



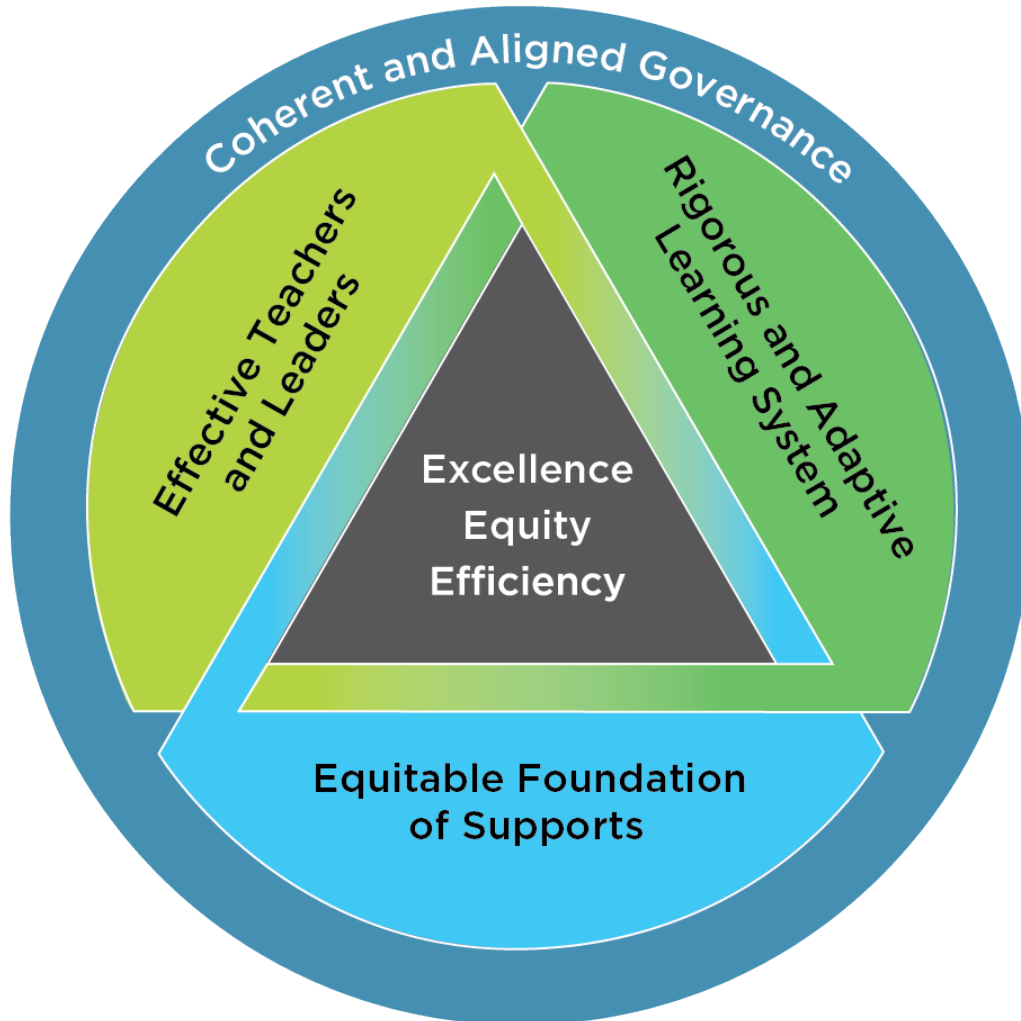
The Design of High-Performing Education Systems:

A Framework for
Policy and Practice

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VISUALIZING THE DESIGN OF HIGH-PERFORMING EDUCATION SYSTEMS



NCEE's framework organizes what we have learned and continue to learn from high-performing countries, provinces, states, districts, and schools we study about the ways they organize their education systems to ensure that all students achieve at high levels.

The framework guides our work with policymakers, researchers, teachers, and leaders.

THE CHALLENGE

Students in the United States now perform in the middle of the 79 nations whose 15-year-olds are regularly assessed in reading, mathematics, and science by the OECD. In some jurisdictions, 15-year-olds are 2-3 years ahead of the average 15-year-old in the U.S. Many developing countries outperform the U.S. as well.

As a result, millennial workers in the U.S. are now tied for the lowest level of basic skills in the industrialized world, whereas 50 years ago our country boasted the best-educated workers in the world. This fact has potentially catastrophic implications for our economy, society, and the sustainability of our democracy. The steady advances in the global integration of labor markets has put the workers of all nations in direct competition with each other, and advances in the automation of work have resulted in increasing competition between machines and people for the available jobs. These two forces have accelerated the rate of change in the labor market, making the future nature of work increasingly uncertain. But what is certain is that the labor market will increasingly demand workers with high levels of knowledge and technical skill.

How have so many other countries gotten ahead of the U.S., and what can our country do to exceed them and meet the challenges of the future?

Countries that redesign their education systems to be adaptive to a future that is volatile, uncertain, complex, and ambiguous (VUCA) will enjoy high standards of living for years to come. Those that fail to do so, especially high-wage countries like the U.S., will struggle to compete and will face steadily widening income disparities, deepening inequities, and growing civil unrest.

This begs the question: how have so many other countries gotten ahead of the U.S., and what can our country do to exceed them and meet the challenges of an uncertain future?

For more than 30 years, The National Center on Education and the Economy (NCEE) has been researching the answer to that question by learning how high-performing education systems around the world were designed. We study their history, visit their schools, and interview teachers, principals, students, parents, policymakers, and people outside the system. We compare them to the U.S. and to one another to better understand how they function as systems, the similarities and differences between them and the tradeoffs they have made. And we explore how they are changing to anticipate the future.

The Design of High-Performing Education Systems is a distillation of that research. It organizes what we have learned and continue to learn from the places we study into a framework of the common components underpinning the design of high-performing education systems. Because no two systems are exactly alike, and there is no country,

state, district, or province anywhere that is doing everything described here in exactly the same way, the framework is a composite picture of a very high-performing system.

The Design of High-Performing Education Systems builds on previous documents, such as the *9 Building Blocks for a World-Class Education System*, that have guided our work. As we explain, it is crucial that high-performing systems are dynamic and constantly evolving. They benchmark their performance against their peers around the world, respond to the latest research and advances in learning science, technology, and leadership theory, and work closely with theorists and economists to anticipate the challenges of the future. And so this framework, like previous iterations, is a living document that will continue to evolve as the high-performing systems do.

HOW DOES NCEE DEFINE HIGH PERFORMANCE?

We define high-performing education systems as those that achieve excellence, equity, and efficiency: world-class levels of performance, for every student, at a sustainable cost.

Excellence

NCEE uses performance on the OECD's Programme for International Student Assessment (PISA) as the measure of whether education systems achieve excellent performance. Every three years, the PISA survey provides comparative data on 15-year-olds' performance in reading, mathematics, and science. PISA is not tied to a particular curriculum; it tests a student's ability to apply what they have learned in school to the kinds of problems they will encounter in the workplace and elsewhere outside school.

While no single test is perfect, we believe PISA provides by far the richest, most valid, and most useful comparative data on student performance available. It is more comprehensive than NAEP and covers more countries and more subjects than TIMSS or PIRLS.

In addition to performance, PISA also collects data on students' wellness and social and emotional learning. This allows us to measure not only whether students have developed a solid foundation of skills and knowledge and the ability to apply them, but also whether they are safe, happy, satisfied with their lives, and content with their school climate. We look closely at the extent to which excellent systems successfully attend to both.

World-class levels of performance, for every student, at a sustainable cost

Equity

Every child should have the opportunity to achieve at high levels. This is not only a moral imperative but is essential to economic success and societal well-being.

NCEE defines equity as the smallest gap between advantaged and disadvantaged students. The smaller the gap, the more equitable the system. But "advantaged" and "disadvantaged" can mean many things, and so we measure equity in many different ways, including:

- the gap in performance between the highest and lowest achieving students;
- the percentage of students from the lowest quartile of socioeconomic status who perform at the highest levels of achievement;
- the variance in academic performance explained by socioeconomic status;
- the percentage of low-performing students;

- the performance of students who are from diverse racial and/or ethnic backgrounds;
- the performance of students who are not native speakers of the language of instruction;
- the gap in performance by gender; and
- the variation in performance within schools and among schools.

Achieving equity is no easy task in a system like the U.S. We have done very little to organize our schools and support our teachers to alleviate the enormous problems concentrated poverty causes for our students: toxic stress and a lack of consistent access to food, shelter, and safety. These problems are compounded by low expectations for poor students, as well as culturally and linguistically diverse students. Further, systemic inequality, inherent bias in curricula, and the enduring racism in this country combined make it enormously difficult for our most disadvantaged students to have a foundation of security and well-being that enables them to succeed in school. In order to build and sustain equity, educators will need the skills and understanding needed to recognize the positive assets all students bring to the classroom as well as the conditions that deny some students access to the educational opportunities enjoyed by other students.

Achieving an equitable public-school system is in the best interest of all our students, and indeed, our economy and our entire society.

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Efficiency... is about strategic investments over the course of a student's education experience that reap long-term benefits.

Ensuring equity is in everyone's best interest. When society is equitable, democratic institutions are strong and economies flourish. When pervasive inequity festers and class mobility becomes impossible, social, economic, and political systems begin to unravel. Achieving an equitable public-school system is in the best interest of all our students, and indeed, our economy and our entire society.

Efficiency

High-performing education systems find ways to maximize efficiency: to get world-class, equitable achievement for all children at the lowest possible cost. Efficiency does not necessarily mean buying the cheapest goods or paying teachers less. It is about strategic investments over the course of a student's educational experience that reap long-term benefits. These strategic investments have paid dividends for high-performing education systems. While many invest more up front for the youngest children, most spend significantly less than the U.S. does on primary and secondary education. Some spend as much as 50 percent less – while getting results that are far better than ours. These returns on investment are particularly significant given the fiscal constraints schools all over the world currently face.

It turns out that beyond a baseline level of adequate spending, how much you spend matters far less than how you spend it. And the high-performing education systems spend their money very

differently than we do. Three examples of inefficiencies in the U.S. will make the point.

First, educators in high-performing systems classify about 5 or 6 percent of their students as special education students – all of them with moderate to severe physical or cognitive challenges. In the U.S., about 14 percent of the students are classified as special education students, yet only about 5 to 6 percent of students have moderate to severe challenges. This is not because high-performing education systems don't provide the support students need. It is because only about half the proportion of students that need that support in the U.S. need it in high-performing systems. And that is because they provide so much more support to very young children before they get to school and to students who start out behind when they get to school. Many fewer students need very expensive special education services over the course of their entire educational career. The students end up achieving at much higher levels and the cost to the system is far less than in the U.S.

Second, the U.S. certifies about 50 percent more elementary school teachers than it needs, at enormous expense. High-performing systems spend more on each teacher they educate, but only educate as many teachers as they need. The way they do this is by keeping the standards for certification of schools of education very high and so reducing the supply of teacher education slots available to aspiring future teachers.

Third, 45 percent of the young people who go into teaching leave the profession within five years in the U.S. But it takes about 10 years to become fully proficient in any profession. In high-performing education systems, recruits typically remain in the profession two to three times as long as they do in the U.S. Yes, they are paid more on average. But the cost of finding, preparing, and supporting new hires is enormous, and the U.S. ends up with a much less qualified workforce, because so many U.S. teachers have not had a chance to fully develop their expertise.

Greatly raising student achievement while simultaneously closing the gap between advantaged and disadvantaged students are essential goals. But they are no less important than ensuring that the nation can afford the cost of reaching those goals. The key to that goal is not just adding costs and additional programs to the system we already have, but instead redesigning that system to get rid of the enormous waste of resources currently built in. Meeting that goal will require a willingness to challenge norms, creative design thinking, and broad and deep political will. NCEE is ready to help its partners meet that challenge.

OVERVIEW OF THE DESIGN OF HIGH-PERFORMING EDUCATION SYSTEMS

High-performing education systems have four components: Effective Teachers and Principals; a Rigorous and Adaptive Learning System; Equitable Foundation of Supports; and Coherent and Aligned Governance. Within each component is a set of component parts. Combined, they create a composite picture of a system that performs at world-class levels and that U.S. states and districts should aspire to match. But a system is more than the sum of its parts: the components have to reinforce one another. Effective teachers and principals activate the rigorous and adaptive learning system for students. An equitable foundation of supports ensures that teachers and principals can teach and lead effectively and that all students come to school ready and able to learn at the highest levels. Coherent and aligned governance incentivizes each component to work in tandem, creates accountability for achieving results, and provides a structure to organize the system.

The most important feature of high-performing education systems is that the components are aligned and designed to work together as a system.

The most important feature of a high-performing education systems is not that it contains all of these components. It is that the components are aligned and designed to work together *as a system*.

Visitors come from every corner of the globe to see the “peaks of excellence” in U.S. schools: people with great ideas can be found here, as can many practices well worth taking home. But the strong ideas and the highly effective programs they spawn rarely affect more than a handful of students. This is because the U.S. does not have an effective system of education. Education systems are not simply collections of independently effective parts and pieces. Effective systems, by definition, are parts and pieces that work in harmony with one another, each one reinforcing and supporting the functioning of the other parts and pieces, and all of them together contributing to the system’s high performance.

It is critical for state policymakers, and district leaders to carefully study these elements, compare them to their systems, consider their context, and work aggressively to design and implement high-performing systems. If they fail to do so, the U.S. will continue to drift behind other countries, with dire consequences for our economy and the wellbeing of our civil society.

HIGH-PERFORMING EDUCATION SYSTEMS AT A GLANCE

Effective Teachers and Principals

High-performing education systems deliver a world-class education to all their students by ensuring that all teachers have a strong foundation in content and pedagogy and powerful incentives and supports to do their best work. This means that every school has an excellent principal who organizes work in ways that promote effective teaching and learning: encourage collaboration, support the development of expertise and focus on continuous improvement.

- Recruitment of a diverse and talented teaching profession with incentives to stay
- Teacher preparation and induction that provide a strong foundation in content, pedagogy, and action research
- Educator career progression that supports and rewards the development and sharing of expertise
- Schools organized so teachers support one another to get better and to improve the whole school
- Leadership development for principals to lead schools and systems effectively

Rigorous and Adaptive Learning System

From preschool to secondary school, including career and technical education (CTE), high-performing learning systems are flexible enough to meet the full range of students' needs and interests, but also built on a set of very high standards that all students are expected to meet. Strong, aligned curriculum and assessment enables all

teachers and students to do their best work, even those who need additional support or greater challenges.

- Preschool aligned to K-12 to ensure all are ready to learn
- Engaging curriculum that promotes deep understanding and assessment that measures the knowledge and skills students need to succeed
- Early identification of struggling learners, and ongoing support and extra time to ensure they meet and exceed standards
- Gateway at the end of compulsory education that leads to high-quality options
- State-of-the-art CTE programs that credential students for jobs of the future

Equitable Foundation of Supports

When young children come to school healthy, eager, and ready to learn, they tend to do well in school. High-performing education systems strive for equity of opportunity by providing strong supports for young children and their families before students arrive at school. But while supports for the youngest children can help level the playing field, the field can tilt again toward the advantaged students if systems do not continue to provide resources to less advantaged students throughout their school careers.

- Pre- and post-natal financial and parenting support for new and expectant families
- Financial, health and social services, and high-quality child care for young children and families

- Schools coordinate access to the health, mental health, social services and supports students need to be successful

Coherent and Aligned Governance

When governance is well-designed, it enables the entire system to function as a system: ensuring that elements of the whole fit together, incentivizing coherence and alignment, supporting educators to do their best work and ensuring accountability for results. To do that effectively, system leaders must be capable, strategic, adaptive in the face of volatility, and deeply knowledgeable about all parts of the system. Leaders set ambitious goals, and incentivize all actors to meet and exceed expectations. At the same time, they give educators the autonomy to

innovate in ways that support those goals. At all levels of the system, roles and responsibilities are clear and do not overlap.

- Highly capable, strategic, and coordinated leadership at all levels of the system
- Accountability systems with incentives and supports to perform well and innovate to reach strategic priorities
- Financial systems that distribute resources equitably and efficiently
- Ongoing benchmarking of successful systems to inform strategies

The four elements of the framework work together to support excellence, equity, and efficiency. Each is described in more detail in the pages that follow.

EFFECTIVE TEACHERS AND PRINCIPALS

Recruitment of a diverse and talented teaching profession with incentives to stay

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Teacher preparation and induction that provide a strong foundation in content, pedagogy, and action research

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Leadership development for principals to lead schools and systems effectively

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RECRUITMENT OF A DIVERSE AND TALENTED TEACHING PROFESSION WITH INCENTIVES TO STAY

High-performing systems have policies in place to ensure that they are recruiting a world-class teaching force. They accredit **few teacher preparation programs**, and all are housed in top research universities. Most U.S. states have 50 or more programs, whereas high-performing education systems of comparable size to these states have fewer than 10, and sometimes fewer than five. In this way, teacher recruitment is immediately limited to only students who can get into top universities. These students have a much stronger grasp of the subjects they will teach and are ready for university-level coursework. The universities set academic requirements for becoming a teacher to levels comparable to other high-status professions. Some have a rigorous entrance test, others have stringent interview processes, and others require candidates to have strong academic backgrounds. Many do all of these things.

Being a good teacher is about more than just academic capability in high-performing systems. These jurisdictions **screen for other qualities**, like a passion for teaching, patience, empathy, and a gift for relating to young people. They intentionally recruit and hire a culturally, ethnically, and socioeconomically diverse group of candidates who can relate to the life experiences of their students.

But getting strong candidates is not enough—strong systems keep teachers in the profession. It is impossible to get a world-class teaching force if new teachers are constantly resigning and need to be replaced. For this reason, architects of the high-performing systems **offer a professional career for teachers**. That means giving them opportunities to build their skills, collaborate with their peers and take on new roles and new opportunities when they demonstrate that they are ready and capable. Throughout society, teachers enjoy widespread respect, with some jurisdictions seeing them as “nation-builders” who take responsibility for society’s future health and prosperity. Public communications, advocacy, and national awards for teachers all reflect this. As a result, annual attrition rates in high-performing education systems are far below the U.S.’s rate of 8 percent, at only two to three

percent. And the benefits to efficiency are significant. Principals are able to spend far less time onboarding and developing new teachers and worry much less about students taught by inexperienced teachers.

TEACHER PREPARATION AND INDUCTION THAT PROVIDE A STRONG FOUNDATION IN CONTENT, PEDAGOGY AND ACTION RESEARCH

Developing teachers' knowledge and skills is critical to the success of high-performing systems. Strong preparation programs and intensive mentoring during the early years of teaching are essential. Some systems offer teaching certificates through four-year bachelor's programs; others offer master's degrees; and some offer both. But still there are several common features of both the content and structure of high-performing preparation programs.

Programs emphasize deep understanding of content. Whereas the U.S. has no common curriculum and therefore often trains teachers on a set of generalized principles for effective pedagogy, universities in the highest-performing systems design preparation programs **specifically focused on the curriculum that teachers will be expected to teach**. Candidates learn first to understand where students are in their learning and then how best to support them to make progress. They also learn how to determine when students may have specific learning challenges that need support from appropriate specialists. Program content is specialized and discipline-specific, with a focus on teaching for conceptual understanding, deep knowledge, and transfer of learning to new contexts. Elementary school teachers are required to specialize either in math and science or language and social studies. Candidates who are preparing to teach preschool are given explicit preparation in teaching the youngest learners. And career and technical education teachers are required to demonstrate mastery of their field. Preparation for all teachers includes learning to conduct action research, the study of a teacher's own practices, with a goal of improving their practice and the performance of the whole school. Teachers in high-performing systems do this kind of research in collaboration with other teachers, as a regular part of their job.

Teaching candidates complete **clinical experiences** of at least a year under the guidance of mentor teachers. In some systems, these mentor teachers have been specifically selected and prepared as part of a career progression system to be mentors. Sometimes, these clinical experiences are reserved for designated practice schools that collaborate closely with the preparation program. These clinical experiences are intentionally designed to be progressively more challenging. Candidates move from observing lessons, to leading their own breakout groups for parts of the day, to taking over full-time teaching responsibility while the mentor teacher observes and provides real-time feedback. Mentors are experienced and skilled teachers who can give thoughtful and helpful feedback. They

frequently coordinate with faculty at the teacher-education institution to ensure that what teacher candidates are experiencing in clinical practice is consistent with what they are learning in class.

In addition, teacher education, like the K-12 learning system, is **competency-based**. Exiting teacher education requires a meaningful demonstration of mastery of craft. This can involve some combination of a written reflection, a videotaped lesson submitted for peer review, a challenging exam, or a demonstration lesson given to a live panel of experts.

Like doctors, who take part in internships and residencies following medical school coursework, new teachers need additional support. High-performing systems have developed programs for **mentoring and induction** of new teachers. Mentors are carefully selected from among a corps of high-quality and experienced teachers and are coached to mentor new teachers, often as part of an existing career progression system. Mentoring and learning on the job take dedicated time. So, both mentors and new teachers are given release time for induction activities. These include collaborative lesson planning, peer observation and feedback, modeling expert teaching strategies, giving feedback on how specific content is taught, and helping to design and grade assessments.

EDUCATOR CAREER PROGRESSION THAT SUPPORTS AND REWARDS THE DEVELOPMENT AND SHARING OF EXPERTISE

In high-performing systems, teachers see teaching as a meaningful, rewarding career that demands ongoing development of knowledge and skills. When teachers develop their pedagogy, content expertise and leadership, they have the opportunity to take on **different, increasingly demanding roles without having to leave the classroom**. This is in contrast to the U.S., where teachers have the same job on the day they retire as they did when they first entered the classroom.

The work of schools is organized around the idea of the strongest teachers leading and mentoring new and struggling teachers through **formal, dedicated roles like lead and master teacher**. These expert teachers facilitate groups of teachers in conducting collaborative action research; observing and providing feedback on each other's lessons; analyzing the effectiveness of instructional materials, curriculum and assessment and developing ways of improving them; and reviewing school and student data to pinpoint what is working and what might need improvement.

Teachers do not become lead or master teachers by simply volunteering. They must apply for the position by demonstrating the requisite skills and specialized expertise needed for the position. Because teachers' salaries are tied, at least in part, to their roles and

responsibilities, financial **incentives reward the acquisition of new skills and expertise and the demonstrated ability to handle more responsibility**, rather than merely more experience. Teachers are rewarded with greater responsibility, compensation, authority, and flexibility when they: demonstrate strong skills as teachers; become strong contributors to the work of teaching teams; build skills to mentor new or struggling teachers; or become strong researchers. Some systems have multiple career tracks to encourage teachers to specialize in one or a few of these important roles such as content specialists, mentors, or curriculum developers. In these ways, teachers have incentives to improve their own teaching, to help one another improve and to improve the performance of the entire system.

In order to attract and retain effective staff, high-performing systems **pay teachers competitive salaries**. Teachers in high-performing systems do not go hungry, suffer from crippling student loan debt, or take second or third jobs to make ends meet. This is because these systems benchmark teachers' salaries against the salaries of other professions requiring similar academic qualifications—nurses, architects, civil engineers—and regularly adjust teacher salaries to meet those benchmarks. They may offer additional benefits, which may include tuition reimbursement for undergraduate studies and bonuses for teaching in high-need areas.

SCHOOLS ORGANIZED SO TEACHERS SUPPORT ONE ANOTHER TO GET BETTER AND TO IMPROVE THE WHOLE SCHOOL

Teachers in the U.S. have little time to collaborate, few opportunities to identify ways they can get better at their work, limited options for advancement and minimal interaction with others in the building outside of high-stakes evaluation. In the U.S., many call teachers “professionals” but treat them as blue-collar workers. In high-performing systems, principals and teachers reorganize schools to enable teachers to continuously improve and advance in their careers by using a **professional model of work organization** akin to a researcher, law associate or member of an architectural firm. Teachers are expected not just to teach students but also to help run the school as a fully contributing professional. They have deep professional competence. They work in teams and are accountable to team members for the quality of their work. Teachers conduct collaborative action research, demonstrate new lessons to their colleagues and critique these lessons and revise them. They have ample time to pursue professional learning opportunities in school, at local universities and even abroad. As teachers prove themselves and are entrusted with more responsibility, they come to see themselves as leaders who improve the effectiveness of the entire system.

The professional model of work organization has implications for how school buildings are laid out, how school days are scheduled and how

classes are organized. Teachers often have their own **meeting space and time** to work together during the school day. Teachers spend much less time directly teaching in classes: only about 40-50 percent of their time, instead of 70 percent in the U.S. They spend more time planning together, observing and critiquing each other's work, working with individual students who need extra help or small groups of such students, interacting with adults outside the school and engaging in their own professional learning.

Giving teachers more professional discretionary time requires **flexible staffing, scheduling, and class sizes**. School districts in high-performing education systems have many fewer administrative employees, which enables those systems to hire more teachers. Principals may use creative scheduling, like having all special subjects meet on a certain day for a particular grade level in elementary schools, to create more collaborative working time on those days. Finally, some classes may be larger than is typical in the U.S. Principals rely on teachers to make recommendations about class size, and teachers may teach a few larger classes in order to teach smaller classes for the students who need the additional individualized support. Teachers often teach in teams, and have the support of specialized instructional aides who can provide one-on-one help, so they can handle larger classes. Teachers have also developed strategies to manage larger classes in cases where it is warranted, including using formative assessment to monitor students carefully, organizing small group independent work as well as self-directed projects, and working with individual or small groups of students who need additional direct instruction.

LEADERSHIP DEVELOPMENT FOR PRINCIPALS TO LEAD SCHOOLS AND SYSTEMS EFFECTIVELY

School leadership is crucial to the success of high-performing education systems. In these systems, district leaders do not wait for individuals to apply to become principals. They **proactively identify promising candidates from the ranks of effective teachers**. Principals and staff developers are on the lookout for candidates who have a combination of strategic skills, self-knowledge, patience, drive, ethical roots, moral qualities, and knowledge of how to manage professionals effectively. Teachers who have the qualities that might make them strong future leaders are entrusted with additional responsibilities designed to cultivate their leadership abilities. Through a career progression system, educators get progressively more demanding opportunities to practice mentorship and leadership and demonstrate these skills over several years. Only after they have proven themselves by demonstrating their capacity to lead other teachers are they selected as principals.

Once new principals are selected, the structure of their leadership development varies, ranging from entirely on the job or in a combination of formal academic executive development and job embedded professional learning. But the leadership development always involves **clinical experience and mentorship**. Experienced mentor principals, who are also identified and cultivated using the career progression system, support assistant principals and new principals as they grow in their careers, give them opportunities to reflect upon their practice and how to build their capacity through thoughtful questioning, and help them realize their personal goals and goals for the growth of their staff and students.

Giving principals the opportunity to reflect on problems of practice in **a community of peer principals and mentors** is key to the success of high-performing systems. Not only do principals continuously develop their skills through ongoing learning, but they also have funding, time, and incentives to do so. This approach parallels the peer-to-peer learning that teachers spend much of their time doing. Consistently, the policies and practices of high-performing systems are underpinned by a consistent theory of action that professional educators, from teachers to principals to district leaders, build their capacity through mentorship and collaborative action learning.

Finally, principals have opportunities to regularly visit other schools in their district, state or province, and even abroad. Principals must learn about successful practices in those schools, districts and countries and adapt their own leadership practice accordingly. This practice is intended to promote a **benchmarking culture** throughout the system. This instills the mentality that it is always possible to learn better ways of doing things and promotes collaboration and collegiality across the system.

RIGOROUS AND ADAPTIVE LEARNING SYSTEM

Preschool aligned to K-12 to ensure all are ready to learn

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Engaging curriculum that promotes deep understanding and assessment that measures the knowledge and skills students need to succeed

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Early identification of struggling learners, and ongoing support and extra time to ensure they meet and exceed standards

-

Gateway at the end of compulsory education that leads to high-quality options

-

State-of-the-art programs that credential students for jobs of the future

From preschool to secondary school, including career and technical education (CTE), high-performing learning systems are flexible enough to meet the full range of students' needs and interests, but also built on a set of very high standards that all students are expected to meet. Strong, aligned curriculum and assessment enables all teachers and students to do their best work, even those who need additional support or greater challenges.

PRESCHOOL ALIGNED TO K-12 TO ENSURE ALL ARE READY TO LEARN

In high-performing education systems, **early childhood education is part of a lifelong education system** that stretches from early childhood to young adulthood and beyond. Early learning is structured around a curriculum that aligns with the primary school curriculum, while still being developmentally appropriate and emphasizing learning through play. This enables teachers to determine whether young learners are ready to enter K-12 and makes the transition as smooth as possible.

Preschool for children as young as three may be optional, but it is **accessible to all**. Slots are available for every parent who wants them, and participation is free or highly subsidized so that all parents can afford it. Ensuring availability for all means that most systems rely on a mix of public and private preschools. But the private sector is subject to the same stringent standards for quality of the learning environment, safety, pedagogy, and teacher preparation as are public providers.

These systems ensure **early childhood teachers have comparable professional standards to their K-12 peers**. They are prepared for their work in programs that emphasize effective pedagogy within the framework of a developmentally appropriate core curriculum. And they have the same kind of opportunities for ongoing learning, professional collaboration, and leadership available to primary and secondary school teachers. This means equitable pay, benefits, working environments with shared office spaces and time to plan, opportunities for career progression that recognize teaching expertise and the willingness to mentor colleagues, and ongoing learning opportunities to enable early childhood teachers to get better at their work.

ENGAGING CURRICULUM THAT PROMOTES DEEP UNDERSTANDING AND ASSESSMENT THAT MEASURES THE KNOWLEDGE AND SKILLS STUDENTS NEED TO SUCCEED

High-performing education systems have a **common curriculum set to very high standards**. The curriculum is organized by grade span and by subject, even if the expectation is that teachers design interdisciplinary projects. The standards establish a progression through each subject that is logical, consistent, developmentally appropriate, and based on what we know about how young people learn. The core curriculum is broad: it includes not only literacy and mathematics, but also foreign languages, civics, history, science, art, music, and health and wellness. But it also covers the subjects in enough depth so students build the conceptual frameworks that allow for retrieval and application of knowledge. This allows them to develop disciplinary thinking; for example, the beginning of the ability to think and reason as a historian or mathematician. In addition to developing both a broad and deep understanding, students are expected to be able to apply concepts from many disciplines to address real-world problems, have the capacity to reason and think critically and creatively.

External assessments are demanding and set to very high standards. But they are also purposeful: **assessments measure what students need to be able to do to succeed** at the next stage of education or in work and life. The goal is not just to measure recall of facts and mastery of basic skills. They capture the ability of the student to analyze newly presented material, synthesize material from many sources to address complex, real-world problems, demonstrate deep understanding of the concepts underlying the discipline studied, apply what has been learned to new challenges and, in general, demonstrate a capacity for thoughtful, fluent, informed use of the material studied. These assessments do not presume that all students have the same history, culture and lived experience. Students have the opportunity to draw on their own cultural backgrounds and experiences as assets when they construct their responses. Assessments clearly communicate to students and teachers what knowledge and skills are necessary to succeed at the next level of education and passing them enables students to show that they are qualified for the next stage. They also give policymakers the ability to track the knowledge, skills and capabilities of the system's graduates and future workforce. These assessments are administered periodically as checkpoints at key interval in students' careers, not at every grade level; thus the extensive use of performance tasks is not prohibitively expensive.

The opportunity to participate in cultural experiences, civics, the arts, team work, and social and emotional development is just as valuable as subject mastery. Teachers in high-performing systems offer students of all income levels and backgrounds **learning opportunities that take**

place outside the classroom. These might include arts, music, and sports, but also museum visits and science experiences. Many high-performing systems engage community partners in providing these opportunities to students. In contrast to the occasional “class trips” and extracurricular experiences, these learning opportunities are seen as “co-curricular.” They are a valued piece of the system’s curriculum.

Successful policymakers and system leaders know that they cannot rest on their laurels: the skills and competencies that are needed to be successful today and in the future are always evolving. For that reason, **the curriculum, standards and assessment in high-performing education systems are dynamic** and educators in the Ministry regularly refresh them in order to anticipate a changing future. Educators are continually benchmarking their standards, curricula and assessments to other leading education systems and anticipating what the knowledge, skills, and dispositions necessary to be successful in the future will be. This benchmarking informs a regularly scheduled curriculum review and update. This process brings together educators, policymakers, economists, and academics. They carefully consider what students need to know and be able to do to meet the needs of the future, how the curriculum should change in response and what supports will be needed to help teachers transition to the new curriculum. These experts see regular updates as essential to getting their students to match the world’s best and enabling them to stay there even in an uncertain future.

EARLY IDENTIFICATION OF STRUGGLING LEARNERS, AND ONGOING SUPPORT AND EXTRA TIME TO ENSURE THEY MEET AND EXCEED STANDARDS

In high-performing systems as in the U.S., teachers screen the young learners for developmental issues to ensure that they receive appropriate supports from a young age. But “early identification” means much more than just developmental screening in high-performing systems. **Formative assessment is central to teachers’ practice.** Teachers strategically assess students’ learning as it is being taught, and are adept in using the real-time results to diagnose misunderstandings, adjust their teaching strategies, determine when students need additional support, and decide when students are ready to move on to more complex concepts in a sequence. Students are actively engaged in the process of formative assessment to help them learn actively and develop critical thinking and self-motivation skills.

Teachers and support staff come together to ensure that all students receive the **support or enrichment they need to ensure that they not only don’t fall behind but also excel.** Teachers support students who are struggling. When students demonstrate they are ready to move faster or study subjects more in-depth, they get a curriculum that enables them to study some subjects in more depth and when they reach high school, to get qualifications earlier if they prefer. The

standards are immovable; the time and support needed to achieve them may be different for different students. To do this, teachers use the non-instructional time they have to screen students early for learning issues and ensure they do not fall behind by giving struggling learners more one-on-one support during the school day, after school and outside of school. Struggling learners receive a flexible range of supports that can start, stop, or change as needed including extra help outside of class, small group work in class, or help from professionals with specific expertise. And all students, including those who learn material more quickly, have access to learning experiences that will challenge and engage them.

GATEWAY AT THE END OF COMPULSORY EDUCATION THAT LEADS TO HIGH-QUALITY OPTIONS

In the high-performing systems, educators work very hard to ensure that students graduate from K-12 with the skills needed to succeed in college, career, and life. Graduating students pass competency-based exams and complete specific courses to **earn a widely recognized qualification** signaling that they have mastered the core curriculum and are ready for their next step. Because the courses and the exams are developed nationally, everyone knows just what the student has accomplished. External experts have carefully validated the exams to ensure that they are accurately measuring the skills needed to succeed at the next level of education. Universities and other higher education institutes require students to earn these qualifications in order to be admitted, because they know that the qualifications demonstrate that students have the skills they will need. And the assessment authority reports the results and publishes exam questions and sample high-scoring answers so everyone understands what is required to succeed and how to meet the high standard.

Once students have earned this credential certifying their ability to succeed in college and career, they have **access to many different options for learning**. These include not only globally recognized advanced academic programs like Advanced Placement, Cambridge A-Levels, International Baccalaureate, and others, but also career and technical education (CTE) programs. CTE programs demand high levels of knowledge and skill in core context, so CTE students must meet high standards just like students in advanced academic study. The academic options include abundant opportunities to engage in applied learning. Students have opportunities to move between programs and they are all designed to give students the opportunity to further their education depending on their interests.

Flexible **pathways open doors. They do not close them.** That's because the pathways rarely lead to dead ends, as pathways in the U.S. often do. A student in the U.S. who earns a two-year associate's degree will often find it all but impossible to enroll in a four-year liberal arts

university later – the university will not recognize the certificate they do have, and will require a host of coursework and test scores they are lacking. In contrast, in high-performing systems, students at two-year programs can move on to universities easily, in addition to more advanced forms of education or the workplace. The knowledge and skills students have attained serve them on whatever pathway they choose.

STATE-OF-THE-ART CTE PROGRAMS THAT CREDENTIAL STUDENTS FOR JOBS OF THE FUTURE

In high-performing education systems, expert economists work hand in hand with employers and economic development agencies to anticipate the skills needed in the future. After that, educators work with employers to create work-based programs that ensure that students develop those skills. They recognize that state-of-the-art career and technical education (CTE) is key to a healthy economy. But the first challenge they face is overcoming the stigma that CTE is what students pursue if they cannot succeed in academics. These systems **make CTE attractive to large proportions of their students**. They ensure that CTE must offer a viable route not only to well-paying occupations that do not require a four-year college degree, but also a pathway into further academic and applied education that can prepare students for positions that do require further education. Many systems also offer students a competitive “training wage.” Others partner with businesses to ensure that students have first pick of lucrative jobs available to them after they graduate.

Employers take a lead role in the design and governance of CTE programs to ensure that they are **targeting skill standards that reflect industry expectations** and current and future skill needs. It is important that CTE programs are aligned with industry demand to ensure that newly credentialed students can smoothly transition from school into in-demand jobs.

Strong CTE systems are **relevant to the world of work as it exists today, and at the same time, adapting to meet the needs of the future**. Instructors and mentors offer learning experiences on state-of-the-art equipment and in state of the art environments. CTE teachers have recent and relevant experience and practice in the field. CTE study can take place in school settings that have all the attributes of real industrial settings, in actual business settings or in a school-worksite combination. Students work on assignments that matter, gaining not only knowledge and skills but also the opportunity to mature and to learn what is expected of them in high-performance workplaces. Industry is encouraged to involve itself in the provision of the up-to-date equipment and training staff need to make the system work. Skill standards reflect the state-of-the-art in the industries and a high level of investment in the education of the students. Economists with

expertise in anticipating the jobs that will be needed five or ten years into the future work closely with employers to ensure that work-based learning prepares students for the jobs of the future. Last and most importantly, students develop not only the technical skills needed to begin a particular career but also the ability to learn new skills quickly so that they can change careers as industries adapt, and sometimes, die, and new forms of work emerge. CTE systems are dynamic and constantly evolving, and the qualifications offered regularly change to anticipate future workforce demands.

EQUITABLE FOUNDATION OF SUPPORTS

When young children come to school healthy, eager, and ready to learn, they tend to do well in school. High-performing education systems strive for equity of opportunity by providing strong supports for young children and their families before students arrive at school. But while supports for the youngest children can help level the playing field, the field can tilt again toward the advantaged students if systems do not continue to provide resources to less advantaged students throughout their school careers.

Pre- and post-natal financial and parenting support for new and expectant families

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Financial, health and social services, and high-quality child care for young children and families

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Schools coordinate access to the health, mental health, social services and supports students need to be successful

PRE- AND POST-NATAL FINANCIAL AND PARENTING SUPPORT FOR NEW AND EXPECTANT FAMILIES

High-performing countries have extensive government **supports for new and expectant families**. These often include “family allowances,” one-time or ongoing payments to families with young children, to help defray the cost of raising children. In some cases, these take the form of college savings bonds for the students. In other cases, they are unrestricted cash payments. Some systems also provide “care packages” for expectant families, containing supplies like diapers, formula, blankets, and clothes. High-performing systems provide generous paid maternity leave, and increasingly, paternity leave as well, to enable families to raise their children at home during the first six months to a year with little to no financial hardship.

How families raise their children is a personal choice and is deeply informed by their cultural backgrounds. At the same time, there are many best practices related to the healthy physical and cognitive development of young children that families may not know. For this reason, high-performing education systems offer **parent education and support**. Examples range from community-based or school-based parenting classes at no cost to the families to home visiting from qualified medical professionals knowledgeable in offering developmental support to newborns. This support may take the form of access to home libraries, educational tools, and toys to promote healthy brain development.

FINANCIAL, HEALTH AND SOCIAL SERVICES, AND HIGH-QUALITY CHILD CARE FOR YOUNG CHILDREN AND FAMILIES

High-performing systems provide **comprehensive health and medical care for all families of young children** at minimal cost. This includes early screenings for developmental and language issues so that they can be addressed well before students enter school by the appropriate specialists. They also provide access to libraries for early reading

material and opportunities to participate in free cultural and recreational activities in the community with young children.

Low-income families, especially, will struggle to balance the need to work with the need to care for their children. In addition to paid family leave, every family has access to **affordable, accessible, and flexible child care**. Because systems need to ensure that there are always sufficient slots for those who need them, child care centers are often privately run, but they are subject to very strict regulatory standards, which are enforced by ensuring that only centers which pass muster can qualify to accept government subsidies. These standards ensure that all child care centers are staffed by a cadre of well-prepared early education professionals who can provide a safe, warm, and developmentally appropriate learning environment. They also set limits on what child care centers can charge to ensure that government subsidies are keeping the cost of child care low.

SCHOOLS COORDINATE ACCESS TO THE HEALTH, MENTAL HEALTH, SOCIAL SERVICES AND SUPPORTS STUDENTS NEED TO BE SUCCESSFUL

Many disadvantaged students struggle to access the critical social services, health care, behavioral and mental health services, nutritional supports, and other needs that students from more affluent families receive as a matter of course. Many students are living in neighborhoods where they experience traumas that go untreated. To ensure equity of opportunity for these students, in high-performing systems, **schools coordinate access to needed services** to enable all children to succeed academically. Schools are staffed with some teachers who serve as behavioral health specialists, student learning needs coordinators, and coordinators with community support services in addition to their regular teaching duties. Teachers are prepared to serve in these roles and given the time, support, and ongoing professional learning to do them well. Schools also employ dedicated medical professionals in every school, or ensure that schools have strong partnerships with a nearby medical facility and social services agency in the community.

Teachers in high-performing systems recognize that while they cannot do everything for all children, they can ensure that every child is referred to specialists who can meet their needs appropriately. They develop **the expertise to identify when students are facing challenges**, through their preparation and induction programs and collaborative professional learning. They recognize behavioral and mental health issues, and signs of trauma and stress and refer students who need support to the appropriate professional, all while exercising empathy and discretion. No less important, they also have opportunities to be reflective about their own biases and are encouraged to employ culturally responsive pedagogy and treat all students with dignity and respect.

COHERENT AND ALIGNED GOVERNANCE

Highly capable and coordinated leadership at all levels of the system

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Accountability systems with incentives and supports to perform well and innovate to reach strategic priorities

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Financial systems that distribute resources equitably and efficiently

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Ongoing benchmarking of successful systems to inform strategies

When governance is well-designed, it enables the entire system to function as a system: ensuring that elements of the whole fit together, incentivizing coherence and alignment, supporting educators to do their best work and ensuring accountability for results. To do that effectively, system leaders must be capable, strategic, adaptive in the face of volatility, and deeply knowledgeable about all parts of the system. Leaders set ambitious goals, and incentivize all actors to meet and exceed expectations. At the same time, they give educators the autonomy to innovate in ways that support those goals. At all levels of the system, roles and responsibilities are clear and do not overlap.

HIGHLY CAPABLE AND COORDINATED LEADERSHIP AT ALL LEVELS OF THE SYSTEM

All high-performing education systems have an institution comparable to a Ministry of Education, either at the state or national level. The Ministry is staffed by highly regarded experts who understand the importance of designing an education system in which the various functions align and support one another. The Ministry is understood to have **authority, accountability and legitimacy** for management, policymaking, and long-term strategic vision. While one agency may not oversee all functions—such as curriculum and assessment; educator preparation, licensing, and professional development; financing; and more—the components are designed to work as a system, with agencies inside and outside the Ministry having clearly defined roles and coordinating agencies serving to facilitate collaboration between them.

Ministries of Education are expected to **set goals for strengthening the education system**, structure clear education policy initiatives to meet those goals, and allocate responsibility for meeting targets and timelines. The government is expected to report periodically on progress toward the goals, thus holding itself accountable for producing the desired results.

ACCOUNTABILITY SYSTEMS WITH INCENTIVES AND SUPPORTS TO PERFORM WELL AND INNOVATE TO REACH STRATEGIC PRIORITIES

High-performing education systems include mechanisms to **report on the success of the system**. These use a range of thoughtful metrics that go beyond test scores—including climate, student well-being and enrichment opportunities—and they put equity front and center. These metrics are reported to the public, to parents, to the business community and employers, and across the different parts of the education system (early childhood, primary and secondary, higher

education) so that they are able to be accountable to each other. In some systems, schools with low results partner with expert principals and teachers from higher performing schools who develop recommendations and work shoulder-to-shoulder to improve the performance of the school. Principals of high-performing schools are given significant incentives to mentor the principals of low-performing schools. Principals also provide incentives for their outstanding teachers to help teachers whose students are not performing well.

High-performing leaders know that how funds for education are spent is at least as important as how much is spent in determining student achievement and funding equity. They **hold schools and districts accountable for spending additional dollars and using supports in ways that will lead to positive outcomes for students**. For example, struggling schools might be required to use a specific set of curriculum materials focused on helping all students to achieve equitably.

Education system leaders provide **professional autonomy at the school level but define the aims of the system and the structures needed to achieve those aims at the system level**. This means that schools and teachers have as much flexibility as they need to teach in ways that are best matched to the needs of their students. They are also encouraged to innovate within the framework of the systems' strategic priorities, and frequently teacher-driven innovation leads to new practices being widely shared and adopted. At the same time, curriculum and pedagogy have enough structure and specification to ensure all students have an equal opportunity to learn.

FINANCIAL SYSTEMS THAT DISTRIBUTE RESOURCES EQUITABLY AND EFFICIENTLY

Policymakers and leaders in high-performing education systems know that, if less-advantaged students are going to achieve at world-class levels, they will have to have access to more resources than students who come to school with greater advantages. High performers have designed **funding systems that invest more in students who will need more help** to reach high standards than in those who will need less help. These may be variations of the pupil-weighted funding formulas common in the U.S., but they start from a common base, rather than allowing students' property tax values to determine the base amount they receive. High-performing systems monitor the use of this funding to ensure that it is reaching the students it is intended to serve and having a positive impact.

Equitable financial systems are about more than just the structure of the funding formula. The **best and most experienced teachers need to reach those students who need the most support**. Schools are staffed so that more teachers can work with students who need more help, and teachers with the most expertise in working with struggling

learners work in the schools that need them most. Some are providing strong incentives to the best teachers to work in classes and schools serving students from low-income and minority families.

ONGOING BENCHMARKING OF SUCCESSFUL SYSTEMS TO INFORM STRATEGIES

High-performing systems are dynamic. In order to continuously get better and keep up with their peers, system leaders know that they must **study what the best systems are doing, and be open to adapting their practices.** They keep up with the latest innovations in curriculum, pedagogy, technology, and professional learning, and adopt those that will help them meet their goals. They also study the changing nature of work, society, and life, and ensure that their systems can adapt to a volatile, uncertain, complex, and ambiguous future. Maintaining political will for these dynamic changes means leaders need to promote extensive public conversation about the aims of education and the strategies to achieve these aims. These require planning processes that are highly inclusive, yet capable of producing complex, coherent, and comprehensive designs. As part of this process, leaders conduct periodic “gap analyses” in order to benchmark their system features against those of other high-performing education systems. The overall goal is to simultaneously enable long-cycle planning and careful implementation of complex policies over decades; the ongoing, planned evolution of those policies in response to benchmarking; and the ability to be nimble and responsive to rapid changes in society, work, and life.