of the 1,708 program graduates, 92% had remained California public school employees.²²¹ In 2016 and 2017, California invested \$45 million in a revived version of the program, the [California Classified School Employee Teacher Credentialing Program](#),²²² which is training 2,250 classified staff members to become teachers. More than half of new program participants are Latinx or Black.

Programs like [Educators Rising](#), an organization that supports more than more than 2,400 schools with programs dedicated to helping students learn about teaching,²²³ and the [South Carolina Teacher Cadet Program](#) make the

case for teaching as a viable and rewarding future career choice and provide opportunities for high school students to practice and develop the skills and dispositions that will help them become quality educators. The South Carolina Teacher Cadet Program, in which students take a dual credit, college-level course that introduces them to teaching, has had more than 65,000 participants in its 31-year history.²²⁴ The annual cost of the program is approximately \$150 per student, with one out of five high school cadets eventually earning a teacher certification.²²⁵

An additional example of a state-level program focused on assisting districts in fostering high school teacher pathway programs is the Recruiting Washington Teachers (RWT) program. Established in 2007, the goal of this program is to prepare a diverse group of future educators who more closely reflect the state's student population.²²⁶ The RWT program is a high school teacher academy program that helps students explore cultural identity and educational opportunities through the lens of the teaching profession.

By supporting participants as they complete high school and apply to and attend college, the RWT program strengthens the pathway from high school to teaching, with the goal that students will become not only certified teachers, but also education leaders who make a difference in their communities. RWT has provided ongoing funding for "learning laboratories" — partner school sites that have developed model curriculum, implementation resources, and professional development tools that are available for any school interested in establishing a teacher academy. Each learning laboratory site includes partnerships between local teachers, districts, and higher education institutions to provide guidance and support to students.

Initial research on the RWT program suggests that the program is succeeding in recruiting students of color, multilingual students, and students who will be the first generation in their family to attend college. Surveys of program participants also suggest that the RWT program is increasing participants' interest in teaching as a career, with about half of the RWT respondents (54%) reporting that their participation in the program had increased their interest in a teaching career.²²⁷ Although currently only anecdotal evidence exists showing the impact of the RWT program on teacher recruitment in the sponsoring districts,²²⁸ future evaluation plans — made possible by improvements to student data tracking — will allow the state to track program participants' postsecondary trajectory and, hopefully, career choices.²²⁹

Although comprehensive teacher preparation can support the recruitment and retention of quality teachers, research points to a number of other important practices that help ensure novice teachers and experienced teachers continue to enjoy professional learning conditions and opportunities throughout their careers that keep them returning year in and year out. Specific practices include early career supports for novice educators and effective professional learning for experienced educators.

Mentoring and Induction

New teacher induction and mentoring has been shown to support the development of teacher competence and effectiveness. An induction program generally is a program of supports and learning opportunities provided to novice teachers in a school or district. Usually, part of the induction experience for new teachers includes opportunities to work closely with a specific mentor teacher who often provides opportunities for collaboration

and more direct feedback on instruction. One research review found a consensus that beginning teachers who participated in an induction program were more able to keep students on task, develop workable lesson plans, use effective questioning practices, adjust classroom activities to meet students' interests, maintain a positive classroom atmosphere, and demonstrate successful classroom management.²³⁰ Finally, two studies show that students of beginning teachers who had participated in an induction program had higher scores, or gains, on academic achievement tests.²³¹ Beyond supporting new teacher effectiveness, induction programs have also demonstrated significant impacts on the retention of novice teachers.

Evidence suggests that strong induction and support for early-career or newly arriving teachers can be an effective policy to ensure well-prepared individuals remain in the classroom.²³² The reason is simple. The first few years of every teacher's career require a leap from preparation to practice; these early years are formative, but they are also extremely difficult. Even teachers who have undergone excellent preparation can struggle as they adjust to a new school, learn the complex nuances of classroom management, grow from their mistakes, and implement new curriculum and instruction, all while ensuring their students are learning.

Research points to several key elements of high-quality induction programs that are most strongly associated with reduced levels of turnover. These include having a mentor from the same field, having common planning time with other teachers in the same subject, having regularly scheduled collaboration with other teachers, and being part of an external network of teachers.²³³ A study of induction programs based on national data found that beginning teachers who receive a comprehensive set of induction supports — including the elements above — stay in teaching at rates more than twice those of teachers who lack these supports.²³⁴ However, only a small proportion of teachers receive this comprehensive set of supports.²³⁵

In their review of the sources of self-efficacy among novice and experienced teachers, Tschannen-Moran & Hoy found that veteran teachers tended to achieve a sense of self-efficacy from mastery experiences grounded in past teaching successes, whereas novice teachers developed stronger feelings of self-efficacy through the support of colleagues and of the wider school community. Further, novice teachers experienced additional boosts to their self-efficacy when they were able to see teaching practices modeled by someone else.²³⁶ These findings suggest that providing novice teachers with opportunities to see quality teaching practices and receive feedback and coaching on their own practices can help promote self-efficacy and, in turn, help support new teacher retention.

Although mentoring and induction programs became more widely available in the United States during the 1990s and early 2000s, many programs lost funding during the recession, and far fewer new teachers were receiving mentoring in 2012 than in 2008.²³⁷ A 2016 review of state policies related to teacher induction found that just 16 states provide dedicated funding to support teacher induction.²³⁸

Induction and Support for New Teachers in Hard-to-Staff Schools

There is also great variability in the quality of these programs. The extent of challenges for early-career teachers is generally greater in high-poverty schools where, evidence suggests, the quality of induction programs tends to be weaker. For example, one study of 374 randomly selected first- and second-year teachers in Florida, Massachusetts, and Michigan found that new teachers in low-income schools were less likely to have formal mentors during their

first year compared with new teachers in high-income schools (65% versus 91%).²³⁹ The study also found that teachers in low-income schools were less likely to have mentors in the same school (53% versus 82%), same grade level (28% versus 61%), and same subject area (40% versus 60%). Moreover, novice teachers in low-income schools were less likely to have even three conversations with their mentors about classroom management, lesson planning, and classroom instruction during their first year of teaching (approximately 45% versus 65%). These weaker programs may be a function of fewer resources spent on induction in high-poverty districts, limited resources spent over a greater number of beginning teachers, and/or too few effective, experienced teachers in low-income schools to serve the disproportionate concentrations of inexperienced teachers in these schools.²⁴⁰

Mentoring and Induction — Potential Policy Solutions

Given the great variability in access to quality induction programs, it is important that states design and fund mentoring and induction programs aligned with research to ensure all novice teachers have access to these important early-career supports. It is worth noting that some states have sought to address gaps in access through intensive state-level investment and support. As an example of a statewide induction program with demonstrated impacts on teacher retention, Connecticut's district-driven teacher induction program for all new teachers — the [Teacher Education and Mentoring](#) (TEAM) program — was established in 2009.²⁴¹ TEAM aims to provide a nonevaluative system of support focused on professional growth and reflective practice. As part of the program, each new teacher is paired with a mentor who coaches and guides her or him through the first two years of the profession — typically providing one to two hours of individualized support per week.²⁴² Beginning teachers complete five modules: classroom environment, planning, instruction, assessment, and professional responsibility. Each module includes a deliberate process of goal setting, implementing new learning in the classroom, and receiving feedback on changes in teaching practice and student outcomes.

Research suggests TEAM supports are benefiting beginning Connecticut teachers. A 2013 evaluation of TEAM using survey evidence of participants found that participation in the program contributed to beginning teachers' sense of development and their decision to stay in the profession and their district.²⁴³ Surveyed beginning teachers overwhelmingly identified numerous aspects of the program as positively impacting their practice, including reflections with their mentors on teaching effectiveness, discussions regarding how to establish safe and productive classrooms, and strategizing how to use assessment data to make instructional decisions.

In addition, approximately 78% of surveyed beginning teachers either agreed or strongly agreed that their TEAM mentor had a positive influence on their decision to continue teaching. This latter result suggests that induction programs that offer mentoring can benefit teacher retention. This model provides a promising blueprint for states seeking to build a comprehensive mentoring and new-teacher support program.

Delaware has implemented a multiyear induction program to support and retain excellent educators. The state requires that all new teachers participate in a four-year induction and mentoring program to advance their license.²⁴⁴ The [Comprehensive Induction Program](#) (CIP), as the program is known, began during the 1994–95 school year as a pilot mentoring program in three districts and was redesigned and expanded statewide 10 years later.²⁴⁵ The redesigned program requires a number of activities characteristic of high-quality induction:

- » Weekly meetings between mentor and novice teachers, including face-to-face conversations to provide real-time support
- » Eight lesson observations (four observing and four being observed) each of the first two years
- » Participation in evidence-based professional learning each year of the program, including professional learning communities specifically for new teachers²⁴⁶

The annual appropriation for CIP is \$300,000.²⁴⁷

According to a 2017 statewide survey of teachers, 78% agreed or strongly agreed that the additional support they received as a new teacher improved their instructional practice, 79% agreed or strongly agreed that the additional support helped them to impact their students' learning, and 71% agreed or strongly agreed that the induction supports were important in their decision to continue teaching at their current school.²⁴⁸

Ultimately, a well-designed program of support and strong mentoring that can build the effectiveness and efficacy of novice teachers offers the increased likelihood of retaining these teachers through their early years in the classroom.

Professional Development

In addition to the induction supports meant to help novice educators quickly build their skills in the classroom, there remains a need for educators to continue to refine and build their expertise over the course of their careers. A focus on teacher professional learning is often seen as a way to support the increasingly complex skills students need to learn in preparation for further education and work in the 21st century. Sophisticated forms of teaching are needed to develop such student competencies as deep mastery of challenging content, critical thinking, complex problem-solving, effective communication and collaboration, and self-direction. In turn, effective professional development (PD) is needed to help teachers learn and refine the pedagogies required to teach these skills.

In considering the enduring impacts of intentional and effective professional development on the wider professional school environments, it is important to understand the influence that school context and culture have over the effectiveness of teachers. As Kraft and Papay (2014) demonstrate in their study of professional environment and the impact on teacher effectiveness over time, collegial and supportive professional environments can help teachers improve their practice at faster rates.²⁴⁹ It is important to note that peer collaboration and school culture were highlighted for being among the strongest predictors of improved teacher effectiveness. The findings from this study are consistent with research indicating the ongoing impact school context has on teachers' practice and future retention. Because of the principles of effective PD that emphasize collaboration, coaching, support, and feedback, implementing effective professional learning opportunities can help support the types of collegial environments that can generate improvement in teacher effectiveness, improvement in teacher attitudes, and an increase in teacher self-efficacy and that can support teacher retention.²⁵⁰

Effective professional development:²⁵¹

- » Is content focused
- » Incorporates active learning utilizing adult learning theory
- » Supports collaboration, typically in job-embedded contexts
- » Uses models of effective practice
- » Provides coaching and expert support
- » Offers opportunities for feedback and reflection
- » Is of sustained duration²⁵²

Is content focused: PD that focuses on teaching strategies associated with specific curriculum content supports teachers learning within their classroom contexts. This element includes an intentional focus on discipline-specific curriculum development and pedagogies in areas such as mathematics, science, and literacy.²⁵³

Incorporates active learning: Active learning engages teachers directly in designing and trying out teaching strategies, providing them with the opportunity to engage in the same style of learning they are designing for their students. Such PD uses authentic artifacts, interactive activities, and other strategies to provide deeply embedded, highly contextualized professional learning. This approach moves away from traditional learning models and environments that are lecture-based and have no direct connection to teachers' classrooms and students.²⁵⁴

Supports collaboration: High-quality PD creates space for teachers to share ideas and collaborate in their learning, often in job-embedded contexts. By working collaboratively, teachers can create communities that positively change the culture and instruction of their entire grade level, department, school, and/or district.²⁵⁵

Uses models of effective practice: Curricular models and modeling of instruction provide teachers with a clear vision of what best practices look like. Teachers may view models that include lesson plans, unit plans, sample student work, observations of peer teachers, and video or written cases of teaching.²⁵⁶

Provides coaching and expert support: Coaching and expert support involve the one-on-one sharing of expertise about content and about evidence-based practices, focused directly on teachers' individual needs.²⁵⁷

Offers opportunities for feedback and reflection: High-quality PD frequently provides built-in time for teachers to think about, receive input on, and make changes to their practice by facilitating reflection and soliciting feedback. Both feedback and reflection help teachers to thoughtfully move toward the expert visions of practice.²⁵⁸

Is of sustained duration: Effective PD provides teachers with adequate time to learn, practice, implement, and reflect upon new strategies that facilitate changes in their practice.²⁵⁹

Professional Learning Communities

Research shows that effective professional learning incorporates most or all of the elements highlighted above.²⁶⁰ Professional learning communities (PLCs) serve as an example of a PD model that incorporates several of these effective elements and supports student learning gains. This collaborative and job-embedded PD can be a source of efficacy and confidence for teachers and can result in widespread improvement within and beyond the school level. Although many PLC efforts have been poorly implemented and are superficial in their design and impact, there is evidence that when implemented with a high degree of quality, PLCs can support improvements in practice, along with student learning gains. Well-implemented PLCs provide ongoing, job-embedded learning that is active, collaborative, and reflective.²⁶¹

The Benefits of Analyzing Student Work and Student Data

The examination of student work is often a focus of productive PLCs. Analyzing student work collaboratively gives teachers opportunities to develop a common understanding of what good work is, of common misunderstandings that students have, and of instructional strategies that may or may not be working and for whom.²⁶² For example, a study investigating three high-achieving schools that have continuously beaten the odds on standardized tests found that teachers' use of multiple student data sources to collectively reflect upon and improve instructional practices in team meetings contributed to increases in student achievement.²⁶³

Although qualitative studies have sought to examine how professional communities are formed and how they operate, several large-scale studies have illustrated how collaborative, job-embedded, professional learning that is focused on student performance has resulted in changed practices and improved student achievement.²⁶⁴ In a comprehensive five-year study of 1,500 restructuring schools, researchers analyzed data from three studies (*School Restructuring Study*, *National Educational Longitudinal Study*, and *Study of Chicago School Reform*) to understand how various reforms influence improved educational experiences for students.²⁶⁵ In their findings, the authors linked successful PLCs to reduced dropout rates among students; lower absenteeism rates; and academic achievement gains in mathematics, science, history, and reading. Another finding had important implications for school equity: The particular characteristics of strong professional communities — having a shared intellectual purpose and a sense of collective responsibility for student learning — reduced the “traditionally strong relationship between socioeconomic status and achievement gains in mathematics and science.”²⁶⁶

As a key piece in high-quality professional learning systems, ongoing and tailored PD ensures all teachers continue to experience learning and growth throughout their careers. This continuous improvement further supports long-term teacher effectiveness and student achievement, and when aligned with high-quality preservice and early-career supports, it builds and extends teacher expertise and self-efficacy and supports the learning of knowledge, skills, and competencies needed to thrive in 21st-century learning and work environments. It is important to note that effective professional development can support teacher retention and ensures the expertise and knowledge cultivated through improved professional development continues to benefit the learning and working environments of schools long term.

Professional Development — Potential Policy Solutions

The elements of effective professional development have been combined in a variety of ways to support teachers' professional learning. Indeed, successful programs identified through research never feature attributes in isolation: As Hargreaves and Fullan (2012) note, the combination of these elements creates a collaborative culture that results in a form of collective professional capital that leverages much more productive, widespread improvement than would be possible if teachers worked alone in egg-crate classrooms.²⁶⁷ Regardless of the specific model employed, professional development should be well designed, incorporating elements of effective PD, as described above. It should also be linked to identified teacher needs, should ensure that teachers have a say in the type of learning they require to best support their students, and should be regularly evaluated so that quality can be continually improved. To support effective professional development that can foster collegial work environments and improve teacher self-efficacy and retention, policymakers and school leaders should consider the following opportunities:

1. As a first priority, policymakers can **provide flexible and adequate funding** for learning opportunities that align with the principles of effective professional development, including sustained engagement in collaboration, mentoring, and coaching, as well as institutes, workshops, and seminars. This state-level investment, much like the funding for new teacher induction and mentoring, ensures that all teachers across school districts have access to quality professional development opportunities and that those opportunities can be tailored to support the learning needs of all students.
2. Policymakers can **adopt standards for professional development** to guide the design, evaluation, and funding of professional learning provided to educators. These standards might reflect the features of effective professional learning outlined in this section as well as standards for implementation.²⁶⁸ These standards would further support the effective use of funding for effective professional development opportunities for all teachers.
3. Echoing a potential opportunity to support improved working conditions, policymakers and administrators could evaluate and **redesign the use of time and school schedules** to increase opportunities for professional learning and collaboration, including participation in professional learning communities, peer coaching and observations across classrooms, and collaborative planning.
4. States, districts, and schools could regularly **conduct needs assessments** using data from staff surveys to identify areas of professional learning most needed and desired by educators. Data from these sources can help ensure that professional learning is not disconnected from practice and supports the areas of knowledge and skills educators want to develop. Additional data collected from surveys of teacher working conditions and school climate could further support a more targeted and focused professional development opportunity for teachers across a school.
5. As part of a broader system of improved compensation, state and district administrators could identify and **develop expert teachers as mentors and coaches** to support learning in their particular area(s) of expertise for other educators.

Conclusion

With faithful implementation at the local and state levels, the practices and examples detailed throughout this report can support school systems in recruiting, developing, and retaining a sustainable and well-prepared teacher workforce. However, individually, none of them is a panacea. Pursuing only one or two strategies will not ensure that all students, especially traditionally disadvantaged students, have a well-prepared teacher leading their classroom. To make more substantial progress toward establishing an education system that is adequately and equitably staffed, policymakers and practitioners can consider a comprehensive set of practices that address the adequate supply, distribution, and working conditions of the teacher workforce. Such an approach includes carefully designed policies attending to every stage of the educator continuum, from recruitment and preparation to development, retention, and career advancement. Comprehensive approaches also recognize the critical impact school leaders have on this continuum and will build these practices in tandem with efforts to support well-prepared leaders at the school and district-level.

Endnotes

- 1 American Association of Colleges for Teacher Education & Partnership for 21st Century Skills. (2010). *21st century knowledge and skills in educator preparation*. Washington, DC: Author. http://www.p21.org/storage/documents/aacte_p21_whitepaper2010.pdf
- 2 Sutchter, L., Darling-Hammond, L., & Carver-Thomas, D. (2016). *A coming crisis in teaching? Teacher supply, demand, and shortages in the U.S.* Palo Alto, CA: Learning Policy Institute.
- 3 Sutchter, Darling-Hammond, & Carver-Thomas, *A coming crisis in teaching?*
- 4 Colby, S. L., & Ortman, J. M. (2014). *Projections of the size and composition of the U.S. population: 2014 to 2060* (pp. 25–143), Current Population Reports. Washington, DC: U.S. Census Bureau. <http://www.census.gov/content/dam/Census/library/publications/2015/demo/p25-1143.pdf>;
Southern Education Foundation. (2015). *Research bulletin: A new majority: Low-income students now a majority in the nation's public schools*. Atlanta, GA: Author. <http://www.southerneducation.org/getattachment/4ac62e27-5260-47a5-9d02-14896ec3a531/A-New-Majority-2015-Update-Low-Income-Students-Now.aspx>
- 5 <https://www.edweek.org/ew/articles/2016/08/31/teacher-diversity-gap-poses-a-steep-climb.html>
- 6 Carver-Thomas, D. (2018). *Diversifying the teaching profession: How to recruit and retain teachers of color*. Palo Alto, CA: Learning Policy Institute.
- 7 Carver-Thomas, D., & Darling-Hammond, L. (2017). *Teacher turnover: Why it matters and what we can do about it*. Palo Alto, CA: Learning Policy Institute.
- 8 Carver-Thomas, *Diversifying the teaching profession*.
- 9 See: Adamson, F., & Darling-Hammond, L. (2012). Funding disparities and the inequitable distribution of teachers: Evaluating sources and solutions. *Education Policy Analysis Archives*, 20(7), 1–46; Figlio, N. (1997). Did the “tax revolt” reduce school performance?, *Journal of Public Economics, Elsevier*, 65(3), 245–269; Grissom, J. A., Viano, S., & Selin, J. L. (2016). Understanding employee turnover in the public sector: Insights from research on teacher mobility. *Public Administration Review*, 76(2). 241–251; Loeb, S., Darling-Hammond, L., & Luczak, J. (2005). How teaching conditions predict teacher turnover in California schools. *Peabody Journal of Education*, 80(3), 44–70; Manski, C. (1987). Academic ability, earnings, and the decision to become a teacher: Evidence from the National Longitudinal Study of the High School Class of 1972. In D. Wise(Ed.), *Public Sector Payrolls*, (pp. 291–312). Chicago, IL: University of Chicago Press; Stockard, J., & Lehman, M. B. (2004). Influences on the satisfaction and retention of 1st-year teachers: The importance of effective school management. *Educational Administration Quarterly*, 40(5), 742–771.
- 10 Beteille, T., & Loeb, S. (2009). Teacher quality and teacher labor market. In G. Sykes (Ed.), *Teacher quality and teacher labor markets* (pp. 596–612). New York, NY: Handbook of Education Policy Research.
- 11 Loeb, Darling-Hammond, & Luczak, *How teaching conditions predict teacher turnover in California schools*; Grissom, Viano, & Selin, *Understanding employee turnover in the public sector: Insights from research on teacher mobility*; Stockard & Lehman, *Influences on the satisfaction and retention of 1st-year teachers: The importance of effective school management*.
- 12 Adamson & Darling-Hammond, *Funding disparities and the inequitable distribution of teachers: Evaluating sources and solutions*.
- 13 Gray, L., et al. (2015). *Public school teacher attrition and mobility in the first five years: Results from the first through fifth waves of the 2007–2008 Beginning Teacher Longitudinal Study*. U.S. Department of Education. <http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=ED556348&site=ehost-live>.
- 14 Beaudin, B. Q. (1995). Former teachers who return to public schools: District and teacher characteristics of teachers who return to the districts they left. *Educational Evaluation and Policy Analysis*, 17(4), 462–75; Murnane, R. J., & Olsen, R. J. (1990). The influences of salaries and opportunity costs on length of stay in teaching evidence from North Carolina. *Journal of Human Resources*, 25(1), 106–124.
- 15 Baker, B., Sciarra, D. G., & Farrie, D. (2015). *Is school funding fair? A national report card*. Newark, NJ: Education Law Center. http://www.schoolfundingfairness.org/National_Report_Card_2015.pdf
- 16 Allegretto, A., & Mishel, L. *The teacher pay gap is wider than ever*. Washington, DC: Economic Policy Institute, 2016. <http://www.epi.org/publication/the-teacher-pay-gap-is-wider-than-ever-teachers-pay-continues-to-fall-further-behind-pay-of-comparable-workers/>
- 17 Boser, U., & Straus, C. (2014). *Mid- and late-career teachers struggle with paltry incomes*. Washington, DC: Center for American Progress. <https://cdn.americanprogress.org/wp-content/uploads/2014/07/teachersalaries-brief.pdf>

- 18 Klein, R. Uber publishes 'tone-deaf' blog post for teacher appreciation. *The Huffington Post*, October 1, 2014. http://www.huffingtonpost.com/2014/10/01/uber-teacher-appreciation-blog_n_5916234.html?ncid=tweetinkushpmg00000067
- 19 Texas State Affordable Housing Corporation. (n.d.). *Teacher home loans*. <http://www.tsahc.org/homebuyers-renters/teacher-home-loans>. Accessed 7/28/16.
- 20 Teach NYC. *Housing support program for mathematics, science, and special education teachers*. <http://teachnycprograms.net/hsp/proginfo.php>
- 21 Teacher Housing Incentive. *Capital homes blog*. March 4, 2016. http://www.capitalhomes.com/Built_Better/Blog/ID/31/Teacher_Housing_Incentive; Department of Housing and Community. *Employer assisted housing program (EAHP)*. <http://dhcd.dc.gov/service/employer-assisted-housing-program-eahp>. Accessed 8/10/16.
- 22 U.S. Department of Housing and Urban Development. *About the Good Neighbor Next Door program*. http://portal.hud.gov/hudportal/HUD?src=/program_offices/housing/sfh/reo/goodn/gnndabot. Accessed 8/10/16.
- 23 Mongeau, L. Is Silicon Valley driving teachers out? *The Atlantic*, July 21, 2015. <http://www.theatlantic.com/education/archive/2015/07/silicon-valley-housing-tough-on-teachers/399071/>
- 24 Hornstein, J. Teachers overcome tough housing market. *Reach Illinois Employer-Assisted Housing*, March 10, 2010. <http://www.reachillinois.org/employers.asp?id=46>
- 25 <https://www.edweek.org/ew/articles/2018/01/24/can-child-care-benefits-keep-teachers-in-the.html>
- 26 Espinoza, D., Saunders, R., Kini, T., & Darling-Hammond, L. (2018). *Taking the long view: State efforts to solve teacher shortages by strengthening the profession*. Palo Alto, CA: Learning Policy Institute.
- 27 Kini, T., & Podolsky, A. (2016). *Does teaching experience increase teacher effectiveness? A review of the research*. (Brief). Palo Alto, CA: Learning Policy Institute.
- 28 Staklis, S., & Henke, R. (2013). *Who considers teaching and who teaches?* Washington, DC: National Center for Education Statistics, U.S. Department of Education.
- 29 Rothstein, J., & Rouse, C. E. (2011). Constrained after college: Student loans and early-career occupational choices. *Journal of Public Economics*, 95(1), 149–63.
- 30 Feng, L., & Sass, T. R. (2015). *The impact of incentives to recruit and retain teachers in 'hard-to-staff' subjects* (Working Paper No. 141). Washington, DC: National Center for Analysis of Longitudinal Data in Education Research. (See also *How effective are loan forgiveness and service scholarships for recruiting teachers?* by Anne Podolsky and Tara Kini (Palo Alto, CA: Learning Policy Institute, 2016).)
- 31 Adamson, F., & Darling-Hammond, L. (2011). *Speaking of salaries: What it will take to get qualified, effective teachers in all communities?* Washington, DC: Center for American Progress.
- 32 Adamson & Darling-Hammond, *Speaking of salaries* (p. 7). Citing Robin R. Henke, Susan P. Choy, Xianglei Chen, Sonya Geis, and Martha Naomi Alt, *America's Teachers: Profile of a Profession, 1993–94*, Table A 4.15. Washington, DC: National Center for Education Statistics, U.S. Department of Education; Loeb, S., Darling-Hammond, L., & Luczak, J. How teaching conditions predict teacher turnover. *Peabody Journal of Education* 80(3), 44–70.
- 33 Adamson & Darling-Hammond *Speaking of salaries*.
- 34 Adamson & Darling-Hammond *Speaking of salaries*.
- 35 Pogodzinski, M. J. (2000). *The teacher shortage: Causes and recommendations for change*. San Jose, CA: Faculty Fellows Program, Center for California Studies, California State University.
- 36 Darling-Hammond, L. (2010). *The flat world and education: How America's commitment to equity will determine our future*. 132–36. New York, NY: Teachers College Press; Adamson, F., & Darling-Hammond, L. *Speaking of salaries* (pp. 26–27).
- 37 Biggs, A. (2015). Is there really a teacher shortage? *Forbes*. <http://www.forbes.com/sites/andrewbiggs/2015/08/13/is-there-really-a-teacher-shortage/>
- 38 Baker, B. D. On 'access to teacher quality' as the new equity concern. *School Finance 101*, last modified July 2, 2014. <https://schoolfinance101.wordpress.com/2014/07/02/on-access-to-teacher-quality-as-the-new-equity-concern/>
- 39 Darling-Hammond, *The flat world and education* (pp. 141–43).
- 40 National Board for Professional Teaching Standards. (2015). *2015 state rankings by total number of National Board–certified teachers*. Arlington, VA: Author. https://www.nbpts.org/sites/default/files/certification_2015/2015_staterankings_all_nbcts.pdf
- 41 Public Schools of North Carolina. (2014). *NC places second in newly certified National Board teachers; continues to lead nation in total number of National Board–certified teachers*. Raleigh, NC: Author. <http://www.ncpublicschools.org/newsroom/news/2014-15/20141209-01>.
- 42 Clotfelter, C. T., Ladd, H. F., & Vigdor, J. L. (2010). Teacher credentials and student achievement in high school: A cross-subject analysis with student fixed effects. *Journal of Human Resources* 45(3), 655–81.
- 43 Baker, Sciarra, & Farrie, *Is school funding fair?* (p. 8).

- 44 Clark, J. (2015, October). More teachers leave North Carolina to teach in other states. Chapel Hill, NC: WUNC. <http://wunc.org/post/more-teachers-leave-north-carolina-teach-other-states#stream/0>. Citing Report to the North Carolina General Assembly: 2014–2015 state of the teaching profession in North Carolina (2015). Raleigh, NC: North Carolina Public Schools. <http://www.ncpublicschools.org/docs/educatoreffectiveness/surveys/leaving/2014-15turnoverreport.pdf>
- 45 Hough, H. J. & Loeb, S. (2009). *The development of a teacher salary parcel Tax: The Quality Teacher and Education Act in San Francisco*. Stanford, CA: Policy Analysis for California Education. <http://cepa.stanford.edu/qtea/publications>.
- 46 Hough, H. J., & Loeb, S. (2014). *Can a district-level teacher salary incentive policy improve teacher recruitment and retention?* Policy Brief 13–4. Stanford, CA: Policy Analysis for California Education. http://cepa.stanford.edu/sites/default/files/PACE%20Policy%20Brief%202013-4_LowRes.pdf
- 47 Clotfelter, C. T., Glennie, E., Ladd, H., & Vigdor, J. Would higher salaries keep teachers in high-poverty schools? Evidence from a policy intervention in North Carolina. *Journal of Public Economics*, 92(5), 1352–70.
- 48 Springer, M. G., Swain, W. A., & Rodriguez, L. A. Effective teacher retention bonuses: Evidence from Tennessee. *Education Evaluation and Policy Analysis*, 38(2), 199–221.
- 49 Humphrey, D., Koppich, J. E., & Hough, H. J. Sharing the wealth: National Board–certified teachers and the students who need them most. *Education Policy Analysis Archives*, 13(18).
- 50 Glazerman, S., Protik, A., Teh, B., Bruch, J., & Max, J. (2013). *Transfer incentives for high-performing teachers: Final results from a multisite randomized experiment*. Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.
- 51 Berry, B., Daughtrey, A., & Wieder, A. (2010). *Teacher leadership: Leading the way to effective teaching and learning* (pp. 1–26). Carrboro, NC: Center for Teaching Quality.
- 52 Booker, K., & Glazerman, S. (2009). *Effects of the Missouri Career Ladder Program on teacher mobility* (pp. 1–27). Princeton, NJ: Mathematica Policy Research Inc.
- 53 Silman, T., & Glazerman, S. (2009). *Teacher bonuses for extra work: A profile of Missouri’s Career Ladder Program* (pp. 1–58). Princeton, NJ: Mathematica Policy Research Inc.
- 54 Spillane, J. P., Kim, C., & Frank, K. A. Instructional advice and information providing and receiving behavior in elementary schools: Exploring tie formation as a building block in social capital development. *American Educational Research Journal* (2012), 1–33.
- 55 National Board for Professional Teaching Standards. (2016, August). About us. Arlington, VA: Author. <http://www.nbpts.org/national-board-certification>
- 56 Cowan, J., & Goldhaber, D. National Board certification and teacher effectiveness: Evidence from Washington state. *Journal of Research on Educational Effectiveness* 9(3), 233–58.
- 57 Cowan & Goldhaber, National Board certification and teacher effectiveness; Goldhaber, D., & Anthony, E. Can teacher quality be effectively assessed? National Board certification as a signal of effective teaching. *The Review of Economics and Statistics* 89(1), 134–50; Chingos, M. M., & Peterson, P. E. It’s easier to pick a good teacher than to train one: Familiar and new results on the correlates of teacher effectiveness. *Economics of Education Review*, 30(3), 449–65; Clotfelter, Ladd, & Vigdor, *Teacher credentials and student achievement in high school*, 655–81.
- 58 Goldhaber & Anthony, *Can teacher quality be effectively assessed*, 134–50.
- 59 See, e.g., California Department of Education, Candidate support by school districts: National Board for Professional Teaching Standards, accessed 8/10/16, <http://www.cde.ca.gov/pd/ps/nbptsdstrctsupport.asp>. For an overview of other states’ incentives for National Board certification, see http://www.nbpts.org/sites/default/files/Policy/state_incentive_chart.pdf
- 60 Koppich, J. E., Humphrey, D. C., & Hough, H. J. (2006). Making use of what teachers know and can do: Policy, practice, and National Board certification. *Education Policy Analysis Archives* 15(7), 1–30; Humphrey, Koppich, & Hough, *Sharing the wealth*.
- 61 Natale, C. F., Bassett, K., Gaddis, L., & McKnight, K. (2013). *Creating sustainable teacher career pathways* (pp. 1–24). Philadelphia, PA: National Network of State Teachers of the Year and Center for Educator Learning & Effectiveness at Pearson, quoting National Education Association Foundation (2012), *Peer assistance and review: All teachers on the road to instructional leadership in Columbus (OH) 100% Project Schools*, NEA Foundation Issue Brief. Washington, DC: Author. <http://www.neafoundation.org/content/assets/2012/11/Peer%20Assistance%20and%20Review%20Issue%20Brief.pdf>
- 62 Darling-Hammond, *The flat world and education* (p. 224).
- 63 Natale, Bassett, Gaddis, & McKnight, *Creating sustainable teacher career pathways* (p. 23); Darling-Hammond, L., & Berry, B. (1998). *The evaluation of teacher policy*. Santa Monica, CA: RAND Corporation.
- 64 Podolsky, A., & Kini, T. (2016). *How effective are loan forgiveness and service scholarships for recruiting teachers?* Palo Alto, CA: Learning Policy Institute.
- 65 Podolsky, A., Kini, T., Bishop, J., & Darling-Hammond, L. (2016). *Solving the teacher shortage: How to attract and retain excellent educators*. Palo Alto, CA: Learning Policy Institute.
- 66 Learning Policy Institute analysis of the 2012 Schools and Staffing Survey and the 2013 Teacher Follow-up Survey, from the Schools and Staffing Surveys, National Center for Education Statistics.
- 67 This section draws on Podolsky, Kini, Bishop, & Darling-Hammond, *Solving the teacher shortage*.

- 68 Clotfelter, Ladd, & Vigdor, Teacher credentials and student achievement in high school, 655–81; Darling-Hammond, L., Holtzman, D. J., Gatlin, S. J., & Heilig, J. V. (2005). Does teacher preparation matter? Evidence about teacher certification, Teach for America, and teacher effectiveness. *Education Policy Analysis Archives*, 13(42), 51; Glazerman, S., Isenberg, E., Dolfin, S., Bleeker, M., Johnson, A., Grider, M., & Jacobus, M. (2010). *Impacts of comprehensive teacher induction*. Washington, DC: U.S. Department of Education; Boyd, D., Grossman, P., Lankford, H., Loeb, S., & Wyckoff, J. (2006). How changes in entry requirements alter the teacher workforce and affect student achievement. *Education Finance and Policy*, 1(2), 176–216; Clotfelter, Ladd, & Vigdor, Teacher credentials and student achievement in high school, 673–82.
- 69 Podolsky, Kini, Bishop, & Darling-Hammond, *Solving the teacher shortage*.
- 70 Scott-Clayton, J., & Li, J. (2016). *Black-White disparity in student loan debt more than triples after graduation*. Washington, DC: Brookings Institution.
- 71 Scott-Clayton & Li, *Black-White disparity in student loan debt more than triples after graduation*.
- 72 Gasman, M., Castro Samayoa, A., & Ginsberg, A. (2017). Minority-serving institutions: Incubators for teachers of color. *The Teacher Educator*, 52(2), 84–98.
- 73 Henry, G. T., Bastian, K. C., & Smith, A. A. (2012). Scholarships to recruit the ‘best and brightest’ into teaching: Who is recruited, where do they teach, how effective are they, and how long do they stay? *Educational Researcher* 41(3), 83–92.
- 74 See North Carolina Teaching Fellows Program, A legacy of inspired educators. See also North Carolina Teaching Fellows Program, *Keeping talented teachers: Lessons learned from the North Carolina teaching fellows* (1995) (Raleigh, NC: Author).
- 75 U.S. Department of Education. North Carolina, Section I.g Teachers Credentialed, Title II Higher Education Act. <https://title2.ed.gov/Public/Report/PrintSection.aspx?Year=2014&StatedID=37&Section=140171>. Accessed 10/29/15.
- 76 Henry, Bastian, & Smith, *Scholarships to recruit the ‘best and brightest’ into teaching*.
- 77 North Carolina Teaching Fellows Program, A legacy of inspired educators.
- 78 The retention rate of the state-subsidized teachers was 75 percent in disadvantaged schools. See Steele, J. L., Murnane, R. J., & Willett, J. B., (2010). Do financial incentives help low-performing schools attract and keep academically talented teachers? Evidence from California, *Journal of Policy Analysis and Management* 29(3), 451–78, doi:10.1002/pam. Meanwhile, the overall teacher retention rate was found to be about 74 percent in a statewide study around the same point in time. See Reed, D., Rueben, K. S., & Barbour, E., (2006), *Retention of new teachers in California* (San Francisco, CA: Public Policy Institute of California), http://www.ppic.org/content/pubs/report/R_206DRR.pdf
- 79 California Student Aid Commission. (2007). *2006–07 Annual report to the legislature on ...* Rancho Cordova, CA: Author.
- 80 Steele, Murnane, & Willett, Do financial incentives help low-performing schools attract and keep academically talented teachers?
- 81 Nebraska Department of Education. (2016, December). *Status of the Programs Report: Programs of the Excellence in Teaching Act*. Lincoln, NE: Author. Nebraska Department of Education. (2018, April). Nebraska consolidated state plan under the Every Students Succeeds Act (p. 158). Lincoln, NE: Author. https://2x9dwr1yq1he1dw6623gg411-wpengine.netdna-ssl.com/wp-content/uploads/2018/05/NebraskaESSA_4.30.18.pdf. Accessed 5/10/18.
- 82 Nebraska Department of Education. (2016, December). *Status of the Programs Report: Programs of the Excellence in Teaching Act*. Lincoln, NE: Author. https://2x9dwr1yq1he1dw6623gg411-wpengine.netdna-ssl.com/wp-content/uploads/2017/07/ETASStatusRpt_Dec2016.pdf
- 83 Nebraska Department of Education. (n.d.). *Attracting Excellence to Teaching Program*. <https://www.education.ne.gov/educatorprep/aetp/>. Accessed 4/30/18.
- 84 Nebraska Department of Education. (2017). *Attracting Excellence to Teaching Program (AETP): Status of the program as of December 2017*. Lincoln, NE: Author. Retrieved from <https://2x9dwr1yq1he1dw6623gg411-wpengine.netdna-ssl.com/wp-content/uploads/2017/12/2017-AETP-Overview.pdf>
- 85 See: <http://www.ffmt.org>; <https://dhe.mo.gov/ppc/grants/minorityteaching.php>; <https://www.tn.gov/collegepays/money-for-college/loan-forgiveness-programs/minority-teaching-fellows-program.html>; <https://education.ky.gov/teachers/div/Pages/Kentucky-Academy-for-Equity-in-Teaching---KAET.aspx?fbclid=IwAR0olxvMZFEYxkRikTuAXOS1B67WgaPeN8ZnqtFnrSvmANoiYvpTlzexws>.
- 86 Ragatz, K. Counterpoint: Why do teachers leave the toughest schools? *Star Tribune*, March 26, 2014. <http://www.startribune.com/counterpoint-why-do-teachers-leave-the-toughest-schools/252548431/>
- 87 Boyd, D., Grossman, P., Ing, M., Lankford, H., Loeb, S., & Wyckoff, J. (2011). The influence of school administrators on teacher retention decisions. *American Educational Research Journal*, 48(2), 303–33; Ladd, H. F. Teachers’ perceptions of their working conditions: How predictive of planned and actual teacher movement? *Educational Evaluation and Policy Analysis*, 33(2), 235–61.
- 88 Ingersoll, R. M. (2001). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal*, 38(3), 499–534; Loeb, Darling-Hammond, & Luczak, How teaching conditions predict teacher turnover, 44–70.
- 89 Simon, N. S., & Johnson, S. M. Teacher turnover in high-poverty schools: What we know and can do. *Teachers College Record*, 117(2015), 1–36.
- 90 Carver-Thomas, *Diversifying the teaching profession*.
- 91 For examples of recent surveys on the importance of these factors, see: Teacher Follow-up Survey (2013), from the Schools and Staffing Surveys, National Center for Education Statistics; North Carolina Teacher Working Conditions Survey (2014), <http://www.ncteachingconditions.org/results>; Vermont Working Conditions Survey (2013), <http://www.tellvermont.org/results>; Maryland Working Conditions Survey (2015), <http://www.tellmaryland.org/results>; Futernick, K. (2007). *A possible dream: Retaining California teachers so all students learn*. Sacramento, CA: California State University.

- 92 See: Teacher Follow-up Survey (2013); Vermont Working Conditions Survey (2013); Carroll, T. G. (2007). *Policy Brief: The High Cost of Teacher Turnover*. Prepared for the National Commission on Teaching and America's Future.
- 93 Hughes, A. L., Matt, J. J., & O'Reilly, F. L. Principal support is imperative to the retention of teachers in hard-to-staff schools. *Journal of Education and Training Studies*, 3(1), 129–34; Torres, A. C., Is this work sustainable? Teacher turnover and perceptions of workload in charter management organizations. *Urban Education* (2014), 1–24; Grissom, J. A. Can good principals keep teachers in disadvantaged schools? Linking principal effectiveness to teacher satisfaction and turnover in hard-to-staff environments. *Teachers College Record*, 113(11), 2552–85.
- 94 Johnson, S. M., Kardos, S. M., Kauffman, D., Liu, E., & Donaldson, M. L. The support gap: New teachers' early experiences in high-income and low-income schools. *Education Policy Analysis Archives*, 12(61).
- 95 Thibodeaux, A. K., Labat, M. B., Lee, D. E., & Labat, C. A. (2015). The effects of leadership and high-stakes testing on teacher retention. *Academy of Educational Leadership Journal*, 19(1), 227–49.
- 96 Simon & Johnson, Teacher turnover in high-poverty schools, 1–36.
- 97 Allensworth, E., Ponisciak, S., & Mazzeo, C. (2009). *The schools teachers leave: Consortium on Chicago School Research*. Chicago, IL: Consortium on Chicago School Research, University of Chicago Urban Education Institute.
- 98 See, e.g., Teacher Follow-up Survey (2013); North Carolina Teacher Working Conditions Survey (2014), <http://www.ncteachingconditions.org/results>; Vermont Working Conditions Survey (2013), <http://www.tellvermont.org/results>; Maryland Working Conditions Survey (2015), <http://www.tellmaryland.org/results>; Futernick, *A Possible Dream*.
- 99 Skaalvik, E. M., & Skaalvik, S. Teacher job satisfaction and motivation to leave the teaching profession: Relations with school context, feeling of belonging, and emotional exhaustion. *Teaching and Teacher Education*, 27(6), 1029–38; Johnson, S. M., Kraft, M. A., & Papay, J. P. How context matters in high-need schools: The effects of teachers' working conditions on their professional satisfaction and their students' achievement. *Teachers College Record*, 114(2012), 1–39.
- 100 Futernick, *A Possible Dream*.
- 101 Carver-Thomas, *Diversifying the teaching profession*.
- 102 Learning Policy Institute analysis of the Teacher Follow-up Survey (2013), from the Schools and Staffing Surveys, National Center for Education Statistics.
- 103 Friedlander, D., & Darling-Hammond, L. (2007). *High schools for equity: Policy supports for student learning in communities of color*. Palo Alto, CA: School Redesign Network at Stanford University; Joyce, B., & Calhoun, E. (1996). *Learning experiences in school renewal: An exploration of five successful programs*. Eugene, OR: ERIC Clearinghouse on Educational Management.
- 104 Snow-Gerono, J. L. (2005). Professional development in a culture of inquiry: PDS teachers identify the benefits of professional learning communities. *Teaching and Teacher Education*, 21(3), 241–56; McLaughlin, M. W., & Talbert, J. E. (2001). *Professional communities and the work of high school teaching*. Chicago, IL: University of Chicago Press.
- 105 Hord, S. M. (1997). *Professional learning communities: Communities of continuous inquiry and improvement*. Austin, TX: Southwest Educational Development Laboratory.
- 106 Stockard, J., & Lehman, M. B. (2014). Influences on the satisfaction and retention of first-year teachers: The importance of effective school management. *Educational Administration Quarterly*, 40(5), 742–71; Hord, *Professional learning communities*.
- 107 Darling-Hammond, L., Chung-Wei, R., Andree, A., Richardson, N., & Orphanos, S. (2009). *Professional learning in the learning profession: A status report on teacher development in the U.S. and abroad*. Dallas, TX: National Staff Development Council.
- 108 Kraft, M. A., & Papay, J. P. (2014). Can professional environments in schools promote teacher development? Explaining heterogeneity in returns to teaching Experience. *Educational Evaluation and Policy Analysis*, 36(4), 476–500.
- 109 Ware, H., & Kitsantas, A. Teacher and collective efficacy beliefs as predictors of professional commitment. *Journal of Educational Research*, 100(5), 303–10.
- 110 Schleicher, A. (2015). *Schools for 21st-century learners: Strong leaders, confident teachers, innovative approaches*. Prepared for the International Summit on the Teaching Profession. Paris, France: OECD Publishing.
- 111 Learning Policy Institute analysis of the Teacher Follow-up Survey (2013), from the Schools and Staffing Surveys, National Center for Education Statistics.
- 112 Hart, R., Casserly, M., Uzzell, R., Palacios, M., Corcoran, A., & Spurgeon, L. (2015). *Student testing in America's Great City Schools: An inventory and preliminary analysis*. Washington, DC: Council of Great City Schools. <http://www.cgcs.org/cms/lib/DC00001581/Centricity/Domain/87/Testing%20Report.pdf>
- 113 Johnson, S. M., Berg, J. H., & Donaldson, M. L. (2005). *Who stays in teaching and why: A review of the literature on teacher retention*. Cambridge, MA: Project on the Next Generation of Teachers, Harvard Graduate School of Education.
- 114 Strauss, V. Kindergarten teacher: My job is now about tests and data — not children. I quit. *The Washington Post*, March 23, 2014. <https://www.washingtonpost.com/news/answer-sheet/wp/2014/03/23/kindergarten-teacher-my-job-is-now-about-tests-and-data-not-children-i-quit/>
- 115 Feng, L., Figlio, D. N., & Sass, T. R. (2010). *School accountability and teacher mobility*. (Working Paper 47). Washington, DC: National Center for Analysis of Longitudinal Data in Education Research.
- 116 Loeb, S., & Cunha, J. (2007). *Have assessment-based accountability reforms influenced the career decisions of teachers and principals? A report commissioned by the U.S. Congress*.

- 117 Figlio, D., & Loeb, S. (2011). School accountability. In E. A. Hanushek, S. Machin, & L. Woessmann (Eds.), *Handbooks in economics*, 3rd ed. (pp. 383–421). Amsterdam, The Netherlands: North-Holland.
- 118 Clotfelter, C. T., Ladd, H. F., Vigdor, J. L., & Aliaga Diaz, R. (2004). Do school accountability systems make it more difficult for low-performing schools to attract and retain high-quality teachers? *Journal of Policy Analysis and Management*, 23(2), 251–71.
- 119 Barksdale-Ladd, M. A., & Thomas, K. F. What's at stake in high-stakes testing: Teachers and parents speak out. *Journal of Teacher Education*, 51(5), 384–97; Hoffman, J. V., Czop Assaf, L., & Paris, S. G. (2001). High-stakes testing in reading: Today in Texas, tomorrow? *The Reading Teacher*, 5, 482–92. As cited in: Boyd, D., Lankford, H., Loeb, S., & Wyckoff, J. (2008). The impact of assessment and accountability on teacher recruitment and retention: Are there unintended consequences? *Public Finance Review*, 36(1), 88–111.
- 120 Carver-Thomas, *Diversifying the teaching profession*.
- 121 Borman, G. D., & Dowling, N. M. (2008). Teacher attrition and retention: A meta-analytic and narrative review of the research. *Review of Educational Research*, 78(3), 367–409.
- 122 See, e.g.: Ware, H., & Kitsantas, A. Teacher and collective efficacy beliefs as predictors of professional commitment. *Journal of Educational Research*, 100(5), 303–10.
- 123 Learning Policy Institute analysis of the 2012 Schools and Staffing Survey and the 2013 Teacher Follow-up Survey, from the Schools and Staffing Surveys, National Center for Education Statistics.
- 124 Theobald, N. D. An examination of the influence of personal, professional, and school district characteristics on public school teacher retention. *Economics of Education Review*, 9(3), 241–250.
- 125 Buckley, J., Schneider, M., & Shang, Y. (2004). *The effects of school facility quality on teacher retention in urban school districts*, Washington, DC: National Clearinghouse for Educational Facilities; Stockard, J., & Lehman, M. B. Influences on the satisfaction and retention of 1st-year teachers: The importance of effective school management. *Educational Administration Quarterly*, 40(5), 742–771.
- 126 Johnson, Berg, & Donaldson. *Who stays in teaching and why* (p. 50).
- 127 Johnson, Berg, & Donaldson. *Who stays in teaching and why* (pp. 50–51).
- 128 Buckley, Schneider, & Shang, *The effects of school facility quality on teacher retention in urban school districts*.
- 129 Rizga, K. (2015). *Mission High: One school, how experts tried to fail it, and the students and teachers who made it triumph* (pp. 246–47). New York, NY: Nation Books.
- 130 Johnson, S. M. (2007). *Finders and keepers: Helping new teachers survive and thrive in our schools* (p. 93). Indianapolis, IN: Jossey-Bass, an Imprint of Wiley.
- 131 Buckley, J., Schneider, M., & Shang, Yi. Fix it and they might stay: School facility quality and teacher retention in Washington, DC. *Teachers College Record*, 107(5), 1107–23.
- 132 Simon & Johnson, Teacher turnover in high-poverty schools, 1–36.
- 133 Wallace Foundation. (2011). *Research findings to support effective educational policies: A guide for policymakers*. New York, NY: Author. <http://www.wallacefoundation.org/knowledge-center/Documents/Findings-to-Support-Effective-Educational-Policy-Making.pdf>; Brown, K., & Wynn, S. (2007). Teacher retention issues: How some principals are supporting and keeping new teachers. *Journal of School Leadership*, 17, 664–698. See also: Manna, P. (2015). *Developing excellent school principals to advance teaching and learning: Considerations for state policy* (p. 7). New York, NY: Wallace Foundation. <http://www.wallacefoundation.org/knowledge-center/school-leadership/state-policy/Documents/Developing-Excellent-School-Principals.pdf>
- 134 Jacob, R., Goddard, R., Kim, M., Miller, R., & Goddard, Y. Exploring the causal impact of the McREL Balanced Leadership Program on leadership, principal efficacy, instructional climate, educator turnover, and student achievement. *Educational Evaluation and Policy Analysis*, 37(3), 314–332.
- 135 Davis, S., Darling-Hammond, L., LaPointe, M., & Meyerson, D. (2005). *School leadership study: Developing successful principals, a review of research*. Stanford, CA: Stanford Educational Leadership Institute. <http://cepa.stanford.edu/sites/default/files/12-Darling-Hammond%283-07%29.pdf>
- 136 Manna, *Developing excellent school principals to advance teaching and learning* (p. 8); Darling-Hammond, L., & Orphanos, S. (2007). *Leadership development in California*. <http://cepa.stanford.edu/sites/default/files/12-Darling-Hammond%283-07%29.pdf>
- 137 Darling-Hammond, L., LaPointe, M., Meyerson, D., Orr, M. T., & Cohen, C. *Preparing school leaders for a changing world: Lessons from exemplary leadership development programs*. Stanford, CA: Stanford University, Stanford Educational Leadership Institute. <http://www.wallacefoundation.org/knowledge-center/Documents/Preparing-School-Leaders.pdf>
- 138 Every Student Succeeds Act, Sections 2002(1); 2101(c)(4)(B)(xi).
- 139 Every Student Succeeds Act, Section 2101(c)(3).
- 140 Whittaker, K. Principal role changes and influence on principal recruitment and selection: An international perspective. *Journal of Educational Administration*, 41(1), 37–54. See also: Darling-Hammond & Orphanos, *Leadership development in California*, <http://cepa.stanford.edu/sites/default/files/12-Darling-Hammond%283-07%29.pdf>; Tyre, P. Why do more than half of principals quit after five years? *The Hechinger Report*, September 26, 2015, <http://hechingerreport.org/why-do-more-than-half-of-principals-quit-after-five-years/>; Cooper, B. S., & Conley, S. (2011). *Keeping and improving today's school leaders: Retaining and sustaining the best*. Lanham, MD: Rowan & Littlefield Education.

- 141 Darling-Hammond, *The flat world and education*.
- 142 Darling-Hammond, *The flat world and education*. For additional information about the North Carolina Principal Fellows Program, see <http://www.ncpfp.org/>.
- 143 Darling-Hammond, *The flat world and education*.
- 144 Darling-Hammond, LaPointe, Meyerson, Orr, & Cohen, *Preparing school leaders for a changing world*; The North Carolina Principal Fellows Program, <http://www.ncpfp.org/>. Accessed on 8/10/16.
- 145 Every Student Succeeds Act, Section 2243.
- 146 New Teacher Center. (2016). *Teaching, empowering, leading, and learning (TELL)*. Santa Cruz, CA: Author. <https://newteachercenter.org/approach/teaching-empowering-leading-and-learning-tell/>
- 147 Maddock, A. *North Carolina teacher working conditions: The intersection of policy and practice*. Santa Cruz, CA: New Teacher Center. http://www.jntp.org/sites/default/files/ntc/main/pdfs/NC_TWC_Policy_Practice.pdf
- 148 Johnson, S. M., Kraft, M. A., & Papay, J. P. How context matters in high-need schools: The effects of teachers' working conditions on their professional satisfaction and their students' achievement. *Teachers College Record*, 114(10), 1–39.
- 149 Darling-Hammond, L., Bae, S., Cook-Harvey, C. M., Lam, L., Mercer, C., Podolsky, A., & Stosich, E. L. (2016). *Pathways to new accountability through the Every Student Succeeds Act*. Palo Alto, CA: Learning Policy Institute.
- 150 Every Student Succeeds Act, Section 2103.
- 151 Pogodzinski, B., Youngs, P., & Frank, K. A. Collegial climate and novice teachers' intent to remain teaching. *American Journal of Education*, 120(1), 27–54.
- 152 Goodpaster, K. P. S., Adedokun, O. A., & Weaver, G. C. Teachers' perceptions of rural STEM teaching: Implications for rural teacher retention. *Rural Educator*, 33(3), 9–22.
- 153 Heineke, A. J., Mazza, B. S., & Tichnor-Wagner, A. After the two-year commitment: A quantitative and qualitative inquiry of Teach for America teacher retention and attrition. *Urban Education*, 49(7), 750–82.
- 154 Waddel, J. Fostering relationships to increase teacher retention in urban schools. *Journal of Curriculum and Instruction*. 4(1), 70–85.
- 155 Johnson, *Finders and keepers*.
- 156 See: Allensworth, E., Ponisciak, S., & Mazzeo, C. (2009). *The schools teachers leave: Teacher mobility in Chicago Public Schools*. Chicago, IL: Consortium on Chicago School Research, The University of Chicago Urban Education Institute.
- 157 Johnson, Kraft, & Papay, How context matters in high-need schools, 1–39.
- 158 Ladd, Teachers' perceptions of their working conditions, 235–61.
- 159 Ladd, Teachers' perceptions of their working conditions, 235–61.
- 160 Marinell, W. H., & Coca, V. M. (2013). *Who stays and who leaves? Findings from a three-part study of teacher turnover in NYC middle schools*. New York, NY: Research Alliance for NYC Schools.
- 161 Simon & Johnson, Teacher turnover in high-poverty schools, 1–6.
- 162 Easton, L. B. From professional development to professional learning. *Phi Delta Kappan*, 89(10), 755–61. See also: Darling-Hammond, *The flat world and education* (p. 229); Seashore Louis, K., Marks, H. M., & Kruse, S. Teachers' professional community in restructuring schools. *American Educational Research Journal*, 33(4), 757–98.
- 163 Seashore Louis, Marks, & Kruse, Teachers' professional community in restructuring schools, 757–98.
- 164 Darling-Hammond, *The flat world and education*.
- 165 See, e.g.: National Center on Time & Learning, *Time for teachers: Leveraging expanded time to strengthen instruction and empower teachers*. Boston, MA: Author. <http://www.timeandlearning.org/sites/default/files/resources/timeforteachers.pdf>. Accessed 8/10/16; Davis, J. Syracuse leading the way on reform in New York. *Time Matters Blog* (January 13, 2015). Boston, MA: National Center on Time & Learning. <http://www.timeandlearning.org/blog/syracuse-leading-way-reform-new-york>
- 166 Notice inviting applications for new awards using fiscal year 2009 funds; smaller learning communities; Notice. *Federal Register*, 75(120). <https://www.gpo.gov/fdsys/pkg/FR-2010-06-23/html/2010-15084.htm>
- 167 Jaquith, A., Mindich, D., Wei, R. C., & Darling-Hammond, L. (2010). *Teacher professional learning in the United States: Case studies of state policies and strategies*. Oxford, OH: Learning Forward.
- 168 Kini, T., & Podolsky, A. (2016). *Does teaching experience increase teacher effectiveness? A review of the research*. Palo Alto, CA: Learning Policy Institute.
- 169 Kini & Podolsky, *Does teaching experience increase teacher effectiveness?*
- 170 This section draws on: Carver-Thomas & Darling-Hammond, *Teacher turnover: Why it matters and what we can do about it*; Podolsky, Kini, Bishop, & Darling-Hammond, *Solving the teacher shortage*; Guha, R., Hyler, M. E., & Darling-Hammond, L. (2016). *The teacher residency: An innovative model for preparing teachers*. Palo Alto, CA: Learning Policy Institute.

- 171 Boyd, D., Grossman, P., Lankford, H., Loeb, S., & Wyckoff, J. (2009). Teacher education and student achievement. *Educational Evaluation and Policy Analysis*, 31(4), 416–40; See also: Darling-Hammond, L., & Hammerness, K., with Grossman, P., Rust, F., & Shulman, L. (2005). The design of teacher education programs. In L. Darling-Hammond & J. Bransford (Eds.), *Preparing teachers for a changing world: What teachers should learn and be able to do* (pp. 390–442). Indianapolis, IN: Jossey-Bass.
- 172 Darling-Hammond, L., Chung, R., & Frelow, F. (2002). Variation in teacher preparation: How well do different pathways prepare teachers to teach? *Journal of Teacher Education*, 53(4), 286–302.
- 173 Ingersoll, R., Merrill, L., & May, H. (2014). *What are the effects of teacher education and preparation on beginning teacher attrition?* Research report (#RR-82). Philadelphia, PA: Consortium for Policy Research in Education, University of Pennsylvania; Henke, R., Chen, X., & Geis, S. (2000). *Progress through the teacher pipeline: 1992–93 college graduates and elementary/secondary school teaching as of 1997*. Postsecondary Education Descriptive Analysis Report for the U.S. Department of Education. Washington, DC: National Center for Education Statistics; Carver-Thomas & Darling-Hammond, *Teacher turnover: Why it matters and what we can do about it*.
- 174 Carver-Thomas & Darling-Hammond, *Teacher turnover: Why it matters and what we can do about it*.
- 175 Clotfelter, C. T., Ladd, H. F., & Vigdor, J. L. (2010). Teacher credentials and student achievement in high school: A cross-subject analysis with student fixed effects. *Journal of Human Resources*, 45(3), 655–81; Clotfelter, C. T., Ladd, H. F., & Vigdor, J. L. (2007). Teacher credentials and student achievement: Longitudinal analysis with student fixed effects. *Economics of Education Review*, 26(6), 673–82; Darling-Hammond, L., Holtzman, D. J., Gatlin, S. J., & Heilig, J. V. (2005). Does teacher preparation matter? Evidence about teacher certification, Teach for America, and teacher effectiveness. *Education Policy Analysis Archives*, 13(42), 51; Boyd, D., Grossman, P., Lankford, H., Loeb, S., & Wyckoff, J. (2006). How changes in entry requirements alter the teacher workforce and affect student achievement. *Education Finance and Policy*, 1(2), 176–216.
- 176 Constantine, J., Player, D., Silva, T., Hallgren, K., Grider, M., & Deke, J. (2009). *An evaluation of teachers trained through different routes to certification, final report* (National Center for Education Evaluation No. 2009-4043). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education; Darling-Hammond, L. (2009). *Educational opportunity and alternative certification: New evidence and new questions*. Stanford, CA: Stanford Center for Opportunity Policy in Education; Humphrey, D. C., Wechsler, M. E., & Hough, H. J. (2008). Characteristics of effective alternative teacher certification programs. *Teachers College Record*, 110(1), 1–63.
- 177 Podolsky, A., & Kini, T. (2016). *How effective are loan forgiveness and service scholarships for recruiting teachers?* (Policy brief). Palo Alto, CA: Learning Policy Institute.
- 178 Carver-Thomas, *Diversifying the teaching profession*.
- 179 Ingersoll, R., Merrill, L., & May, H. (2014). *What are the effects of teacher education and preparation on beginning teacher attrition?* Research report (#RR-82). Philadelphia, PA: Consortium for Policy Research in Education, University of Pennsylvania.
- 180 Boyd, D., Grossman, P., Lankford, H., Loeb, S., & Wyckoff, J. (2009). Teacher education and student achievement. *Educational Evaluation and Policy Analysis*, 31(4), 416–40.
- 181 Darling-Hammond, L., & Hammerness, K., with Grossman, P., Rust, F., & Shulman, L. (2005). The design of teacher education programs. In L. Darling-Hammond & J. Bransford (Eds.), *Preparing teachers for a changing world: What teachers should learn and be able to do* (pp. 390–442). Indianapolis, IN: Jossey-Bass.
- 182 Darling-Hammond, L. (2006) *Powerful teacher education: Lessons from exemplary programs*. San Francisco: Jossey-Bass.
- 183 Ball, D. L., Sleep, L., Boerst, T. A., & Bass, H. (2009). Combining the development of practice and the practice of development in teacher education. *The Elementary School Journal*, 109(5), 458–74; National Council for Accreditation of Teacher Education. (2010). *Transforming teacher education through clinical practice: A national strategy to prepare effective teachers*. Washington, DC: Author. Retrieved from <http://www.ncate.org/LinkClick.aspx?fileticket=zzeiB1OoqPk%3D&tabid=7>
- 184 De La Paz, S., Malkus, N., Monte-Sano, C., & Montanaro, E. (2011). Evaluating American history teachers' professional development: Effects on student learning. *Theory and Research in Social Education*, 39(4940540). doi:10.1080/00933104.2011.10473465; Brownell, M., Chard, D., Benedict, A., & Lignugaris/Kraft, B. (2019). Preparing general and special education preservice teachers for response to intervention: A practice-based approach. In M. Kennedy & P. Pullen (Eds.), *Handbook of response to intervention and multitiered systems of support* (pp. 121–146). Abingdon, UK: Routledge; Ball, D. L., & Forzani, F. M. (2009). The work of teaching and the challenge for teacher education. *Journal of Teacher Education*, 60(5), 497–511.
- 185 Boyd, D., Grossman, P., Lankford, H., Loeb, S., & Wyckoff, J. (2008). *Teacher preparation and student achievement*. NBER Working Paper No. W14314. National Bureau of Economic Research. Available at SSRN: <http://ssrn.com/abstract=1264576>; Darling-Hammond, *Powerful teacher education: Lessons from exemplary programs*; Ronfeldt, M., & Reininger, M. (2012). More or better student teaching? *Teaching and Teacher Education*, 28(8), 1091–1106.
- 186 Ingersoll, Merrill, & May, *What are the effects of teacher education and preparation on beginning teacher attrition?*
- 187 Podolsky, Kini, Bishop, & Darling-Hammond, *Solving the teacher shortage*; Carver-Thomas & Darling-Hammond, *Teacher turnover: Why it matters and what we can do about it*.

- 188 Denton, J. J. (1982). Early field experience influence on performance in subsequent coursework. *Journal of Teacher Education*, 33, 19–23; Denton, J. J., Morris, J. E., & Tooke, D. J. (1982). The influence of academic characteristics of student teachers on the cognitive attainment of learners. *Educational and Psychological Research*, 2, 15–29; Henry, M. (1983). The effect of increased exploratory field experiences upon the perceptions and performance of student teachers. *Action in Teacher Education*, 5, 66–70; Ross, S. M., Hughes, T. M., & Hill, R. E. (1981). Field experiences as meaningful contexts for learning about learning. *Journal of Educational Research*, 75, 103–107; Koerner, M., Rust, F., & Baumgartner, F. (2002). Exploring roles in student teaching placements. *Teacher Education Quarterly*, 29(2), 35–58; Sunal, D. W. (1980). Effect of field experience during elementary methods courses on preservice teacher behavior. *Journal of Research in Science Teaching*, 17, 17–23.
- 189 Denton, Early field experience influence on performance in subsequent coursework; Denton, J. J., Morris, J. E., & Tooke, D. J. (1982). The influence of academic characteristics of student teachers on the cognitive attainment of learners. *Educational and Psychological Research*, 2, 15–29; Henry, M. (1983). The effect of increased exploratory field experiences upon the perceptions and performance of student teachers. *Action in Teacher Education*, 5, 66–70; Ross, S. M., Hughes, T. M., & Hill, R. E. (1981). Field experiences as meaningful contexts for learning about learning. *Journal of Educational Research*, 75, 103–107; Koerner, M., Rust, F., & Baumgartner, F. (2002). Exploring roles in student teaching placements. *Teacher Education Quarterly*, 29(2), 35–58; Sunal, D. W. (1980). Effect of field experience during elementary methods courses on preservice teacher behavior. *Journal of Research in Science Teaching*, 17, 17–23.
- 190 Carver-Thomas, *Diversifying the teaching profession*; Carver-Thomas Darling-Hammond, *Teacher turnover: Why it matters and what we can do about it*.
- 191 Darling-Hammond & Hammerness, with Grossman, Rust, & Shulman, The design of teacher education programs.
- 192 Darling-Hammond, L., Oakes, J., Wojcikiewicz, S. K., Hyler, M. E., Guha, R., Podolsky, A., Kini, T., Cook-Harvey, C. M., Jackson Mercer, C. N., & Harrell, A. (2019). *Preparing teachers for deeper learning*. Cambridge, MA: Harvard Education Press.
- 193 Kenreich, T., Hartzler-Miller, C., Neopolitan, J. E., & Wiltz, N. W. (2004). *Impact of teacher preparation on teacher retention and quality*. San Diego, CA: Annual meeting of the American Educational Research Association; Hunter Quartz, K. (2003). Too angry to leave: Supporting new teachers' commitments to transform urban schools. *Journal of Teacher Education*, 54(2), 99–111; Fleener, C. (1998). *A comparison of attrition rates*. Commerce, TX: Texas A&M University; Latham, N. I., & Vogt, W. P. (2007). Do professional development schools reduce teacher attrition? Evidence from a longitudinal study of 1,000 graduates. *Journal of Teacher Education*, 58(2), 153–167.
- 194 Latham & Vogt, Do professional development schools reduce teacher attrition?
- 195 Trachtman, R. (1996). The NCATE professional development school study. New York, NY: Paper presented at the annual meeting of the American Educational Research Association; Crow, N. A., Bullough, R. V., Jr., Kauchak, D., Hobbs, S., & Stokes, D. K. (1996). An alternative model of teacher development in a PDS. New York, NY: Paper presented at the annual meeting of the American Educational Research Association; Houston Consortium of Professional Development. (1996). *Association of Teacher Educators, Newsletter*, 7; Jett-Simpson, M., Pugach, M. C., & Whipp, J. (1992). Portrait of an urban professional development school. San Francisco, CA: Paper presented at the annual meeting of the American Educational Research Association.
- 196 Darling-Hammond & Hammerness, with Grossman, Rust, & Shulman, The design of teacher education programs.
- 197 Darling-Hammond et al., *Preparing teachers for deeper learning*.
- 198 Darling-Hammond, L. (2010). *Evaluating teacher effectiveness: How teacher performance assessments can measure and improve teaching*. Washington, DC: Center for American Progress. See also: Goldhaber, D., Cowan, J., & Theobald, R. (2016). *Evaluating prospective teachers: Testing the predictive validity of the edTPA*. (CALDER Working Paper No. 157). Washington, DC: National Center for Analysis of Longitudinal Data in Education Research.
- 199 Darling-Hammond, L. (2016). Research on teaching and teacher education and its influences on policy and practice. *Educational Researcher*, 45(2), 83–91.
- 200 For a review, see: National Research Council. (2008). *Assessing accomplished teaching: Advanced-level certification programs*. Washington, DC: National Academies Press.
- 201 Lustick, D., & Sykes, G. (2006). National Board certification as professional development: What are teachers learning? *Education Policy Analysis Archives*, 14; Sato, M., Wei, R. C., & Darling-Hammond, L. (2008). Improving teachers' assessment practices through professional development: The case of National Board certification. *American Educational Research Journal* 45(3), 669–700.
- 202 California Commission on Teacher Credentialing. (2016). *California teacher performance expectations*. Sacramento, CA: Author. https://www.ctc.ca.gov/docs/default-source/educator-prep/standards/adopted-tpes-2016.pdf?sfvrsn=8cb2c410_0
- 203 Henry, G. T., Purtell, K. M., Bastian, K. C., Fortner, C. K., Thompson, C. L., Campbell, S. L., & Patterson, K. M. (2014). The effects of teacher entry portals on student achievement. *Journal of Teacher Education*, 65, 7–23.
- 204 Clotfelter, C. T., Ladd, H. F., & Vigdor, J. L. (2007). *How and why do teacher credentials matter for student achievement?* (NBER Working Paper 12828). Cambridge, MA: National Bureau of Economic Research.
- 205 Papay, J. P., West, M. R., Fullerton, J. B., & Kane, T. J. (2012). Does an urban teacher residency increase student achievement? Early evidence from Boston. *Educational Evaluation and Policy Analysis*, 34(4), 413–34; Guha, R., Hyler, M. E., & Darling-Hammond, L. (2016). *The teacher residency: An innovative model for preparing teachers*. Palo Alto, CA: Learning Policy Institute.
- 206 Guha, Hyler, & Darling-Hammond, *The teacher residency: An innovative model for preparing teachers*.
- 207 Sloan, K., & Blazevski, J. (2015). *New Visions Hunter College urban teacher residency: Measures of success*. Bloomington, IN: Rockman et al.

- 208 Papay, J. P., West, M. R., Fullerton, J. B., & Kane, T. J. (2012). Does an urban teacher residency increase student achievement? Early evidence from Boston. *Educational Evaluation and Policy Analysis*, 34(4), 413–34.
- 209 Tennessee Higher Education Commission. Tennessee Teacher Preparation Report Card 2014 State Profile. Nashville, TN: Author. https://www.tn.gov/assets/entities/thec/attachments/reportcard2014A_Tennessee_State_Profile.pdf
- 210 National Center for Teacher Residencies. (2016). *NCTR Network Partner Report 2015–16*. Chicago, IL: Author.
- 211 Nineteen percent is the total percentage of teachers of color (non-White) who are new hires (first-time teachers). Twenty percent of total hires are teachers of color — this includes brand-new, returning, and reentry teachers. Eighteen percent of the total teacher workforce is teachers of color (non-White). Source: Learning Policy Institute analysis of the Schools and Staffing Survey, Restricted Use Public School Teacher Data File, 2011–12.
- 212 National Center for Teacher Residencies, *NCTR Network Partner Report 2015–16*.
- 213 Perlstein, L., Jerald, C., & Duffrin, E. (2014). *Building effective teacher residencies*. Chicago, IL: Urban Teacher Residency United.
- 214 Darling-Hammond, L., & Sykes, G. (2003). *Wanted: A national teacher supply policy for education: The right way to meet the 'highly qualified teacher' challenge*. Tempe, AZ: Education Policy Analysis Archives. Ingersoll, R. M. *Is there really a teacher shortage?* (2003). Philadelphia, PA: Center for the Study of Teaching and Policy, University of Washington; The Consortium for Policy Research in Education. The No Child Left Behind Act.
- 215 Silva, T., McKie, A., & Gleason, P. (2015, August). *New findings on the retention of novice teachers from teaching residency programs*. Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences. doi:10.1017/CBO9781107415324.004; Papay et al., Does an urban teacher residency increase student achievement?
- 216 Guha, Hyler, & Darling-Hammond, *The teacher residency: An innovative model for preparing teachers*.
- 217 Boyd, D., Lankford, H., Loeb, S., & Wyckoff, J. (2005). The draw of home: How teachers' preferences for proximity disadvantage urban schools. *Journal of Policy Analysis and Management* 24(1), 113–32.
- 218 Carver-Thomas, *Diversifying the teaching profession*.
- 219 Podolsky, Kini, Bishop, & Darling-Hammond, *Solving the teacher shortage*.
- 220 Clewell, B. C., & Villegas, A. M. (2001). *Absence unexcused: Ending teacher shortages in high-need areas: Evaluating the Pathways to Teaching Careers Program*. Washington, DC: Urban Institute.
- 221 Commission on Teacher Credentialing. (2008). *California school paraprofessional teacher training program: An annual report to the legislature as required by SB 1636*. Sacramento, CA: Author. http://www.ctc.ca.gov/reports/PTTP_2008_LegRpt.pdf. Accessed 12/20/17.
- 222 California Commission on Teacher Credentialing, Educator Preparation Committee. (2017). *Update on state-funded grant programs*. Sacramento, CA: Author. https://www.ctc.ca.gov/docs/default-source/commission/agendas/2017-12/2017-12-3b.pdf?sfvrsn=894e57b1_2. Accessed 4/27/18.
- 223 Educators Rising. (2018). <https://educatorsrising.org/>. Accessed 5/22/18; Simmons, A. (2018, February). *Teacher recruitment starting in high school*. Marin County, CA: Edutopia. <https://www.edutopia.org/article/teacher-recruitment-starting-high-school>. Accessed 5/22/18.
- 224 Teacher Cadets. (n.d.). Research. <https://www.teachercadets.com/research.html>. Accessed 5/22/18.
- 225 The Riley Institute at Furman University. (n.d.). *Teacher Cadet Program: WhatWorksSC Clearinghouse*. Greenville, SC: The Riley Institute at Furman University Center for Education Policy and Leadership. <https://riley.furman.edu/sites/default/files/docs/Teacher%20Cadet.pdf>. Accessed 4/27/18.
- 226 Washington Professional Educator Standards Board. (n.d.). *Recruiting Washington teachers*. <http://pathway.pesb.wa.gov/future-educators/rwt>. Accessed 12/12/17.
- 227 Geiger, B., & Hougan, E. (2017). *Recruiting Washington teachers: 2016–2017 annual report*. Olympia, WA: Professional Educator Standards Board. <https://drive.google.com/file/d/1tn7nCYz-0fFcY697LhHr30D1pHJU0ioc/view>. Accessed 07/08/18.
- 228 Simmons, A. Teacher recruitment starting in high school.
- 229 Geiger & Hougan, *Recruiting Washington teachers: 2016–17 annual report*.
- 230 Ingersoll, R. M., & Strong, M. (2011). The impact of induction and mentoring programs for beginning teachers: A critical review of the research. *Review of Educational Research*, 81(2), 225.
- 231 Ingersoll, R. M., & Strong, M. The impact of induction and mentoring programs for beginning teachers, 201–233. See also: Glazer, S., Isenberg, E., Dolfin, S., Bleeker, M., Johnson, A., Grider, M., & Jacobus, M. (2010). *Impacts of comprehensive teacher induction: Final results from a randomized controlled study*, Mathematica Policy Research, National Center for Education Evaluation and Regional Assistance, U.S. Department of Education, which found significant differences in student achievement for teachers who had participated in two years of induction versus the control group.
- 232 This section draws on Podolsky, Kini, Bishop, & Darling-Hammond, *Solving the teacher shortage*.
- 233 Ingersoll, R. M., & Smith, T. M. (2004). Do teacher induction and mentoring matter? *NAASP Bulletin* 88(638), 28–40.
- 234 Ingersoll & Smith, Do teacher induction and mentoring matter? 28–40.
- 235 Podolsky, Kini, Bishop, & Darling-Hammond, *Solving the teacher shortage*.

- 236 Tschannen-Moran, M., & Woolfolk Hoy, A. (2007). The differential antecedents of self-efficacy beliefs of novice and experienced teachers. *Teaching and Teacher Education*, 23, 944–56. doi:10.1016/j.tate.2006.05.003
- 237 Koppich, J. E., Humphrey, D. C., Bland, J., Heenan, B., McCaffery, T., Ramage, K., & Stokes, L. (2013). *California's beginning teachers: The bumpy path to a profession*. Menlo Park, CA: SRI International. As cited in: Podolsky, Kini, Bishop, & Darling-Hammond, *Solving the teacher shortage*.
- 238 Goldrick, L. (2016). *Support from the start: A 50-state review of policies on new educator induction and mentoring*. Santa Cruz: New Teacher Center. Note: The state of Connecticut has eliminated state funding for teacher induction since the publication of this report.
- 239 Kardos, S. M., & Johnson, S. M. (2010). New teachers' experiences of mentoring: The good, the bad, and the inequity. *Journal of Educational Change*, 11(1), 23–44.
- 240 Kini & Podolsky, *Does teaching experience increase teacher effectiveness?*
- 241 P. A. 09-6, 2009 Leg., Spec. Sess. (Ct. 2009); Connecticut Department of Education. (n.d.). Teacher Education and Mentoring (TEAM) program. <http://portal.ct.gov/SDE/TEAM/Teacher-Education-And-Mentoring-TEAM-Program>. Accessed 5/22/18.
- 242 Bozack, A., Freilicher, T., & Salvaggio, A. N. (2013). *Teacher education and mentoring program evaluation report*. <http://www.cea.org/issues/news/2013/mar/04/pdf/TEAM-Report-2-15-13.pdf>. Accessed 12/12/17.
- 243 Bozack, Freilicher, & Salvaggio, *Teacher education and mentoring program evaluation report*.
- 244 Delaware Professional Standards Board. (n.d.). Delaware administrative code: Title 14 education, 1503 educator mentoring. <http://regulations.delaware.gov/AdminCode/title14/1500/1503.pdf>. Accessed 12/12/17.
- 245 Raffel, J. A., Holbert, R. R., Curtis, K. A., Middlebrooks, A., Noble, A., & O'Malley, F. (2007). *Delaware's new teacher mentoring/induction program: Initiation, implementation, and integration*. Newark, DE: University of Delaware.
- 246 Delaware Professional Standards Board. (n.d.). Delaware administrative code: Title 14 education, 1503 educator mentoring. <http://regulations.delaware.gov/AdminCode/title14/1500/1503.pdf>. Accessed 12/12/17; Delaware Department of Education. (n.d.). Comprehensive induction program: Program requirements. <https://www.doe.k12.de.us/Page/3569>. Accessed 12/8/17.
- 247 S. B. 285, 148th Gen. Assem., Reg. Sess. (De. 2017), 211.
- 248 TELL Delaware. (2017). Result details: TELL Delaware. <https://telledelaware.org/results/report/590/172027>. Accessed 12/8/17.
- 249 Kraft, M. A., & Papay, J. P. (2014). Can professional environments in schools promote teacher development? Explaining heterogeneity in returns to teaching experience. *Educational Evaluation and Policy Analysis*, 36(4), 476–500.
- 250 Ware, H., & Kitsantas, A. (2007). Teacher and collective efficacy beliefs as predictors of professional commitment. *Journal of Educational Research*, 100(5), 303–10.
- 251 In a recent review of 35 studies meant to define features of effective professional development, included studies emerged from an extensive search of the literature over the last three decades that met a rigorous methodological criterium: They featured a careful experimental or comparison group design or they analyzed student outcomes with statistical controls for context variables and student characteristics. Each of the studies demonstrated a positive link between teacher professional development, teaching practices, and student outcomes, and they presented seven widely shared features of effective professional development.
- 252 Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). *Effective teacher professional development*. Palo Alto, CA: Learning Policy Institute.
- 253 Roth, K. J., Garnier, H. E., Chen, C., Lemmens, M., Schwillie, K., & Wickler, N. I. Z. (2011). Videobased lesson analysis: Effective science PD for teacher and student learning. *Journal on Research in Science Teaching*, 48(2), 117–48.
- 254 Greenleaf, C. L., Hanson, T. L., Rosen, R., Boscardin, D. K., Herman, J., Schneider, S. A., Madden, S., & Jones, B. (2011). Integrating literacy and science in biology: Teaching and learning impacts of reading apprenticeship professional development. *American Educational Research Journal*, 48(3), 647–717.
- 255 Allen, J. P., Pianta, R. C., Gregory, A., Mikami, A. Y., & Lun, J. (2011). An interaction-based approach to enhancing secondary school instruction and student achievement. *Science*, 333(6045), 1034–37.
- 256 Heller, J. I., Daehler, K. R., Wong, N., Shinohara, M., & Miratrix, L. W. (2012). Differential effects of three professional development models on teacher knowledge and student achievement in elementary science. *Journal of Research in Science Teaching*, 49(3), 333–62.
- 257 Campbell, P. F., & Malkus, N. N. (2011). The impact of elementary mathematics coaches on student achievement. *The Elementary School Journal* 111(3), 430–54
- 258 Landry, S. H., Anthony, J. L., Swank, P. R., & Monseque-Bailey, P. (2009). Effectiveness of comprehensive professional development for teachers of at-risk preschoolers. *Journal of Educational Psychology*, 101(2), 448–65.
- 259 Antoniou, P., & Kyriakides, L. (2013). A dynamic integrated approach to teacher professional development: Impact and sustainability of the effects on improving teacher behavior and student outcomes. *Teaching and Teacher Education*, 29, 1–12.
- 260 Darling-Hammond, Hyler, & Gardner, *Effective teacher professional development*.
- 261 Darling-Hammond, Hyler, & Gardner, *Effective teacher professional development*.

- 262 Ball, D. L., & Cohen, D. K. (1999). Developing practice, developing practitioners: Toward a practice-based theory of professional education. *Teaching as the learning profession: Handbook of policy and practice*, 1, (3), 22; Dunne, F., Nave, B., & Lewis, A. (2000). Critical friends: Teachers helping to improve student learning. *Phi Delta Kappa International Research Bulletin (CEDR)*, 28, 9–12; Little, J. W. (2003). Inside teacher community: Representations of classroom practice. *Teacher College Record*, 105(6), 913–45.
- 263 Strahan, D. (2003). Promoting a collaborative professional culture in three elementary schools that have beaten the odds. *The Elementary School Journal*, 104(2), 127–46.
- 264 Bryk, A., Camburn, E., & Louis, K. (1999). Professional community in Chicago elementary schools: Facilitating factors and organizational consequences. *Educational Administration Quarterly*, 35(5), 751–81; Calkins, A., Guenther, W., Belfiore, G., & Lash, D. (2007). *The turnaround challenge: Why America's best opportunity to dramatically improve student achievement lies in our worst-performing schools*. Boston, MA: Mass Insight Education & Research Institute; Goddard, Y. L., Goddard, R. D., & Tschannen-Moran, M. (2007). Theoretical and empirical investigation of teacher collaboration for school improvement and student achievement in public elementary schools. *Teachers College Record*, 109(4), 877–96; Louis, K. S., & Marks, H. M. (1998). Does professional learning community affect the classroom? Teachers' work and student experiences in restructuring schools. *American Journal of Education*, 106(4), 532–75; Supovitz, J. A., & Christman, J. B. (2003). *Developing communities of instructional practice: Lessons for Cincinnati and Philadelphia* (pp. 1–9). CPRE Policy Briefs. Philadelphia, PA: University of Pennsylvania.
- 265 Newman, F., & Wehlage, G. (1997). *Successful school restructuring: A report to the public and educators by the Center on Organization and Restructuring of Schools 37*. Madison, WI: Document Service, Wisconsin Center for Education Research.
- 266 Newman & Wehlage, *Successful school restructuring*.
- 267 Hargreaves, A., & Fullan, M. (2012). *Professional capital: Transforming teaching in every school*. New York, NY: Teachers College Press.
- 268 [Learning Forward](#) provides a set of standards for professional learning that overlap to some degree with the elements of effective professional learning we have outlined here. See <https://learningforward.org/standards-for-professional-learning>