

Teacher and Leader Effectiveness

in High-Performing Education Systems

Edited by
Linda Darling-Hammond
and Robert Rothman



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Suggested citation:

Linda Darling-Hammond and Robert Rothman, eds., *Teacher and Leader Effectiveness in High-Performing Education Systems* (Washington, DC: Alliance for Excellent Education and Stanford, CA: Stanford Center for Opportunity Policy in Education, 2011).

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Founded in 2001, the Alliance for Excellent Education is a Washington, D.C.–based national policy and advocacy organization that works to improve national and federal policy so that all students can achieve at high academic levels and graduate from high school ready for success in college, work, and citizenship in the twenty-first century. The Alliance focuses on America’s six million most-at-risk secondary school students—those in the lowest achievement quartile—who are most likely to leave school without a diploma or graduate unprepared for a productive future.

The Alliance’s audience includes parents; educators; federal, state, and local policy communities; education organizations; business leaders; the media; and a concerned public. To inform the national debate about education policies and options, the Alliance produces reports and other materials, makes presentations at meetings and conferences, briefs policymakers and the press, holds regular webinars, and provides timely information to a wide audience via its biweekly newsletter and regularly updated website, www.all4ed.org.

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- Research on the Opportunity Gap.
- Cross-national comparative analysis of educational opportunity.
- Development of policy and practice to expand educational opportunity.

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Acknowledgments

This report was made possible with funding from the Education Funders Strategy Group and Carnegie Corporation of New York.

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Lessons Learned from Finland, Ontario, and Singapore

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Teacher effectiveness has rapidly risen to the top of the education policy agenda. The U.S. Department of Education (ED) identified the issue as one of four key elements in its Race to the Top competition, and more than a dozen states, responding to Race to the Top incentives, adopted laws revamping teacher education and evaluation systems, hoping to ensure that teachers are effective in the classroom.

The focus on teacher effectiveness makes sense. While there might be disagreement about the most effective ways to measure and develop effectiveness, educators and policymakers generally agree that ensuring that teachers are capable of improving student learning—and that school leaders are able to help them do so—is perhaps the most significant step they can take to raise student achievement. This conviction is backed up by research. The evidence is clear that teaching is one of the most important school-related factors in student achievement,¹ and that improving teacher effectiveness can raise overall student achievement levels.²

The countries featured in this volume have well-developed and effective systems for recruiting, preparing, developing, and retaining teachers and school leaders. Comparisons between countries are valuable for a number of reasons. First, they broaden the view of what is possible. Too often, policymakers remain stuck with conventional ideas, bound by precedents in their own context, and are unable to see options that might be available and successful. By providing policymakers with an expanded view of the policy choices that might be available, comparisons can expand the toolbox. Second, international comparisons show how ideas work in practice at the system level. By exploring other systems in depth, policymakers can see what the implementation challenges are, how other nations dealt with them, and what remains to be solved. Such explorations can help enable policymakers put in place new policies with a clearer eye.

Finland, Ontario, and Singapore

For its examination of teacher effectiveness policies, AEE and SCOPE looked to Finland, Ontario, and Singapore. These jurisdictions have attracted a great deal of attention in U.S. education policy circles recently, and with good reason. Most significantly, they get good results: they are among the highest-performing jurisdictions in international tests of student achievement, and their results are among the most equitable in the world. The gaps between the lowest-performing and the highest-performing students in Finland, Ontario, and Singapore are much smaller than in the United States, and the average performance is quite high.³

These jurisdictions also represent models that the United States can learn from. Although the nations are considerably smaller than the United States as a whole, they are equivalent in size to substantial U.S. states, where most education policy is made and takes effect. In terms of population, Finland is about the size of Colorado; Ontario is slightly larger than Illinois; and Singapore is about the size of Kentucky.

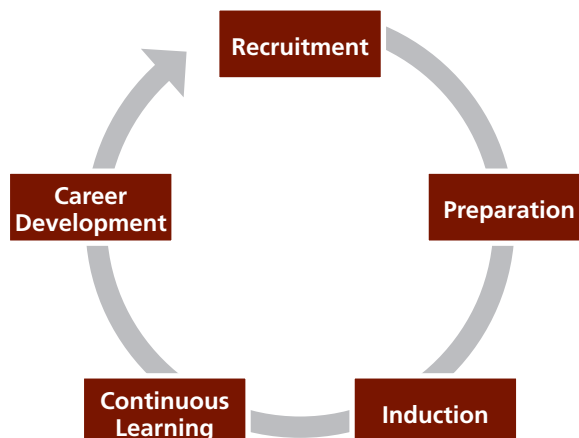
Moreover, these jurisdictions are increasingly diverse in student population, despite their reputation as homogeneous. Finland is attracting a growing number of immigrants from the Middle East and North Africa, and some schools in Helsinki serve primarily immigrant students. About a quarter of Ontario's residents are from outside Canada. And Singapore has a number of minority groups, speaking four official languages (and many more unofficial ones) and representing the diverse communities that make up that nation-state.

Finland, Ontario, and Singapore also provide important lessons for discussions of policies to develop teacher and school leader effectiveness. All attribute their educational success in large measure to their efforts to recruit, prepare, develop, and retain a strong educator workforce within a purposeful human capital system. The policies they have implemented demonstrate that the focus on educator effectiveness in the current U.S. education policy debate is appropriate. The right efforts to improve teacher effectiveness can lead to higher and more equitable student achievement. These efforts include

- a systemic approach;
- strong recruitment and preparation;
- attractive teaching conditions;
- continuous support for learning; and
- proactive leadership development.

Lesson 1: It Takes a System

While the educator-development systems of Finland, Ontario, and Singapore differ in significant ways, what they have in common is that they are just that—*systems* for teacher and leader development. They include multiple components, not just a single policy, and these components are intended to be coherent and complementary, to support the overall goal of ensuring that each school in each jurisdiction is filled with highly effective teachers and is led by a highly effective principal.



This vision of a system of teacher development is sometimes described in terms of “human capital management,” as a people-centered approach is termed in business. This framework draws organizational attention to recruiting, developing, and retaining talented individuals as well as focusing leaders on supporting their effectiveness. In creating a human capital system, organizations might start with a component that addresses their most urgent need, but they recognize that all of the elements require attention and must work together effectively.

The systems in Finland, Ontario, and Singapore encompass the full range of policies that affect the development and support for teachers and school leaders, including

- the recruitment of qualified individuals into the profession;
- their preparation;
- their induction;
- their professional development;
- their evaluation and career development; and
- their retention over time.

Leaders in these jurisdictions recognize that all policies need to work in harmony or the systems will become unbalanced. For example, placing too strong an emphasis on recruitment without concomitant attention on development and retention could result in a continual churn within the teaching profession.

That said, each of the jurisdictions has chosen to place its primary focus on particular aspects of the system. Finland, for example, has sought since 1979 to invest intensely in the initial preparation of teachers. That year, the country required all teachers, including those teaching in the primary grades, to earn at least a master’s degree in education, in addition to a bachelor’s degree in one or more content areas. To complement the powerful initial preparation, Finland then provides teachers with considerable support—primarily time to collaborate with their peers to develop curricula and assessments—and considerable autonomy.

Ontario, meanwhile, emphasizes building the capacity of the teaching workforce. The province has instituted a comprehensive induction program for new teachers that includes professional development and appraisal, as well as an appraisal program for all teachers that focuses on development and growth. These policies are intended to complement the strong initial preparation that all teachers receive, and they have served to reverse an exodus from the teaching profession.

Singapore augments its strong initial preparation and induction with a highly developed performance management system, which spells out the knowledge, skills, and attitudes expected at each stage of a teacher’s career and, based on careful evaluation and intensive supports, provides a series of career tracks that teachers can pursue. These enable teachers to become mentor teachers, curriculum specialists, or principals, thereby developing talent in every component of the education system. The systems in all three jurisdictions are continually being refined. Finland’s Ministry of Education has become concerned that teachers need more support, so the country is considering strengthening induction and professional development for practicing teachers. Ontario has surveyed teachers and

found that there were some gaps in initial preparation in areas like classroom management and the teaching of students with special needs, so the province is revamping its induction system to address those areas. Singapore is looking to strengthen instruction in skills such as problem solving and critical thinking that are increasingly important in a global economy and society.

Lesson 2: Get It Right from the Start

Leaders in Finland, Ontario, and Singapore all believe that getting the right people into teaching and preparing them well is a critical piece of teacher development. All of these systems have strong systems for recruiting and preparing teachers.

In each jurisdiction, entry into teacher education programs is extremely selective. Finland chooses one out of every ten individuals who apply to become primary school teachers; Singapore has traditionally chosen participants from the top third of high school classes (the nation is now moving rapidly toward graduate-level preparation); and in Ontario, where graduate-level preparation is the norm, the process is highly competitive. In that way, each jurisdiction helps ensure that highly capable people go into teaching.

Finland, Ontario, and Singapore not only recruit able candidates, they also screen them carefully to ensure that they have the attributes that make teachers effective—including commitment to the profession and evidence of the capacity to work well with children, as well as academic ability. For example, in Finland, the two-stage process first looks for top academic honors and then examines students' understanding of teaching—through both a written exam on pedagogy and their participation in a clinical activity that replicates a school situation and demonstrates social interaction and communication skills as well as teaching attitudes and behaviors.

Once selected, applicants for teaching in each jurisdiction go through carefully designed and well-supported preparation programs. In Finland, teachers must earn at least a two-year master's degree in education at one of eight universities that are known internationally for their rigorous, research-based programs. This degree follows undergraduate training in a major subject plus two minor subjects. Teachers both study research and become researchers: they complete a master's thesis on a pedagogical problem.

A substantial amount of the time spent in teacher education is in clinical practice in one of the model schools that partner with each university. In these schools, teachers are specially selected and trained to ensure that they can model effective practice and coach beginners. University courses also model strategies of cooperative and problem-based learning, reflective practice, and computer-supported education, encouraged by a higher education evaluation system that rewards effective, innovative university teaching practice.

Ontario teachers also go through rigorous preparation at one of thirteen universities accredited by the Ontario College of Education. These programs generally consist of three or four years of undergraduate study and a year of teacher preparation at a faculty of education.

Singapore revamped its teacher education programs in 2001 to increase teachers' pedagogical knowledge and skills as well as their content knowledge. Singapore has been moving toward graduate-

level training of teachers, with about two-thirds now completing a one-year master's degree program following the undergraduate content major, and one-third completing a four-year undergraduate program. All teachers, including those who will teach in elementary schools, must demonstrate deep mastery of at least one content area (plus study of other subjects they will teach), and clinical training has been expanded. A new school partnership model engages schools more proactively in supporting trainees during their practicum experiences.⁴

All preservice preparation occurs in the National Institute of Education (NIE), affiliated with Nanyang Technological University (NTU). At NIE, candidates learn to teach in the same way they will ask their own students to learn. Every student has a laptop, and the entire campus is wireless. The library spaces and a growing number of classrooms are consciously arranged with round tables and groups of three to four chairs so that students will have places to share knowledge and collaborate. Comfortable areas with sofa and chair arrangements are designed for group work among teachers and principals, with access to full technology supports (e.g., DVD, video and computer hookup, and a plasma screen for projecting their work as they do it). During the course of preparation, there is a focus on teaching for problem-based and inquiry learning, on developing collaboration, and on addressing a range of learning styles in the classroom.

Significantly, all three jurisdictions subsidize the preparation of teachers. In Finland and Singapore, teacher education is paid for completely by the government, and candidates earn a stipend or salary while they train. In Ontario, the government covers about two-thirds of the cost of candidates' preparation. With those subsidies, promising students can enter teacher education knowing that they will not carry large debts once they graduate.

When new teachers enter the profession, they receive induction support. In Singapore, beginning teachers are given two years of coaching from expert senior teachers who are trained by the NIE as mentors and have released time to help beginners learn their craft. During the structured mentoring period, beginning teachers teach a reduced load (about two-thirds that of an experienced teacher) and attend courses in classroom management, counseling, reflective practices, and assessment offered by NIE and the ministry.

In Ontario, the recently enacted New Teacher Induction Program (NTIP) provides a range of supports, including orientation, mentoring, and professional development focused on key areas of need identified by new teachers, including classroom management, communication with parents, assessment and evaluation, and work with students with special needs.

Lesson 3: Make Teaching an Attractive Profession

Finland, Ontario, and Singapore have been able to attract and retain highly effective teachers in part because teaching is an attractive profession that many individuals want to join and stay in. Unlike in the United States, where the top high school graduates often pursue careers in medicine, law, or business, teaching is a draw for academically talented youth, who stay in the profession rather than leave to find more lucrative jobs. In Finland, for example, teaching was the top-rated job by college students surveyed in 2008.

In some respects, this attractiveness is a cultural phenomenon. Leaders have frequently expressed their belief that teachers are vital, and this has helped raise the status of the profession. In 1966, when Singapore had just achieved its independence, then Minister of Education Ong Pang Boon declared that “the future of every one of us in Singapore is to a large extent determined by what our teachers do in the classroom.” Forty years later, Singapore’s prime minister, Lee Hsien Loong, reaffirmed this commitment: “Just as a country is as good as its people, so its citizens are only as good as their teachers.”

The respect accorded to teachers is not just about money. While new teachers in Singapore are paid nearly as well as new doctors entering government service, Finland’s teachers—among the most admired professionals in the country—earn about the average Finnish salary, the equivalent to the average of mid-career teachers in OECD nations (about \$41,000 in U.S. dollars).⁵ Salaries in Ontario range from \$37,000 to \$90,000, comparable to those in the United States.

Yet each jurisdiction has developed and implemented policies that make teaching attractive, and these efforts clearly have paid off. In addition to offering rhetorical support, leaders have adopted policies to improve teachers’ working conditions and sense of professionalism, elevating teaching to the level of other professions like medicine and law.

Finland has built professionalism into its system. Because teachers are so well prepared, they are also well respected and much trusted, receiving high status in the society and operating with significant autonomy inside the classroom. Teachers’ work is compared to that of medical doctors. The country has no external tests other than samples taken at two grade levels and a faculty-developed college-admissions test. Instead, the nation relies on teachers to develop their own assessments of student learning based on the National Curriculum. In that way, the country has signaled that teachers are professionals who can make sound judgments about student progress. There is no formal evaluation process, but teachers receive continual feedback from their principal and other school faculty members.

Furthermore, teaching conditions in Finland are highly desirable. Schools are equitably funded, well stocked, and uniformly well supported; class sizes are fairly small; students receive food and health care as well as educational supports. In addition, teachers’ instructional hours are short by U.S. standards (about 60 percent of the time U.S. teachers teach), so teachers have time for fashioning strong instruction, planning, meeting with students and parents, and grading papers, while also maintaining a reasonable family life. Only 10 percent to 15 percent of teachers leave the profession during the course of their career, an annual attrition rate of less than 1 percent.

In Ontario, the provincial premier bestows annual awards for excellent teachers. The Premier’s Awards for Teaching Excellence are given each May to “recognize educators and staff who excel at unlocking the potential of Ontario’s young people,” according to the province’s website. Teachers are supported in using research to improve their practice and their schools, and they are recognized when their efforts succeed. Teachers can earn more as they gain expertise by completing Additional Qualifications programs that enhance their knowledge and skills in such areas as special education, English as a second language, and French as a second language.

As part of its efforts to professionalize teaching, Ontario ended several policies adopted in the 1990s, such as testing and evaluation requirements that teachers had seen as punitive, which had led to an exodus from the profession. The incoming Liberal government, which took office in 2003, instead created a Working Table on Teacher Development that included teacher representatives, and adopted policies aimed at providing support and building teachers' capacity to teach more effectively. The province now has a surplus of teachers, as do Finland and Singapore.

Few teachers leave the profession in any of these jurisdictions. In Singapore, the attrition rate of teachers is less than 3 percent annually, which is less than half the annual attrition rate for teachers in the United States. Based on a recent Ministry of Education survey, teachers rank the following three reasons as key to staying in teaching:

- a positive culture with a strong sense of mission;
- good compensation and rewards benchmarked against market rates; and
- a wide range of opportunities for professional growth and development.

Singapore's performance-management system and career-ladder program help to create a strong profession. Teachers have numerous opportunities to grow professionally and take on leadership responsibilities, based on demonstrations of competence. Depending on their own abilities and career goals, teachers can remain in the classroom and become lead and master teachers; they can take on specialist roles, like curriculum specialist or guidance counselor; or they can take the leadership track and become administrators. The Ministry of Education is constantly looking for ways to recognize and promote teacher leadership, both for individuals who have demonstrated various talents and for teachers as a whole.

Lesson 4: Invest in Continuous Learning

In addition to providing strong initial preparation for teachers and creating working conditions that encourage retention, each of these jurisdictions also provides opportunities and support for teachers to develop their knowledge and skills, to improve their practice, and to grow as professionals. All three jurisdictions provide considerable time for teachers to work collaboratively and learn together during the regular school schedule—as much as five times what U.S. teachers receive. This enables teachers to become both individually and collectively more effective and helps ensure that highly effective teachers remain in schools.

Such efforts are critically important to avoiding the disruption and cost associated with teacher attrition. In the United States, about one-third of beginning teachers leave the profession within five years, costing districts \$7.3 billion a year.⁶ Teachers are most likely to leave if they feel ineffective or unsupported.

Singaporean teachers have about twenty hours a week built into their schedule for shared planning and learning, including visits to one another's classrooms, as well as one hundred hours per year of state-supported professional development outside of their school time. The NIE and ministry have trained teachers for lesson study and action research in the classroom so that they can examine teaching and learning problems and find solutions that can be disseminated to others. The ministry

has just established a new teaching academy to support teacher-initiated and teacher-led learning opportunities around subject matter across schools. A teacher's network also supports learning circles, teacher-led workshops, conferences, and a website and publications series for sharing knowledge. To support school-based learning, senior and master teachers are appointed to lead the coaching and development of the teachers in each school.

Singapore's performance management system is designed explicitly to link to professional development and to provide growth opportunities for effective teachers. The system's career paths for teachers allow them to remain in the classroom and become lead or master teachers. It also lets them take on additional responsibilities, such as part- or full-time curriculum development, at the school level or at levels all the way up to the ministry. Or teachers can follow the leadership track and become school, district, regional, or national leaders in the education system.

All teacher and leadership training is at government expense. As teachers are promoted and selected into these kinds of roles, they receive free courses of study through the ministry at the NIE, either while they are still teaching or while taking a sabbatical from their jobs. How far teachers advance depends on their interests and the competencies they demonstrate through the evaluation system. Greater compensation accompanies greater responsibility, and a teacher at the top of the master-teacher track can earn as much as a school principal.

Finland, meanwhile, provides opportunities for teachers to develop their practice. Within the parameters of the National Curriculum, teachers engage in joint curriculum planning and approve the school-level curriculum. The importance of curriculum design in teacher practice has helped shift the focus of professional development from fragmented inservice training toward more systemic, theoretically grounded schoolwide improvement efforts.

Because Finnish teachers take on significant responsibility for curriculum and assessment, as well as experimentation with and improvement of teaching methods, some of the most important aspects of their work are conducted beyond traditional teaching roles. Teachers take on many of the roles conducted by educational consultants and specialists in other countries, but because teaching is highly professionalized, diverse responsibilities are handled within the teaching role, without teachers leaving teaching or being placed in more bureaucratically respected, highly compensated roles. Although the career structure is not hierarchical, experienced teachers earn much more than their peers in the United States.

Many Finnish teachers take advantage of the opportunity to pursue doctoral studies in education, often while simultaneously teaching school. According to a recent national survey, teachers devote an average of about seven working days per year to professional development on their own time and by time provided by the system. The state plans to double its \$30 million annual budget for professional development of teachers and school principals by 2016.

The Ontario Ministry of Education has adopted a multifaceted set of capacity-building strategies to support effective leadership, teaching, and student learning. Teachers and principals have six professional activity days every school year to work with each other on activities related to key state and local priorities. The ministry also fosters capacity building and collaboration by sharing information about existing and emerging successful practices in schools and classrooms

through studies, webcasts, and videos of effective practices that can be used in professional development initiatives.

Ontario's annual evaluation system for teachers is also designed for professional growth. As part of the system, teachers complete the Annual Learning Plan, which outlines growth goals for the year. This plan allows teachers and principals to work together to plan improvement strategies and identify needed professional development.

In addition, Ontario's Ministry of Education also funds the Teacher Learning and Leadership Program, which provides job-embedded professional development for qualifying teachers. Teachers who are part of the program join a provincewide network, which shares ideas and best practices. The ministry also provides opportunities for teachers to spend a year or two in the ministry to work on provincial policy. This practice not only enhances teachers' knowledge and skills, it also improves policy by giving teachers a hand in setting it and ensuring that it can be implemented effectively.

Lesson 5: Proactively Recruit and Develop High-Quality Leadership

One of the most significant aspects of the educator-development systems in Finland, Ontario, and Singapore is their investment in leadership development and support. These systems recognize that high-quality leadership strengthens teaching by providing skillful guidance and creating a school vision that all teachers share.

The evidence shows that school leadership is second only to teaching in its effects on student learning. About a quarter of the school-related variation in student achievement can be explained by school leadership.⁷

In all three jurisdictions, school leaders are expected to be *instructional leaders*. They are expected to know curriculum and teaching intimately and be able to provide guidance and support to teachers. While management and budgeting are important aspects of leaders' jobs, their instructional leadership role is paramount. Effective instructional leaders can evaluate teachers skillfully, provide them with useful feedback, assess the school's needs for professional development, and direct instructional resources where they are most needed. Principals are attuned to the learning needs of students and adults.

To help ensure that every leader can fulfill this role, all three jurisdictions proactively recruit principals from among the ranks of expert teachers who exhibit leadership potential. In Finland, in fact, principals by law must be qualified to teach in the school they lead. That means not only that someone from outside of education cannot become a principal but also that an elementary teacher cannot become a principal in a high school.

The three jurisdictions also provide training for principals that is designed to ensure that they can assume the instructional leadership role expected of them.

In Ontario, prospective principals take part in the Principals' Qualifications Program, a system accredited by the Ontario College of Teachers and consisting of two parts, each totalling 125 hours, plus a practicum. The program is provided by faculties of education and principals' associations and

is structured around the Ontario Leadership Framework, which emphasizes instructional leadership and support. In addition to completing the PQP, principals must have an undergraduate degree, five years of classroom experience, qualifications in three divisions of the school system, and a master's or double-subject specialist degree. Once appointed, all principals and vice principals receive mentoring for their first two years in each role. This mentoring, fully funded by the ministry, is organized around a learning plan to guide the support.

In Singapore, teachers with leadership potential are identified early and groomed for leadership positions, generally progressing to subject head, head of department, vice principal, and then principal. Potential principals, who are selected after a grueling interview process that includes a two-day simulation test, enter the six-month Leaders in Education program. This program, conducted by the Ministry of Education, includes education coursework, field-based projects, and mentoring from senior principals, as well as examinations of other industries and visits to other countries to learn about effective practices.

All of the programs also include extensive clinical training. In Finland, for example, some university-based programs include a peer-assisted leadership model, in which part of the training is done by shadowing and being mentored by the senior school principal.

Conclusion

Taken individually, these lessons might sound familiar to American ears. Many states and school districts have instituted programs to recruit highly capable individuals into teaching and prepare them effectively, provided ongoing support and development along with career paths for veterans, and invested in high-quality leadership. These efforts have increased in recent years as policymakers have recognized the importance of teacher effectiveness in improving student learning. In 2010, for example, ED launched a campaign to raise awareness of teaching and attract individuals to the profession. ED also made teacher effectiveness a top priority in its Race to the Top program, and many states developed comprehensive plans for developing teacher effectiveness as part of their proposals.

However, as promising as they are, these efforts do not yet add up to a comprehensive system in most communities. While some states view teacher development systemically, others do not, and many of the initiatives tackle the issue in a piecemeal fashion. Few states or districts have created a seamless, well-supported pipeline to school leadership positions. As the examples from high-performing nations show, only a systemic approach will ensure that all schools and classrooms are staffed by highly effective leaders and teachers.

Federal and state policy can help all states and districts systemically approach teacher development. The pending reauthorization of both the Elementary and Secondary Education Act and Title II of the Higher Education Act—which addresses teacher education—provides an opportunity for Congress to look for ways to create incentives and provide support to states and districts to develop and refine systems for teacher and leader effectiveness. Individual states can take steps to create coherent policies and practices as they coordinate their own systems. Efforts at both levels are needed to develop a world-class educator workforce.

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Developing Effective Teachers and School Leaders: The Case of Finland

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With its high levels of educational achievement and attainment, Finland is regarded as one of the world's most literate societies. More than 98 percent of Finns attend preschool at the age of six; 99 percent complete compulsory basic education at the age of sixteen. About 94 percent of those who start the academic strand of upper secondary school graduate. Completion rates in vocational upper secondary school also reach close to 90 percent. Three of five young Finns enroll in state-funded higher education after upper secondary school.¹

Since it emerged in 2000 as the top-scoring Organisation for Economic Co-operation and Development (OECD) nation on the Programme for International Student Assessment (PISA), researchers have been pouring into the country to study the so-called “Finnish miracle.” How did a country with an undistinguished education system in the 1980s surge to the head of the global class in just a few decades? Research and experience suggest that one element of the Finnish system trumps all others: excellent teachers and leaders. This section looks at how Finland develops such excellence in its educator workforce.

The Teacher in Finnish Society

Education has always been an integral part of Finnish culture and society. Teachers currently enjoy great respect and trust in Finland. Finns regard teaching as a noble, prestigious profession—akin to medicine, law, or economics—and one driven by moral purpose rather than material interests.

Teachers also are the main reason Finland now leads the international pack in literacy, science, and math. Until the 1960s the level of educational attainment in Finland remained fairly low: only one in ten adult Finns had completed more than nine years of basic education, and achieving a university degree was uncommon.² Back then, Finland's education level was comparable with that of Malaysia or Peru, and lagged behind its Scandinavian neighbors of Denmark, Norway, and Sweden. Today, Finland publicly recognizes the value of its teachers and trusts their professional judgment in schools. Without excellent teachers, Finland's current international success would have been impossible to achieve.

The Finnish education system does not employ external standardized student testing to drive the performance of schools. Neither does it employ a rigorous inspection system of schools and teachers. Instead of test-based accountability, the Finnish system relies on the expertise and professional accountability of teachers who are knowledgeable and committed to their students and communities.

Recruiting the Best

Among young Finns, teaching is consistently the most admired profession in regular opinion polls of high school graduates.³ Becoming a primary school teacher in Finland is a very competitive process. Only Finland's best and brightest are able to fulfill those professional dreams. Every spring, thousands of high school graduates submit their applications to the departments of teacher education in Finnish universities. Usually it is not enough to complete high school and pass a rigorous matriculation examination. Successful candidates must have not only good scores and excellent interpersonal skills but also a deep personal commitment to teach and work in schools. Annually only about one in every ten applicants will be accepted to study to become a primary school teacher. Among all categories of teacher education, about five thousand teachers are selected from about twenty thousand applicants.

Candidates are first selected based on matriculation examination results, their high school record, and relevant records of out-of-school accomplishments. In the second phase:

1. Candidates complete a written exam on assigned books on pedagogy.
2. Candidates engage in an observed clinical activity replicating school situations, where social interaction and communication skills come into play.
3. The top candidates are interviewed and asked, among other things, to explain why they have decided to become teachers. These highly capable candidates then complete a rigorous teacher education program at government expense.

Wages are not the main reason young people become teachers in Finland. Teachers earn very close to the national average salary level, typically equivalent to what mid-career, middle school teachers earn annually in the OECD nations—about \$41,000 in U.S. dollars.⁴ More important than salaries are such factors as high social prestige, professional autonomy in schools, and the ethos of teaching as a service to society and the public good. Thus, young Finns see teaching as a career on par with other professions where people work independently and rely on scientific knowledge and skills that they gained through university studies.

Preparing Them Well

All teachers in Finnish primary, junior high, and high schools must hold a master's degree; preschool and kindergarten teachers must hold a bachelor's degree. There are no alternative ways to receive a teacher's diploma in Finland; the university degree constitutes a license to teach.⁵

Primary school teachers major in education, while upper-grade teachers concentrate their studies in a particular subject, e.g., mathematics, as well as didactics, consisting of pedagogical content knowledge specific to that subject.

Teacher education is based on a combination of research, practice, and reflection, meaning that it must be supported by scientific knowledge and focus on thinking processes and cognitive skills used in conducting research. In addition to studying educational theory, content, and subject-specific pedagogy, each student completes a master's thesis on a topic relevant to educational practice.

Successful completion of a master's degree in teaching (including a bachelor's degree) generally takes five to seven and a half years, depending on the field of study.⁶

Strong Focus on Content and Pedagogy

A broad-based curriculum ensures that newly prepared Finnish teachers possess balanced knowledge and skills in both theory and practice. It also means that prospective teachers possess deep professional insight into education from several perspectives, including educational psychology and sociology, curriculum theories, student assessment, special needs education, and pedagogical content knowledge in selected subject areas. All eight universities that offer teacher education in Finland have their own strategies and curricula that are nationally coordinated to ensure coherence but locally crafted in order to make the best use of the particular university's resources.

Subject teachers complete a master's degree in one major subject and one or two minor subjects. Students then apply to a university's department of teacher education to study pedagogy for their focus subject. Subject-focused pedagogy and research are advanced in Finnish universities, and strategies of cooperative and problem-based learning, reflective practice, and computer-supported education are common. A higher education evaluation system that rewards effective, innovative university teaching practice has served as an important driver for these developments.

Integration of Theory, Research, and Practice

Finland's commitment to *research-based teacher education* means that educational theories, research methodologies, and practice all play an important role in preparation programs.⁷ Teacher education curricula are designed to create a systematic pathway from the foundations of educational thinking to educational research methodologies and then on to more advanced fields of the educational sciences. Each student thereby builds an understanding of the systemic nature of educational practice. Finnish students also learn the skills of how to design, conduct, and present original research on practical or theoretical aspects of education.

Another important element of Finnish research-based teacher education is practical training in schools, which is a key component of the curriculum, integrated with research and theory. Over the five-year program, candidates advance from *basic teaching practice to advanced practice and then to final practice*. During each of these phases, students observe lessons by experienced teachers, practice teaching observed by supervisory teachers, and deliver independent lessons to different groups of pupils while being evaluated by supervising teachers and department of teacher education professors and lecturers. Practicum experiences comprise about 15 percent to 25 percent of teachers' overall preparation time.

Much of this work is completed within special Teacher Training Schools governed by the universities, which have similar curricula and practices to normal public schools. Some student teachers also practice in a network of selected Municipal Field Schools, which are regular public schools. Schools where practice teaching occurs have higher professional staff requirements, and supervising teachers have to prove they are competent to work with student teachers.

Teacher Training Schools are also expected to pursue research and development roles in collaboration with the university department of teacher education and, sometimes, with the academic faculties who also have teacher education functions. These schools can, therefore, introduce sample lessons and alternative curricular designs to student teachers. These schools also have teachers who are well prepared in supervision and teacher professional development and assessment strategies. Because teacher education is so strong, Finnish teachers are very well prepared for taking a teaching job as soon as they are assigned to a school.

Hiring, Evaluation, and Retention

Because Finland has no centralized management of education, the school and the principal, together with the school board, typically make hiring decisions. Small allowances or premiums are offered to attract young teachers to teach in small, rural schools, which are generally less popular than those in the urban areas near the universities where teachers have studied. The teaching force in Finland is highly unionized; almost all teachers are members of the Trade Union of Education.

There is no formal teacher evaluation in Finland. Teachers receive feedback from their principal and the school staff itself. Because Finland does not have a standardized assessment for evaluating students, there is no formal consideration of student learning outcomes in the evaluation. Teacher and leader effectiveness are defined using a broader meaning of student learning than just test scores in mathematics and reading literacy.

Once a teacher has permanent employment in a school, there are no checkpoints or means for terminating a contract unless there is a violation of the ethical rules of teaching. Finland relies on the strong preparation of teachers, their professional ethic, and their opportunities for ongoing engagement with colleagues in the professional work of teaching and curriculum and assessment development to support their effectiveness. A good teacher is one who is able to help all children progress and grow in a holistic way.

When new teachers are employed in a school, they usually stay there for life. Very few primary school teachers leave their work during the first five years, and attrition is much less common than in other countries. An official estimate suggests that only 10 percent to 15 percent of teachers leave the profession during the course of their career.

Teachers compare what they do in a primary school classroom to the work that doctors do in medical clinics. A key characteristic of Finnish teachers' work environment is that they are autonomous, trusted, and respected professionals. Unlike nations that have bureaucratic accountability systems that make teachers feel threatened, over-controlled, and undervalued, teaching in Finland is a very sophisticated profession, where teachers feel they can truly exercise the skills they have learned in the university. Test-based accountability is replaced by shared responsibility and inspiration for human development.

Professional Learning and Development

Finnish teachers possessing a master's degree have the right to participate in postgraduate studies to supplement their professional development. Many teachers take advantage of the opportunity to pursue doctoral studies in education, often while simultaneously teaching school. For doctoral studies in education, students must complete advanced learning in the educational sciences.

While Finnish teacher education has been praised for its systematic academic structure and high overall quality,⁸ professional development and inservice programs for teachers are more variable. In Finland, induction of new teachers into their first teaching position is less uniform than initial preparation. It is up to each school and municipality to take care of new teachers' induction to their teaching assignments. Some schools, as part of their mission, have adopted advanced procedures and support systems for new staff, whereas other schools simply bid new teachers welcome and show them their classrooms. In some schools, induction is a specific responsibility of school principals or deputy principals, while in others induction jobs may be assigned to experienced teachers. Teacher induction is an area that requires further development in Finland, as has been pointed out in a recent European Commission report.⁹

Teachers' annual duties include three days devoted to planning and professional development. According to a Finnish national survey, teachers devoted about seven working days per year on average to professional development in 2007; approximately half was drawn from teachers' personal time. About two-thirds of primary and secondary school teachers participated in professional development that year.¹⁰

Concerns have also been raised recently about the variability of inservice education. Municipalities, as the overseers of primary, middle, and high schools, are responsible for providing teachers with learning opportunities, based on their needs. Whereas some Finnish municipalities organize inservice programs for all teachers, in others it is up to individual teachers or school principals to decide how much and what type of professional development is needed and whether such interventions will be funded. Although schools are financed equitably, the central government has only limited influence on the budget decisions made by municipalities or schools. Therefore, some teachers have more opportunities for professional development than others do.

In response to concerns about uneven opportunities for inservice professional learning,¹¹ the government is planning substantial increases in professional development budgets and considering ways to require that all teachers must have access to adequate professional training financed by municipalities. The state budget annually allocates some \$30 million to professional development of teachers and school principals through various forms of pretertiary and continuing education. The government determines the focus of the training, based on current national educational development needs, and the training is contracted out to service providers on a competitive basis. The Finnish Ministry of Education, in collaboration with municipalities, plans to double the public funding for teacher professional development by 2016.¹²

Engagement in Curriculum and Assessment Development

During the course of Finland's education reforms, teachers have demanded more autonomy and responsibility for curriculum and student assessment.¹³ Gradual growth of teacher professionalism in Finnish schools since the 1980s has made this a legitimate appeal. Teachers' engagement in these areas contributes to teacher status, satisfaction, and effectiveness.

While the *National Curriculum Framework for Basic Education* and similar documents for upper secondary education provide guidance to teachers, curriculum planning is the responsibility of schools and municipalities. Local education authorities and teachers approve the school-level curriculum, and school principals play a key role in curriculum design. Teacher education provides them with well-developed curriculum knowledge and planning skills. Moreover, the importance of curriculum design in teacher practice has helped shift the focus of professional development from fragmented inservice training toward more systemic, theoretically grounded schoolwide improvement efforts.

Along with curriculum design, teachers play a key role in assessing students. Finnish schools do not use standardized testing to determine student success. There are three primary reasons for this. First, while assessment practice is well grounded in the national curriculum, education policy in Finland gives a high priority to personalized learning and creativity as an important part of how schools operate. Therefore, the progress of each student in school is judged more against his or her individual development and abilities rather than against statistical indicators. Second, education authorities insist that curriculum, teaching, and learning, rather than testing, should drive teachers' practice in schools. Student assessment in Finnish schools is embedded in the teaching and learning process and used to improve both teachers' and students' work throughout the academic year. Third, determining students' academic performance and social development in Finland are seen as a responsibility of the school, not the external assessors. Teachers are the best judges of how their own students are progressing in school.

Finnish schools accept that there may be some limitations on comparability when teachers do all the grading. At the same time, Finns believe that the problems often associated with external standardized testing—narrowing of the curriculum, teaching to the test, unethical practices related to manipulating test results, and unhealthy competition among schools—can be more problematic. Since Finnish teachers must design and conduct appropriate curriculum-based assessments to document student progress, classroom assessment and school-based evaluation are important parts of teacher education and professional development.

Although Finnish teachers' work consists primarily of classroom teaching, many of their duties lie outside of class. Formally, teachers' working time in Finland consists of classroom teaching, preparation for class, and two hours a week planning schoolwork with colleagues. From an international perspective, Finnish teachers devote less time to teaching than do teachers in many other nations. For example, a typical middle school teacher in Finland teaches just under six hundred hours annually, which corresponds to about four forty-five-minute lessons a day. In the United States, by contrast, a teacher at the same level devotes 1,080 hours to teaching more than 180 school days.¹⁴ This means that a middle school teacher in the United States, on average, devotes about twice as much time to classroom teaching compared with his or her counterpart in Finland.

This, however, does not imply that teachers in Finland work less than teachers in other countries. An important—and still voluntary—part of Finnish teachers' work is devoted to the improvement of classroom practice, the advancement of the school as a whole, and work with the community.¹⁵ Because Finnish teachers take on significant responsibility for curriculum and assessment, as well as experimentation with and improvement of teaching methods, some of the most important aspects of their work are conducted outside of classrooms.

Career Development and Leadership

Because teaching is highly professionalized, diverse responsibilities are handled within the teaching role. A peculiar feature of Finnish schools is that all the teachers are equal and are expected to do similar types of things. It is very rare for anyone to be assigned to a strictly non-teaching role. Job portfolios may differ—teachers may have some type of special role in working with the curriculum or parent-school cooperation or business-school partnership—but everybody still teaches.

If teachers have a special role that is particularly time-consuming, they still continue to teach, perhaps with fewer teaching hours. Rarely do these roles receive additional compensation. Occasionally principals may offer a small stipend to teachers who are doing other work in addition to their teaching. This means that there is only a little room for career development in Finnish schools. However, the relative difference between salaries of beginning and senior teachers is much larger in Finland than in the United States.¹⁶

Development of School Leaders

By law, all school principals must be qualified teachers for the school they lead and must complete a specific course of academic training at the university. In most cases, this is done as part-time study while the person is teaching or working in the school. Some of the university programs are based on a peer-assisted leadership model, in which part of the training is done by shadowing and being mentored by the senior school principal.

Local education authorities, with the advice and counsel of the teachers, select principals. Principal evaluation, like teacher evaluation, is handled differently in each municipality. In some cases, there is a personal results-based contract between the principal and the municipality, in which the outcomes and expected results of the principal's work are defined. As mentioned above, formal external teacher or leader evaluations do not exist in Finland. Consequently, value-added methods to measure teacher or leader effectiveness are alien to the Finnish education system.

But, as Andy Hargreaves concluded in a recent analysis of leadership development in Finland,¹⁷

leadership currently contributes to Finnish high performance not by concentrating or perseverating on performance outcomes, particularly measurable ones, but by paying attention to the conditions, processes and goals that produce high performance—a common mission; a broad but unobtrusive steering system; strong municipal leadership with lots of local investment in curriculum and educational development; teachers who already are qualified and capable at the point of entry; informal cooperation and distributed leadership;

principals who stay close to the classroom, their colleagues, and the culture of teaching; and (from the principal's standpoint) being first among a society of equals in the practical and improvisational practice of school-based improvement.

Lessons from Finland's Success

No single factor can explain Finland's outstanding educational performance. However, most analysts observe that excellent teachers play a critical role. Successful Finnish practices include

- the development of rigorous research-based and practice-oriented teacher education programs that prepare teachers in content, pedagogy, and educational theory, as well as the capacity to do their own research, and that include fieldwork mentored by expert veterans;
- significant financial support for teacher education, professional development, reasonable and equitable salaries, and working conditions that enable lateral professional learning and building social capital in schools; and
- the creation of a respected profession in which teachers have considerable authority and autonomy, including responsibility for curriculum design and student assessment, which engages them in the ongoing analysis and refinement of practice.

Teachers' capacity to teach in classrooms and work collaboratively in professional communities has been built systematically through academic teacher education. A smart strategy is to invest in quality at the point of entry into teacher education. The Finnish example suggests that a critical condition for attracting the most able young people is that teaching is an independent and respected profession rather than just a technical implementation of externally mandated standards and tests. Teachers' strong competence and preparedness creates the prerequisite for the professional autonomy that makes teaching a valued career.

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Systems for Teacher and Leadership Effectiveness and Quality: Ontario, Canada

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In Canada, education is the responsibility of each province or territory. Ontario is Canada's largest and most diverse province, serving almost two million students in five thousand schools in four publicly funded school systems (English public, English Catholic, French public, and French Catholic). Ontario receives more than half of all newcomers (including immigrants and refugees) into Canada and also has more than half of Canada's visible minorities—a population that is growing more than four times faster than the general population. Currently, 27 percent of Ontario students were born outside Canada, with 20 percent self-identifying as members of a visible minority, and 4.5 percent of Ontario schoolchildren are French speaking. Approximately 115,000 teachers and 7,300 school principals are employed in Ontario's seventy-two district school boards (sixty English and twelve French), which range widely in size, from a few hundred students in remote rural areas to 250,000 students in the Toronto District School Board. The public education system is held in generally high regard, with 95 percent of all students attending publicly funded schools.

Government Priorities

For about a decade beginning in the early 1990s, the education system in Ontario was characterized by significant labor disruption, public dissatisfaction, and poor morale leading to high turnover among teachers. In 2004, a new provincial government set an ambitious agenda for education, recognizing that a focused and sustained commitment to education and teaching is key to a strong and prosperous society. The government identified three core priorities to drive its education reform agenda forward:

1. Increased student achievement.
2. Reduced gaps in achievement for students.
3. Increased public confidence in publicly funded education.

^a The authors would like to acknowledge the assistance of Rebecca Cossar, Kirsty Henderson, Jordon Douglas, Eleanor Newman, and Laurie Pedwell.

Specifically, the Ontario government committed to having 75 percent of students achieving at the provincial standard (70 percent, or a B grade) in reading, writing, and mathematics in the sixth grade (age twelve) and a secondary school graduation rate of 85 percent of students. To date,

- In 2010, 68 percent of students overall achieved the provincial standard of Level 3 compared to 54 percent in 2003—an increase of 14 percentage points.
- In 2009, 79 percent of students graduated from high school within five years, compared to 68 percent in 2004—an increase of 11 percentage points.

The defining feature of Ontario's successful approach to education reform is professional capacity building—at the provincial, district school board, school, and classroom levels—with a focus on results.

To support this capacity building, the Ontario Ministry of Education has

- created the Literacy and Numeracy Secretariat (LNS) and the Student Success/Learning to 18 Branch (SS/L18), now coordinated within the Student Achievement Division;
- made major investments in personnel (e.g., student achievement officers, student success leaders, additional primary and specialist teachers) and resources (e.g., professional learning institutes, webinars, instructional guides); and
- developed finely tuned strategies (e.g., Ontario Focused Intervention Partnerships) to help improve teaching and learning in Ontario schools.

The ministry has also developed a range of supporting conditions to improve student outcomes, including teacher and leadership development frameworks and peace and stability in labor relations.

Teacher Effectiveness and Quality: From Teacher Testing to Teacher Development

The Ontario Ministry of Education recognizes teachers as the single most important factor in the improvement of student achievement, and teacher professional development as the single most important factor in the improvement of teacher quality. This is supported by research that suggests that what teachers know and are able to do is crucial to student learning.¹

In 1997, the Ontario College of Teachers (OCT) was established to regulate the teaching profession in the public interest (<http://www.oct.ca/>). The college licenses all teachers in Ontario's publicly funded school system, sets standards of practice and conduct for the profession, and investigates complaints against teachers from the public. Self-regulation of the teaching profession encourages a climate of respect and recognition for teachers and raises the profile of teachers with the public.

Ontario has explored a number of different approaches to improve student achievement through teacher development, including a teacher-testing program from 2001 to 2004. The teacher-testing program comprised an entry to the profession test, a recertification program every five years, and a teacher evaluation program. The prescriptive nature of the testing program did not encourage teachers to be actively and meaningfully engaged in either their own learning or their students' learning, and was considered punitive and controlling by the profession.

Since 2004, the Ministry of Education has advanced an approach based on respect and professionalism for teachers, teaching practice, and teacher development. A defining feature is a commitment to collective capacity building at all levels of the education system. To create a sense of common purpose and cooperation among education stakeholders, the ministry initiated the Working Table on Teacher Development to provide an effective vehicle for policymakers, teachers, school boards, and teacher labor groups to share different perspectives. This led to the creation of a number of innovative teacher development programs for new and experienced teachers.

Teacher Recruitment

School boards are responsible for the hiring and appointment of teachers to Ontario schools in the public system. Teachers apply to schools of their choice and are assigned to positions based on the program needs of the school and the safety and well-being of students, as well as their own qualifications and seniority. Principals generally make these assignment decisions. Some school boards also have staffing committees, consisting of school and school board staff, and representatives of teachers' federations to assist in making staffing decisions.

All teachers in the public system must be members of the Ontario Teachers' Federation and one of its teachers' union affiliates, and all school boards are responsible for negotiating local collective agreements with the federations.

Ontario's employment market is now characterized by an oversupply of trained teachers in most subject areas, especially in elementary schools. Even though the oversupply means that it now takes the average new teacher longer to secure a permanent full-time contract, surveys of teachers beginning their careers in Ontario schools reveal a high level of professional satisfaction and an eagerness to stay in the field.

Teacher Preparation, Continuing Professional Development, and Capacity Building

Teacher preparation and professional development in Ontario is based on a framework of experience, training, professional learning, and appraisal over the stages of a teacher's career ranging across preservice, new teacher, experienced teacher, and teacher leadership stages. Central to the framework is the idea that effective and lifelong teacher development depends on teachers taking ownership of their learning and having the capacity to develop and renew their knowledge and skills.

Teacher Preservice Education

Ontario teachers generally complete a minimum of three or four years of undergraduate study and a year of teacher preservice education at a faculty of education at an Ontario university before becoming certified with OCT. Thirteen Ontario universities currently offer teacher preservice education programs, which are accredited by OCT. In order to be accredited, preservice programs must satisfy fifteen broad requirements outlined in O. Reg. 347/02 (Accreditation of Teacher Education Programs), under the Ontario College of Teachers Act of 1996.

Generally, applicants to preservice programs must meet certain academic standards and may also have to demonstrate other evidence of competency (e.g., entry interview, experience with children). As part of their preservice programs, teacher candidates must complete a minimum of forty days of practice teaching, although most Ontario programs offer at least fifty or sixty days. The government provides operating funding to support enrollment in preservice programs. In 2009–10, the government provided approximately \$8,517 for each full-time teacher candidate to complete one year of preservice education. This funding is supplemented by tuition and mandatory ancillary fees that are regulated by the government and paid by the teacher candidate (e.g., from \$4,720 to \$5,940 for one year, as of 2008–09).

Since 2007, the Ministry of Education has delivered the Building Futures program² to assist teacher candidates in understanding key government education priorities as they make the transition from university to the school classroom. Candidates receive information and resources about education priorities and effective teaching strategies through a series of workshops by experienced educators.

New Teacher Induction Program (NTIP)

The New Teacher Induction Program (NTIP) is mandatory for new teachers³ employed in Ontario's public school system. The NTIP provides a range of supports, including orientation, mentoring, and professional development, and includes two performance appraisals by the school principal and a notation on the teaching certificate indicating successful completion of the program. The professional development focuses on key areas of need identified by new teachers, including classroom management, communication with parents, and assessment and evaluation.

In a recent provincewide evaluation of the program, the majority of school boards (82 percent) reported that more than 90 percent of their new teacher hires would be returning for the upcoming school year (based on 2008–09 data). The evaluation, along with annual surveys of beginning teachers (conducted by OCT and partially funded by the government), is identifying new teachers' continuing needs (e.g., preparation to teach students who have special needs) and informing the ongoing implementation of the program.

Teacher Appraisal and Evaluation

The Teacher Performance Appraisal (TPA) system⁴ provides teachers with meaningful appraisals that encourage professional learning and growth. The appraisal process was developed in collaboration with key education stakeholders and is designed to foster teacher development and identify opportunities for additional support where required. Each teacher is appraised every five years by his/her school principal based on competencies that reflect standards of practice set out by OCT (sixteen competencies for experienced teachers and eight competencies for new teachers).

As part of the appraisal process, experienced teachers must complete the Annual Learning Plan (ALP) each year, outlining their plan for professional growth. Developing, maintaining, and updating the ALP provides teachers and principals with an opportunity to collaborate and to engage in discussion about teachers' performance, growth strategies, and professional learning specific to their needs.

Although the performance appraisal process for new and experienced teachers focuses on teacher growth and development, there are a small number of cases where continued unsatisfactory performance results in the termination of a teacher's employment.

Input gathered from a recent survey and focus groups of principals and teachers shows that there are still some challenges in implementing the TPA—specifically, making the process more meaningful for the teacher. For example, principals would like more training on how to provide support when a teacher does not receive a satisfactory rating. Teachers would like specific support on how to develop their professional learning commitments.

Teacher Learning and Leadership Program

Experienced teachers may apply to participate in the Teacher Learning and Leadership Program (TLLP)⁵ in order to model and share best practices with other teachers through self-directed, job-embedded professional development projects, which are funded by the Ministry of Education. Projects explore a wide range of innovative instructional strategies, such as integrating technology into teaching and differentiating learning for students with special needs. Teachers involved in the TLLP become part of a provincial network of professional learning where their knowledge and learning is shared with other teachers within and outside their boards. Information about completed projects is made available provincewide on the ministry website.

Additional Qualifications

More than 35,000 teachers take Additional Qualifications (AQ) programs every year to upgrade their qualifications and enhance their practice. AQ programs are offered by Ontario faculties of education and other organizations and are accredited by OCT. These programs are voluntary, taken on a teacher's own personal time (e.g., during the summer), and the cost of participation is covered by the teacher (up to \$1,000 per program). In 2008, teachers spent over \$25 million of their own money on AQ programs. Teachers obtain AQs in order to develop greater knowledge and expertise in particular areas of study and to move up the salary grid. The most popular AQs are special education, English as a second language, and French as a second language.

The Ministry of Education and the Ontario Teachers' Federation also sponsor summer institutes for teachers to enhance their knowledge and skills in a range of provincial priority areas. These summer institutes are very well attended and are offered at minimal cost to teachers.

Teacher Recognition and Reward

Local collective agreements negotiated by each school board include specific salary ranges for the board's teachers. Teachers' salaries in Ontario range from \$37,000 to \$90,000 within a twelve-year salary grid. Teachers can move between salary categories by completing a specific number of AQ programs. Teachers can receive additional remuneration for responsibilities beyond regular classroom duties (e.g., acting as a department head). Teachers may also take on other roles in their schools, such as volunteering for extracurricular activities or acting as mentors for new teachers, which are not associated with additional remuneration.

The government successfully facilitated a process in 2005 and 2009 to implement a provincial bargaining framework to establish four-year collective agreements across Ontario and to avoid labor disruption. This has promoted peace and stability throughout the publicly funded school system. There have been no strike days or union unrest during this time in Ontario.

Ontario also recognizes and celebrates teachers through the Premier's Awards for Teaching Excellence,⁶ an awards program for outstanding educators and support staff in the publicly funded school system.

Leadership Effectiveness

The Ministry of Education considers school leaders to be instructional leaders and school leadership to be a key supporting condition in the achievement of its education priorities. In 2005, the ministry developed a paper on the role of the principal called *Leading Education: New Supports for Principals and Vice-Principals in Ontario Publicly Funded Schools*, outlining five goals:

1. Ensure conditions exist that permit principals to perform their key function as the “instructional leader.”
2. Provide high-quality training.
3. Increase input principals and vice principals have within the education system.
4. Improve respect and security.
5. Better define the role, powers, and responsibilities.

Principal Preparation

All principals and vice principals must attain principals' qualifications by completing the Principals' Qualification Program (PQP). The program is accredited by OCT and consists of two parts, each totalling 125 hours, plus a practicum. The program is provided by faculties of education and by principals' associations. The PQP is structured around the Ontario Leadership Framework. In addition to completing the PQP, principals must have an undergraduate degree, five years of classroom experience, qualifications in three divisions of the school system, and a master's or double-subject specialist degree.

Leadership Recruitment, Recognition, and Retention

School boards decide on the placement of principals in specific schools by looking at the talent pool of candidates, the needs of their schools, and the career preferences of their current leaders where possible, taking into account advice from school councils. Each school board receives ministry funding to develop a mandatory leadership succession and talent development plan based on a continuum of effective training and selection practices. School boards are supported by the Institute for Education Leadership—a partnership made up of representatives from the ministry, principals' and supervisory officers' associations, and councils of directors of education—in developing effective succession plans.

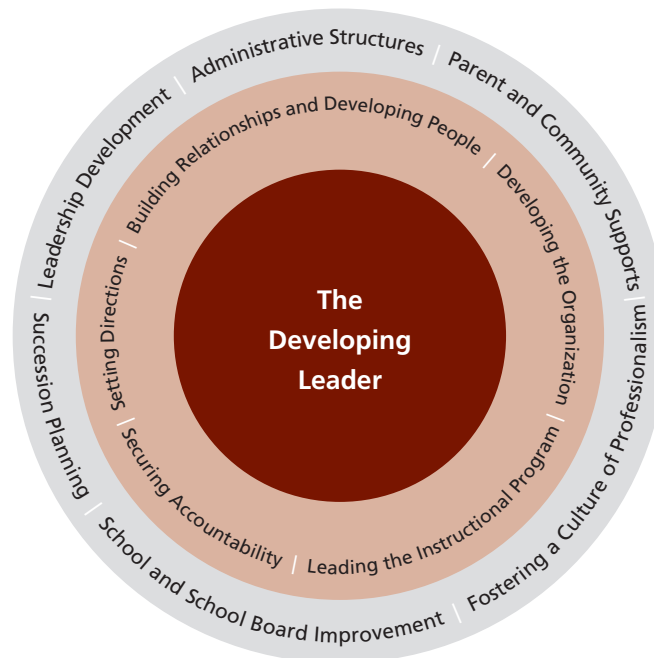
Some factors may serve as deterrents for teachers to become vice principals or principals, including a negligible salary increase, if any, and the fact that teachers must leave the protection of their federation or union in order to take on the new role. Still, most school leaders indicate that they like their jobs, and very few leave prior to the average retirement age.

The Ontario Leadership Strategy and Leadership Framework

The ministry's extensive Ontario Leadership Strategy (OLS)⁷ is a comprehensive plan of action designed to support student achievement and well-being by attracting and developing skilled and passionate school and system leaders. The theory of action driving the OLS is that significant progress toward the province's three core education priorities can be accomplished by

- directly improving the quality of school and district leadership;
- supporting and adding value to efforts of others responsible for leadership development; and
- working to improve conditions for teaching and learning in schools and classrooms.

The OLS is underpinned and informed by a research-based framework for leadership development.



The Ontario Leadership Framework identifies the practices and competencies that describe effective leadership, based on research and professional practice, in five domains:

1. Setting directions.
2. Building relationships and developing people.
3. Developing the organization.
4. Leading the instructional program.
5. Securing accountability.

The Leadership Framework is a non-mandated tool to guide leadership practice. Its purpose is to promote a common language that fosters an understanding of leadership and what it means to be a school and system leader, to make explicit the connections between leaders' influence and the quality of teaching and learning, and to guide the design and implementation of professional learning and development of school and system leaders.

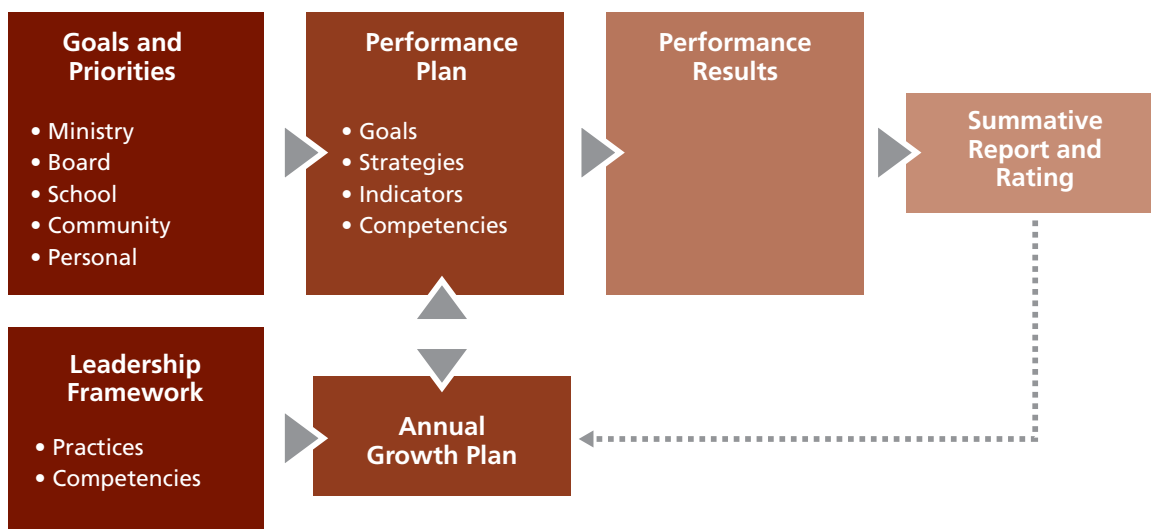
Principal Mentoring

All principals and vice principals are offered mentoring for their first two years in each role,⁸ funded by the ministry and delivered by school boards according to ministry guidelines. Features of the mentoring program include training for mentors, a learning plan outlining how the mentor and mentee will work together, and a transparent matching and exit process to ensure a good fit between mentor and mentee. More than 4,500 principals and vice principals have benefited from the support of a trained mentor, and over 3,700 have acted as mentors.

Principal Performance Appraisal

All principals and vice principals are appraised every five years through the Principal Performance Appraisal (PPA) process.⁹ As part of the appraisal process, principals, in consultation with their supervisors, must set a few challenging yet achievable goals based on ministry, school board, school, community, and personal priorities, and develop strategies to meet these goals.

At the end of the appraisal year, principals are appraised according to the progress they have made in meeting their goals. If this is unsatisfactory, a process is followed that includes an improvement plan, time for improvement, and the offering of supports. If insufficient improvement is made, the board has the authority to demote, transfer, or terminate employment. An annual growth plan—connected to the Ontario Leadership Framework—outlines the activities that the principal will engage in to support the performance plan.



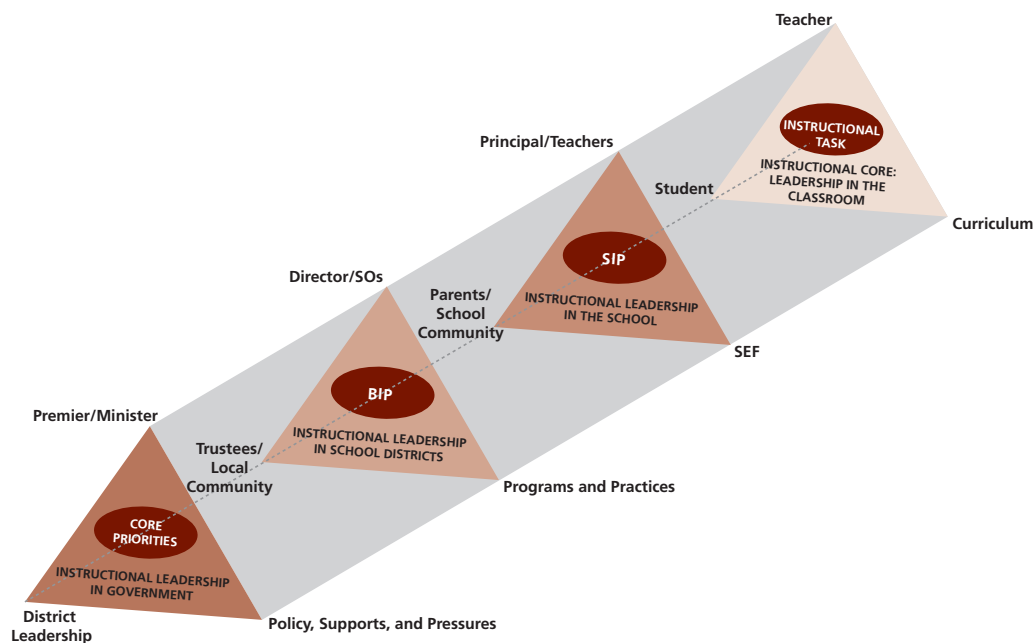
Capacity Building Through Job-Embedded Professional Learning and Collaborative Practice

The Ministry of Education’s capacity-building strategies to support effective leadership, teaching, and student learning are multifaceted. For example, teachers and principals have six professional activity days every school year to work with each other on activities related to key ministry priorities and local school and school board needs.

The ministry also fosters capacity building and collaboration by sharing information about existing and emerging successful practices. Through the Schools on the Move strategy, for example, the ministry highlights elementary schools that are making substantial and sustained gains in student achievement, often in challenging contexts, and provides information to other schools about the practices that have contributed to their success. The ministry also develops and disseminates webcasts and online resources, including videos of effective practices from Ontario’s classrooms, to support schools in their efforts to build capacity.

Aligned Goals, Plans, Actions, and Capacity Focused on Instruction for Improving Student Outcomes

Recently, the ministry has introduced the K–12 School Effectiveness Framework, which places aligned planning, actions, and capacity building at the center of the work of all levels of the education system. The prism below serves to illustrate how provincial direction, school board priorities, and school improvement efforts support classroom instruction.



Lessons Learned

Ontario's approach to teacher and leadership effectiveness is building a rich culture of learning across all parts of its diverse education system. Its education reform agenda is based on professional capacity building and is characterized by

- shared understanding of the importance of setting clear goals for high standards of achievement to enable students of all abilities and backgrounds to achieve their potential;
- respect for teachers as professionals who are committed to developing their practice through collaborative inquiry and differentiated instruction to achieve excellent results for their students; and
- supportive instructional leadership from school principals and district leaders within a coherent framework that is focused on the classroom and inspired by students.

The Ontario Ministry of Education has made great progress with its education reform agenda and is continuing to collaborate with education partners on teacher and leadership development frameworks that focus on professional growth in the context of student achievement.

Endnotes

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Creating Effective Teachers and Leaders in Singapore

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Our teachers are simply the most important asset we have. Their commitment to excellence, their caring eye, and the passion they put into nurturing their students are what allow us to provide the best possible education to every young Singaporean.

—Mr. Tharman Shammugaratnam, Singapore Minister for Education

Context

Shortly after Singapore became independent in 1965, its leaders realized that, since the nation had few natural resources, its future would rely on the knowledge and skills of its people. At that time, with relatively few people entering and completing high school, only a small number of people graduated from high school or college, and the nation had few skilled workers. Today, by contrast, about 75 percent of young people complete postsecondary education in a college or a polytechnic, and nearly all of the remainder receive a vocational degree that prepares them for work, which is increasingly likely to be in a high-tech field in one of the many multinational corporations settling in Singapore.¹

This small nation—about the same size as Kentucky, the median U.S. state—has been steadily building an education system that seeks to ensure that every student has access to strong teaching, an inquiry curriculum, and cutting-edge technology.

A strong teaching force has always been considered critical to the development of a strong education system. As early as 1966, the minister for education, Ong Pang Boon, noted,

Teachers have a heavy responsibility, as the future of every one of us in Singapore is to a large extent determined by what teachers do in the classroom.... The Singapore government recognises the worth of teachers and realises that it is essential that we have well-qualified and well-paid teachers to have a good education system.²

Singapore's education system came to international attention when its students scored first in the world in both mathematics and science on the Trends in International Mathematics and Science Study (TIMSS) assessments in 2003. About 90 percent of Singapore's students scored above the international median on the TIMSS tests. In 2009, when it first entered the Programme in International Student Assessment (PISA), Singapore also scored near the top of the rankings in mathematics, science, and reading.

These rankings are based on strong achievement for all of the country's students, including the Malay and Tamil minorities, who have been rapidly closing what was once a yawning achievement gap.³ This accomplishment is even more remarkable given that fewer than half of Singapore's students routinely speak English, the language of the test, at home. Most speak one of the other three official national languages of the country—Mandarin, Malay, or Tamil—and some speak one of several dozen other languages or dialects.

These successes are the product of a long-term commitment to developing a high-quality educational system, with each era of reform building on previous efforts, while acknowledging new realities. Current initiatives are an outgrowth of a systemwide reform called “Thinking Schools, Learning Nation,” launched by former Prime Minister Goh Chok Tong in 1997. The Ministry of Education explains that this initiative was meant to create

a nation of thinking and committed citizens capable of meeting the challenges of the future, and an education system geared to the needs of the twenty-first century. Thinking schools will be learning organizations in every sense, constantly challenging assumptions, and seeking better ways of doing things through participation, creativity and innovation. Thinking Schools will be the cradle of thinking students as well as thinking adults and this spirit of learning should accompany our students even after they leave school. A Learning Nation envisions a national culture and social environment that promotes lifelong learning in our people. The capacity of Singaporeans to continually learn, both for professional development and for personal enrichment, will determine our collective tolerance for change.⁴

To develop this spirit of creativity and innovation, schools are encouraged to engage both students and teachers in experiential and cooperative learning, action research, scientific investigations, entrepreneurial activities, and discussion and debate. Well-prepared and well-supported teachers and leaders are at the center of these efforts.⁵

Recruiting and Keeping Top Candidates

In Singapore, teacher education is a serious investment throughout the career. Teachers are hired centrally by the Ministry of Education (MOE). To get the best teachers, the MOE recruits from the top third of each cohort for a one-year graduate program or, if they enter earlier, a four-year undergraduate teacher education program. (Currently, about two-thirds are prepared in the graduate program and one-third are prepared in the undergraduate program.) In either case, candidates are immediately put on the MOE's payroll. When they enter teaching, they earn as much as or more than the average starting salary of fresh graduates with similar qualifications in the job market. Principals sit on the recruitment interview panels. The first assignment for a teacher is based on the manpower needs of the nation's schools. After two years, teachers can request for a posting to a school of their choice, subject to approval by their principal and the receiving principal. A principal can also identify teachers to be posted to his or her school, subject to agreement from the other principal. In addition, there is a yearly posting exercise in which teachers who have requested a job rotation are centrally posted according to manpower needs.

The attrition rate of teachers is less than 3 percent annually. This is low compared to other public and private organizations. (By comparison, attrition rates for teachers in the United States range from 6 percent to 8 percent annually.) In a recent MOE survey, teachers indicated the following top three reasons for staying in the field: a positive culture with a strong sense of mission; good compensation and rewards benchmarked against market rates; and a wide range of opportunities for professional growth and development.

Preparing Teachers Well

Teacher education programs were overhauled in 2001 to increase teachers' pedagogical knowledge and skills on top of their content preparation, which includes, even for elementary teachers, a deep mastery of one content area plus preparation for the four major subjects they must teach (English language, mathematics, science, and social studies). Practicum training has been expanded and located in a new "school partnership" model which engages schools more proactively in supporting trainees.⁶

Growing efforts have been made to engage candidates in the kind of inquiry and reflection in which they are expected to engage their students, so they can teach for independent learning, integrated project work, and innovation. During the course of preparation, there is a focus on learning to use problem-based and inquiry learning, on developing collaboration, and on addressing a range of learning styles in the classroom.

All preservice preparation occurs in the National Institute of Education (NIE), affiliated with Nanyang Technological University (NTU), which prepares over two thousand teachers per year. At the NIE, candidates learn to teach in the same way they will be asked to teach. Every student has a laptop, and the entire campus is wireless. The library spaces and a growing number of classrooms are consciously arranged with round tables and groups of three to four chairs so students will have places to share knowledge and collaborate. A comfortable area with sofa and chair arrangements is designed for group work among teachers and principals. The grouping areas are soundproofed with an overhead circular cone so several groups can work together in the same room. They have access to full technology supports (e.g., DVD, video and computer hookup, a plasma projection screen), and the wall is a whiteboard for recording ideas.

Candidates have practicum opportunities in classrooms with teachers who have been deemed good models of these practices. The four-year undergraduate program includes frequent practicum experiences in every year of their training. Candidates spend more than twenty weeks working in the classroom over the course of their preparation. The one-year graduate program includes a ten-week practicum in a school. The practicum is jointly supervised and assessed by a lecturer from the Institute of Education and a supervising senior teacher in the school. A pass in the practicum is necessary for the award of a diploma.⁷

The institute has been creative in thinking about how to help teachers envision new modes of practice beyond those they see in their student teaching. For example, a model classroom has been constructed at the NIE to give educators a vision of what learning will be like in the future. It includes handheld computers; a coffee bar where students can meet at round tables and work on educational video

games; and communications with other students in other countries who are working on solving a problem together (e.g., identifying a virus that is spreading, collecting data, running tests, accessing information over the Internet), working on the subway while tracking friends, working at home where interactive technology connects families and friends in communication, and working in a classroom that, again, features round tables surrounded by chairs and in which students are engaged in more inquiry and problem solving. These settings are used as the site for learning new teaching strategies.

The NIE conducts its own evaluation of the preservice courses and gathers feedback from the new teachers on the effectiveness of these courses in teacher preparation. The information is used internally by the NIE to make program improvements.

Current initiatives include the use of videotapes of teaching to support teachers' analysis of practice and to strengthen the theory-practice connection, the integration of pedagogies for teaching twenty-first-century skills, the increased emphasis on preparing teachers for formative assessment and performance assessments, and a new e-portfolio providing evidence of a student teacher's learning and reflections over time, to support development and confirm the attainment of teaching competencies.

Ongoing Professional Learning for Teachers

Support for Beginning Teachers

Beginning teachers are equipped with the basic theories and practical skills to teach. However, the preservice program may not adequately prepare them in the whole repertoire of skills and competencies to be effective teachers. After initial preparation, novice teachers are not just left to sink or swim. Following preservice preparation, beginning teachers are mentored and coached by senior teachers for two years. Expert teachers, trained by the NIE as mentors, are given released time to help beginners learn their craft. During the structured mentoring period, beginning teachers also attend courses in classroom management, counseling, reflective practices, and assessment offered by the NIE and the MOE.

During this period, novices are given a lighter workload (i.e., two-thirds that of a more experienced teacher) to help them ease into the teaching profession. These two years serve as an extended practicum, and their performance is used to determine their confirmation in the service. (Confirmation is analogous to having tenure; teachers do not need to be recertified or licensed after confirmation.)

Continuous Professional Learning

On average, the government pays for one hundred hours of professional development each year for all teachers. There is a wide range of professional development courses and conferences/seminars. Teachers can also take professional development leaves and sabbaticals to enhance their skills. The MOE has just established a new teachers' academy to support professional development opportunities across schools. The academy serves to facilitate teacher-initiated and teacher-led learning opportunities for the teaching fraternity organized around subject chapters and special interest groups.

Teachers have approximately twenty hours of timetabled teaching periods per week. Teachers can make use of their non-teaching hours to work with other teachers on lesson preparation, visit other classrooms to study teaching, or engage in professional discussions and meetings with teachers from their school or their cluster.

The MOE and the NIE have been training teachers to undertake action research projects in the classroom so they can examine teaching and learning problems and find solutions that can be disseminated to others. To support school-based learning, senior and master teachers are appointed to lead the coaching and development of the teachers in each school.

Among Singapore's many investments in teacher professional learning is the Teacher's Network, established in 1998 by the MOE as part of the "Thinking Schools" initiative. The mission of the Teacher's Network is to serve as a catalyst and support for teacher-initiated development through sharing, collaboration, and reflection. The Teacher's Network includes learning circles, teacher-led workshops, conferences, and a well-being program, as well as a website and publications series for sharing knowledge.⁸

In a Teacher's Network learning circle, four to ten teachers and a facilitator collaboratively identify and solve common problems chosen by the participating teachers using discussions and action research. The learning circles generally meet for eight two-hour sessions over a period of four to twelve months. Supported by the national university, Teacher's Network professional development officers run an initial whole-school training program on the key processes of reflection, dialogue, and action research and a more extended program to train teachers as learning circle facilitators and mentor facilitators in the field. A major part of the facilitator's role is to encourage the teachers to act as co-learners and critical friends so they feel safe to take the risks of sharing their assumptions and personal theories, experimenting with new ideas and practices, and sharing their successes and problems. Discussing problems and possible solutions in learning circles fosters a sense of collegiality among teachers and encourages teachers to be reflective practitioners. Learning circles allow teachers to feel that they are producing knowledge, not just disseminating received knowledge.

Teacher-led workshops provide teachers an opportunity to present their ideas and work with their colleagues in a collegial atmosphere where everyone, including the presenter, is a co-learner and critical friend. Each workshop is jointly planned with a Teacher's Network professional development officer to ensure that everyone will be a co-learner in the workshop. The presenters first prepare an outline of their workshop, then the professional development officer helps the presenters surface their tacit knowledge and assumptions and trains them in facilitation so they do not present as an expert with all the answers, but share and discuss the challenges they face in the classroom. The process is time consuming, but almost all teacher presenters find that it leads to them grow professionally.

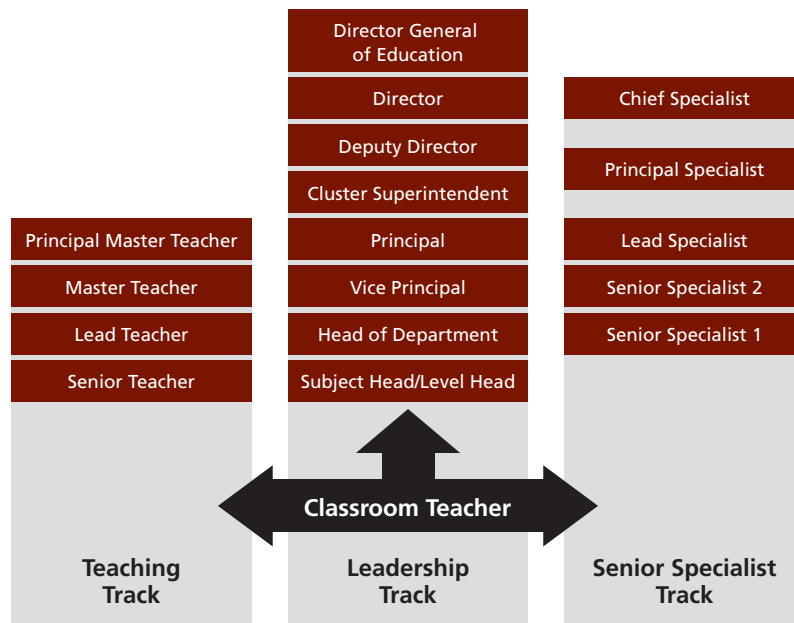
The MOE conducts regular surveys to gather feedback from teachers. The relevant findings concerning inservice training are taken up by both the MOE and the NIE for continual improvement.

Career Development and Leadership

Career development is a constant concern in Singapore schools. Principals, cluster superintendents (each of whom oversees a network of about a dozen schools), and MOE senior management all pay attention to teachers' talents and potentials to support promotions and tap teachers for a variety of leadership roles.

Teacher performance is evaluated through a performance management process using the Enhanced Performance Management System (EPMS). The EPMS is a competency-based performance management system that spells out the knowledge, skills, competencies, and attitudes expected at each stage of the career and within each of three career tracks: the teaching track (which extends through levels of senior, lead, and master teachers); the specialist track (which includes roles like curriculum specialist, educational psychologist, and guidance counselor); and the leadership track (which progresses through roles like department head to vice principal, principal, superintendent, and divisional heads and directors). These opportunities bring recognition, extra compensation, and new challenges that keep teaching exciting.

Career Tracks for Teachers



Teachers are assessed based on their contributions to the holistic development of students, i.e., quality of students' learning, pastoral care and well-being of students, co-curricular activities, and collaboration with parents. The evaluation takes into consideration both processes and outcomes in academic as well as nonacademic domains. All teachers are assessed yearly using the EPMS. They are expected to have a minimum of two one-on-one work review sessions with their head of department, who is their immediate supervisor. The final assessment is reviewed and endorsed by the school principal. Outcomes include classroom success of students, but external exams occur only in sixth and tenth grades, so outside test scores are not generally part of the evaluation process.

Annual evaluations are used to establish a performance bonus set by the principal for each teacher, as well as to flag struggling teachers for additional assistance or potential dismissal (a very tiny number), and to flag successful teachers for potential promotions. In considering teachers for promotion or progression along each of the three career tracks, their performance evaluations in the last three years are taken into consideration. There is flexibility of lateral movements across the three career tracks.

As teachers are promoted and selected into these kinds of roles, they receive free courses of study through the MOE at the NIE, sometimes while they are still teaching and other times while taking a sabbatical from their jobs. Teachers who take on higher levels of responsibility, such as head of department or principal, will eventually be promoted to a higher pay scale commensurate with their respective roles and responsibilities. The diagram on page 38 illustrates that a teacher has the opportunity to progress to a promotional grade and pay scale equivalent to that of a school principal if they reach the pinnacle of the master teacher track. Similarly, a specialist can progress to as high a promotional grade as that of a director.

Advancement Along the Teaching Track

Those aspiring to advance within the teaching track must meet accreditation standards for the positions. These standards are assessed through a professional portfolio, which includes

- a personal statement on taking up the higher appointment;
- a summary of evidence satisfying each accreditation standard; and
- supporting data to substantiate the evidence (e.g., lesson plans, presentations).

The accreditation standards build on the evaluation criteria used to evaluate teaching (holistic development of pupils through quality learning, pastoral care and well-being, and co-curricular activities), adding progressively broader criteria at each career level. These include such things as contributions to the school, cluster, zone, and nation; collaboration and networking; and contributions to a culture of professionalism, ethos, and standards.

Advancement Along the Specialist Track

The senior specialist track aims to develop a strong core of officers in the MOE with deep knowledge and skills in areas such as curriculum, planning, educational programs, and educational technology. These specialists are supported in pursuing advanced graduate study (master's and doctorate degrees), and they work in clusters that help guide policy and practice for curriculum and assessment, educational psychology and guidance, and educational research and measurement.

Advancement Along the Leadership Track

As leadership is seen as a key enabler for strong schools, much attention and resources are given to identify and groom school leaders. Teachers with leadership potential are identified early and groomed for leadership positions. They progress from teacher to subject head, head of department, vice principal, and then principal.

Potential principals go through several rounds of interviews with senior management, including the permanent secretary, director-general, and directors in the MOE. They also need to undergo the Leadership Situation Exercise, a two-day intensive simulation test to gauge their leadership competencies and their readiness to take on leadership positions. After this selection process, they are required to attend the six-month Leaders in Education Program (LEP) conducted by the NIE.

The LEP is a leadership executive program that exposes potential school leaders to challenging leadership experiences in the context of the school and beyond to the other industries. Participants have the opportunity to visit other countries and learn about their educational systems and structures as well as the kinds of issues they are grappling with. The LEP also helps shape the personal qualities for effective leadership and prepare them to meet the demands of school management and interactions with parents, the school board, and the public. Participants of the LEP partner and are mentored by experienced principals while they take courses at the NIE. Beyond the LEP, new principals are given inservice training on governance, human resource management, financial management, and management of media.

The placement of principals in schools is decided at the headquarters level, where they are matched to schools according to their leadership strengths and the profile and needs of the school. Teachers and parents do not have a role in the selection and placement of principals.

Like teachers, principals are evaluated using the EPMS. They are assessed on their performance and leadership competencies. The evaluation takes into consideration processes and results in the following areas: vision for the school; strategic planning and administration; development and management of staff; and management of resources and school processes. They are also assessed on their overall school performance, which includes student academic achievement as well as achievements in nonacademic domains such as arts and aesthetics, physical fitness and sports, social and emotional well-being, and student morale and leadership. These evaluations are used to determine their promotion and progression along the leadership track. Principals who are not performing will be counseled, coached, and, if need be, redeployed.

Principals who show strong leadership abilities and a broad vision for educational improvement are continuously evaluated for promotion to the level of cluster superintendent and even a directorship within the MOE.

In these ways, Singapore aims to build a coherent system grounded in a common vision: strong, common training around shared goals, and continual development of educational knowledge, skills, and talent.

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About the Authors

Carol Campbell is the executive director of the Stanford Center for Opportunity Policy in Education (SCOPE), where she oversees the work of SCOPE and its affiliated programs, including the School Redesign Network. She worked previously at the Ministry of Education in Ontario, Canada, where, in her most recent position, she served as Ontario's first chief research officer and simultaneously served as founding director of the Education Research and Evaluation Strategy Branch.

Prior to moving to Ontario, Dr. Campbell was a member of the faculty at the Institute of Education, University of London, teaching in the master's and doctoral programs in education policy, leadership, management, and research. She also worked as policy and strategy adviser in the Directorate of the Institute and as an adviser on school reform to the English government's Department for Education and Skills and to the commissioner for London schools. Dr. Campbell completed her doctorate at the University of Strathclyde and held teaching and research posts at Strathclyde and Glasgow Universities.

Linda Darling-Hammond is Charles E. Ducommun Professor of Education at Stanford University and faculty co-director of the Stanford Center on Opportunity Policy in Education (SCOPE). She is former president of the American Educational Research Association and a member of the National Academy of Education. Her research, teaching, and policy work focus on issues of teacher quality, school reform, and educational equity. From 1994 to 2001, she served as executive director of the National Commission on Teaching and America's Future, a blue-ribbon panel whose 1996 report, *What Matters Most: Teaching for America's Future*, led to sweeping policy changes in teaching and teacher education. In 2006, the report was named one of the most influential affecting U.S. education, and Dr. Darling-Hammond was named one of the nation's ten most influential people in educational policy over the last decade. She directed the education policy transition team for President Barack Obama in 2008. Dr. Darling-Hammond's most recent book is *The Flat World and Education* (Teachers College Press, 2010), which evaluates the success of educational policies in the United States and abroad. Dr. Darling-Hammond received her bachelor's degree from Yale University and her doctorate in urban education from Temple University.

Barry Pervin is assistant deputy minister of the instruction and leadership development division at the Ontario Ministry of Education. In support of the ministry's overall agenda to improve student outcomes in Ontario schools, Mr. Pervin is responsible for policy and program development in areas such as teacher development, leadership development, safe and healthy schools, equity and inclusive education, and school board governance and labor relations.

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A nationally known education writer and editor, Mr. Rothman has also worked with Achieve and the National Center on Education and the Economy, and was a reporter and editor for *Education Week*. He has written numerous reports and articles on a wide range of education issues, and he is editor of *City Schools* (Harvard Education Press, 2007) and author of *Measuring Up: Standards, Assessments and School Reform* (Jossey-Bass, 1995). He has a degree in political science from Yale University.

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Tan Lay Choo is chief executive of the Singapore Examinations and Assessment Board (SEAB). SEAB is a statutory board under the Singapore Ministry of Education, which is responsible for the design and development of national examinations and the promotion of the goals of Singapore's education system. The role of SEAB as an examining authority includes the organization and conduct of national examinations and the provision of advisory and consultancy services to the Ministry of Education and other government agencies. SEAB also conducts training for teachers and examination personnel on assessment theories and on the practice and management and conduct of examinations.

Ms. Tan has held several appointments in the Ministry of Education headquarters as well as in schools during her thirty years of service. She started her career as a mathematics teacher, served as a principal of a secondary school, and was subsequently appointed as a cluster superintendent overseeing a number of schools. Having served in several leadership appointments in headquarters, Ms. Tan had the opportunity to shape policies and design systemwide programs for a wide range of students, including gifted students, students with special needs, and low achievers. Ms. Tan also had a stint in manpower planning for the education system and contributed to policies on recruitment and career development of teachers.

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