

DEVELOPING HIGH-QUALITY TEACHING

Every school must be a model learning organization. Teachers and principals will constantly look out for new ideas and practices, and continuously refresh their own knowledge. Teaching will itself be a learning profession, like any other knowledge-based profession of the future.

—Prime Minister Goh Chok Tong, Singapore (1997)

AS CHAPTER 3 DESCRIBED, high-performing systems place a strong emphasis on providing prospective teachers with a solid grounding in knowledge and experience to ensure that all teachers are ready to practice from the start. But they do not stop there. These systems also provide structures and opportunities to enable teachers to continually hone and improve their practice and keep learning so that they can become better and better each year. Finally, they provide teachers with opportunities to use their enhanced skills to take on new roles in schools and school systems.

These opportunities and structures take many forms. First, the systems have articulated clear statements about what constitutes high-quality teaching; these are often codified in standards of practice. These standards guide teacher education, beginning teacher mentoring and induction, professional development, assessment, and feedback.

Second, the systems provide teachers with time to work with and learn from colleagues and to conduct their own research to test and measure the effects of innovative practices. To accomplish this, schools in these countries break down classroom walls (metaphorically) to allow teachers to collaborate and observe one another's practices, and they structure the school day so that teachers have time for these activities—they are not in front of students every minute of the school day. They also encourage teachers to engage in research about practice and find ways to share, use, and celebrate what is learned.

Third, the systems view teacher evaluation as a way of providing feedback to teachers to help them improve their practice, rather than as a punitive measure aimed at weeding out the weakest performers. And some, such as Singapore, couple appraisals with opportunities for teachers to grow in the profession.

Jensen and colleagues' (2016) study of four high-performing systems—British Columbia, Hong Kong, Shanghai, and Singapore—identified a set of common policies that support professional learning in each system. These include policies for building in time for collaboration, developing teacher leadership roles that organize and support professional learning, and using school-level and individual-level evaluation and accountability systems to support learning and collaboration. When well managed, these policies result in the following:

- School improvement organized around effective professional learning
- Professional learning built into daily practice
- Recognition for the development of teacher expertise—and use of that expertise to support learning for others
- Teachers sharing responsibility for their own and other's professional learning
- District or state strategies that lead to professional learning throughout the system

These features are also apparent in the additional countries we studied and are consistent with a substantial body of literature showing that teacher professional development is more likely to be effective in improving teacher practice and student learning when it is collegial, sustained, and ongoing; connected to the work of teachers in the classroom; and coherently related to broader school reforms efforts (Darling-Hammond & Richardson, 2009; Elmore & Burney, 1997).

In this chapter we describe the practices of professional learning and growth we encountered. We note that prominent cornerstones for teacher learning include the national or state curricula in each of the jurisdictions—which offer a common foundation for joint work—and the professional standards for practice, described in Chapter 3, which guide preparation, induction, professional development, evaluation, and ongoing feedback. We also note that professional development is not something that is done unto teachers in special periodic sessions: It is part of the regular daily and weekly experience of teaching and learning, which are inextricably linked together. The chapter is organized in

terms of the ways in which the jurisdictions provide for this learning through

- Incentives and infrastructure for learning
- Time and opportunity for collaboration
- Curriculum development and lesson study
- Teacher research
- Teacher-led professional development
- Appraisal and feedback

Incentives and Infrastructure for Learning

A key theory of action in all of these jurisdictions is that continuous professional learning for teachers and leaders is essential to school improvement. This belief manifests in a set of requirements and incentives to stimulate ongoing learning embedded in the day-to-day work of teachers in schools as well as the creation of organizations and funding streams that ensure a steady supply of good options for learning in collaborative settings—often organized using shared subject matter or other pedagogical goals—outside of school.

Many jurisdictions attach requirements for professional learning to the renewal of the teaching license. In Shanghai, Chinese regulations require all teachers to participate in ongoing professional learning opportunities for 240 hours every 5 years. Districts and higher-education institutions provide workshops for teachers, which cover topics such as education theory and practice and educational technology.

In New South Wales, 100 hours of continuing professional development are required every 5 years to maintain accreditation, and teachers must show how the learning addresses at least one standard in each of the seven domains of the national standards for teaching. Similarly, in Victoria, where teacher registration must be maintained each year, teachers elect, complete, and document 20 hours of professional learning annually. NSW pays for 5 school development days each year, when teachers can work together on school-identified professional learning. In Australia, 97% of teachers undertook professional development in 2013 compared to an average of 88% among countries participating in the TALIS surveys (OECD, 2014d).

Singapore believes in teacher-led professional learning for growth. As a guideline, Singapore offers about 100 hours of paid professional development time (over 12 days). In reality the time offered to teachers

often exceeds 100 hours. At the national level, the ministry has established an Academy of Singapore Teachers (AST) and other academies and language centers to provide teacher-led professional development for teachers. These organizations work with teachers and connect to schools to provide professional opportunities “by teachers for teachers” through the extensive networks of teacher leaders who offer a wide range of professional learning courses, activities, learning communities, resources, and expertise. AST also supports professional learning communities (PLCs) within schools, offering training to professional learning team facilitators and a toolkit to help them create and sustain PLCs. Learning communities of teachers across schools—known as networked learning communities—are supported to facilitate teacher collaboration. These learning communities within and across schools are typically facilitated by teacher leaders.

In Ontario, the Ministry of Education has provided substantial funding to teacher federations to support professional learning activities, including support for release time, travel, and accommodations to create incentives for teachers to take advantage of them. School boards in Ontario also receive funding and support from the ministry to support professional learning and capacity building linked to priority strategies and needs each year; for example, in 2014–2015, the ministry supported professional learning in special education K–12, PLCs to support the development of French language, support for Aboriginal students, mathematics support, differentiated instruction, literacy, innovative practices integrating assessment and feedback, teacher inquiry, and supporting transitions for students between grades and schools.

Ontario’s incentives for professional learning also include a salary structure that can reward teachers for additional qualifications (AQs) that upgrade their knowledge and enhance their practice. The more than 400 AQ courses available in 2014 were offered by Ontario faculties of education, teachers’ federations, and other organizations and are accredited by the Ontario College of Teachers (OCT).

Finland has recently expanded its professional learning support in part because of evidence that the amount of learning teachers took part in varied widely. A 2007 survey, for example, found that only two-thirds of Finnish teachers had taken part in professional development activities (Piesanen, Kiviniemi, & Valkonen, 2007). In response, the Finnish government established a new program, called *Osaava* (“capable” or “skillful”), to promote professional learning. The program added 8 to 10 million euros per year to the 40 to 60 million euros

annually provided by the ministry and municipalities on behalf of five strategic aims:

1. Promoting equity and leadership in teachers' lifelong learning
2. Making flexible learning paths a reality in educational institutions
3. Enhancing the adaptation of innovative professional development models
4. Improving networking and collaboration among educational institutions and professional development providers
5. Mainstreaming successful professional development practices

The program also establishes a continuum of professional learning, starting with induction for new teachers and including support for professional learning for educational leaders. About 20% of the funding was specifically allocated to supporting a mentoring program for new teachers, the use of educational technology in teacher training schools, and a program of long-term professional development for educational leaders. Formal professional development in Finland is usually offered by universities, the National Board, or other organizations for specific kinds of needs, such as infusing technology or learning to support students with special needs in the newly reformed service system. This kind of professional learning is funded by the government and local schools; teachers are rarely asked to pay for learning opportunities. Teachers noted that there are a great many professional development opportunities available, and they appreciate and tap into these opportunities periodically, but their strong commitment to their students often stops them from wanting to leave the classroom or secure a substitute to attend, especially because they can have many of their learning needs met in the school.

In New South Wales, the Department of Education and Communities has provided a fully devolved system of professional learning and leadership development since 2005. Each year the full professional learning budget of AU\$36 million has been distributed to all 2,250 schools, based on their size and distance from large regional centers—roughly AU\$700 for each teacher generally or AU\$1,000 for teachers in rural areas. Additional funding was allocated to support teachers in their first year.

The Professional Learning and Leadership Development Directorate designed professional learning programs for teachers and school leaders based on consultation with teachers and leaders and an annual survey, which sought information about professional learning priorities from each school's professional learning team. Schools selected which

programs or providers could best address their priorities; the department's programs were the most popular with schools. All teachers in New South Wales are required to complete professional learning aligned to their performance management and development plan. Teachers are responsible for determining their professional learning within the context of their professional and career development needs and the priorities of their school.

The school-based professional learning system was driven by two key beliefs. These were, first, that schools were in the best position to align the learning needs of their teachers with the learning needs of students, and, second, that the professional learning that would have the greatest impact on classroom practices would be that which was closely aligned to the day-to-day work of teachers within the school. The devolution of professional learning funding to schools required the development of a system to account for the allocation and the impact of the teacher professional learning funds. This system enabled the gathering of substantial evidence from teachers and school leaders regarding the professional learning strategies that had the greatest impact on the learning of students, teachers, and school leaders. It also paved the way for longitudinal research to establish what teachers find has the greatest impact on their learning and their capacity to teach (McIntyre, 2013). Among the lessons from the 6,000 teachers who contributed to this research was the importance to their learning of collaborative preparation of lessons and teaching resources, opportunities for observing each other's lessons, as well as the collaborative assessment and evaluation of student work.

The allocation of the system's professional learning budget directly to schools enabled teachers and school leaders to structure time within schools for lesson observation and feedback and the collaborative development and evaluation of lessons. This provided a significant source of professional learning for teachers. Each year, an average of 60% of teacher professional learning funding was spent on additional time for teachers to support them in their learning. This initiative highlighted the importance of reframing activities within schools to ensure that schools are not only places for students to learn but also places for teachers to learn. As Daniel McKay, a New South Wales teacher noted (Link 4-1):

We've talked about our school being a community of learners, seeing everyone as a learner and that we can learn off each other. Teachers learning off teachers and students off students. Teachers off students and vice versa. We thought it's a great way for teachers to learn. They're not just sitting in the classroom by themselves or going to a one-off professional learning and then coming back and trialing



something or not trialing something in the classroom. Just having that support with each other. We've looked at changing our professional learning in our school so that teachers are learning as we want the students to learn. Obviously we want students in the classroom working with each other—[engaged in] group work, supporting each other, reflecting and being critical of each other. That's what we want our teachers to be in their own teaching profession.

Time and Opportunity for Collaboration

Collaboration is at the heart of effective schools. Although many policy makers think about effective teachers as individuals who have certain traits and training and who create special oases in their classrooms, the evidence is clear that the most effective settings for learning feature considerable joint work among teachers. Collaboration among educators is critical, not just because working with other teachers is a nice thing to do and it makes school a more pleasant place to be. In fact, it turns out that high-performing schools—similar to high-performing businesses—organize people to take advantage of each other's knowledge and skills and create a set of common, coherent practices so that the whole is far greater than the sum of the parts.

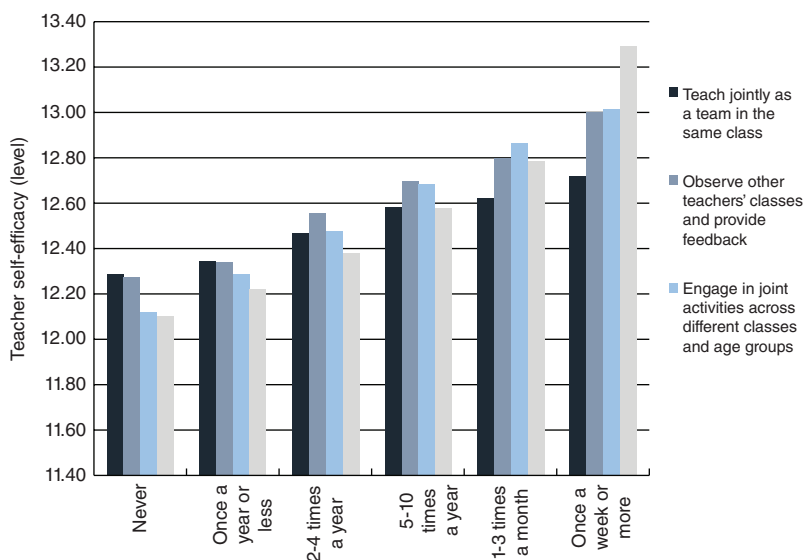
In one study, economists were able to quantify the student learning gains generated by the collective expertise of teams of teachers. They found that the greatest gains were attributable to teachers who are more experienced, better qualified, and who stayed together as teams within their schools. The researchers found that peer learning among small groups of teachers was the most powerful predictor of improved student achievement over time (Jackson & Bruegmann, 2009). Another found that students achieved more in mathematics and reading when they attended schools characterized by higher levels of teacher collaboration for school improvement (Goddard, Goddard, & Tschannen-Moran, 2007). A third found that teachers become more effective over time when they work in collegial environments (Kraft & Papay, 2014).

It is not surprising, then, that teachers around the world report that their colleagues contribute to their teaching effectiveness (OECD, 2014d). Contrary to the factory model system designed for isolated teachers to work alone at different spots on the assembly line, education is a team sport. Successful schools raise achievement because they assemble the right mix of skills and abilities and enable people to work collaboratively.

The value of collaboration has been underscored in recent international studies. Analyses of the TALIS surveys found that teachers' participation in collaborative forms of professional development is associated with innovative teaching practices, such as the use of small-group work, interactive computer technology, and active teaching practices such as extended project work (OECD, 2014d, pp. 380–382). Further, TALIS analyses found that teacher professional collaboration is positively associated with teachers' confidence in their abilities and their enjoyment of teaching. In particular, frequent engagement in joint activities across classes and collaborative professional learning are positively associated with teacher self-efficacy and job satisfaction (OECD, 2014d) (see Figures 4–1 and 4–2).

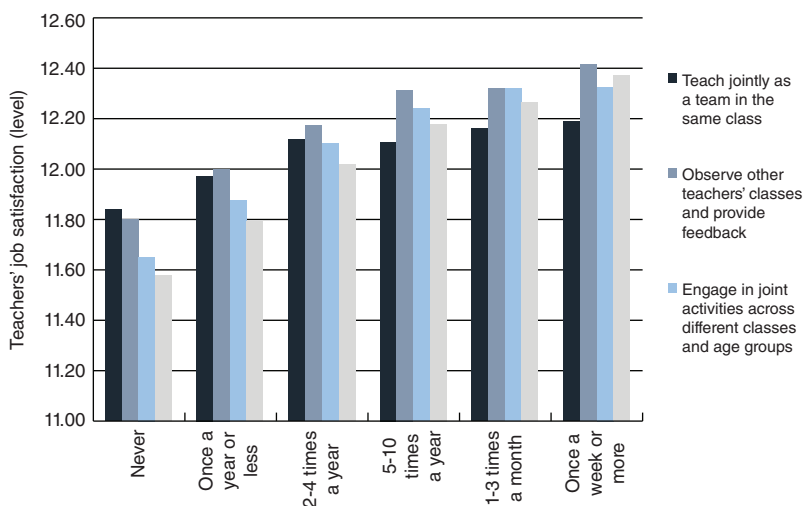
Previous research has also shown that opportunities for collaboration with and learning from colleagues, such as induction and mentoring for early career teachers, are significant factors in determining teacher retention in the profession (Ingersoll & Strong, 2011). Further research has found that teachers gain in effectiveness with experience (Kini & Podolsky, 2016), and thus increased teacher retention is associated with

Figure 4–1 Teachers' Self-Efficacy Level and the Frequency of Teacher Professional Collaboration



Source: OECD (2014d). Used with permission.

Figure 4–2 Teachers' Job Satisfaction Level and the Frequency of Teacher Professional Collaboration



Source: OECD (2014d). Used with permission.

a more effective teaching workforce (Clotfelter, Ladd, & Vigdor, 2006; Henry, Bastian, & Fortner, 2011).

Time for Collaboration

As these examples suggest, teachers in high-performing countries spend a great deal of their learning time in collaboration with peers. This is possible because, in many of these countries, teachers spend less of their working day directly in front of students than do teachers in the United States. According to the TALIS, US teachers, for example, spend about 27 hours a week teaching students directly, about 50% more than the international average of about 19 hours. By contrast, teachers in Singapore spend about 17 hours a week teaching (OECD, 2014d). In Shanghai it is about 15 hours. As we noted in Chapter 3, the Australian Education Union has negotiated additional time for beginning teachers, and New South Wales has added to this time for novices and veterans.

In the time that teachers are not directly engaged with students they are frequently working with each other to plan lessons collaboratively or to conduct action research and analyze their practice and its outcomes.

Schools create time and structure meetings to enable teachers to take part in opportunities ranging from formal seminars offered by government agencies, teacher associations, and other teachers, providing targeted learning in areas related to the standards for teaching and school improvement priorities to informal learning opportunities that are available from colleagues in the school.

Opportunity for Collaboration

Finland, for example, features a substantial commitment to in-school sharing and learning that is organic and widespread. Jouni Kangasniemi, senior advisor in the Ministry of Education, emphasized that the ideas undergirding Osaava move from a traditional professional development notion to a conception of teacher learning as occurring within more natural, local (or national) networks and communities that enable teachers to learn from one another. He noted:

It is essential to understand that we can use the already existing teachers' know-how and knowledge and innovations to develop others, and to see that "the wisdom" does not exist outside the schools but inside them.

The organic nature of teachers' professional learning in schools takes forms that are democratically organized. Principals described formal and informal opportunities for dialogue, feedback, collaboration, and working in professional teams within the schools themselves. For instance, Principal Heidi Honkanen in Langinkoski lower secondary school in Kotka emphasized the importance of constant professional dialogue and weekly teacher meetings as efficient ways to share new ideas, knowledge, and give peer support to and learn from colleagues. These meetings are tied directly to everyday school life and enable teachers to handle issues when they arise.

The fact that teachers share a large common space for their working area—as is also true in Shanghai—expands the possibilities for teachers to learn from each other. Indeed, Jouni Partanen, a novice history teacher in Langinkoski, noted that this enabled him to secure new ideas and useful tips for practical solutions from his colleagues even during short breaks. He explained that this kind of in-time local, personal support was crucial for him as a new teacher:

It's very handy since if I have, for example, a practical question concerning how to organize my lessons or so I can just consult some more experienced colleague while we get coffee between the lessons. So, I'm able to get help immediately and [do] not need to wait.

Principal Anna Hirvonen in Myllypuro Primary School described organizing “demo lessons” in their school in which one teacher who has special expertise on some method or subject teaches a lesson to others, which enables teachers to enrich their teaching and informs them about new possible ways of doing things. Other opportunities are more organic and informal, such as getting help from more experienced teachers in a shared common space at the school. The orientation is local and democratic rather than focused largely on professional learning that occurs beyond the school environment.

Collaborative learning is also the rule in Victoria. Professional learning commonly takes the form of in-school collective readings, professional learning teams, joint planning, student data analysis, classroom observations, and subsequent professional conversations to identify problems and improve practice as well as to see how teachers are incorporating elements of professional learning into their classroom teaching. The use of school networks for joint workshops and activities is also common.

School boards and schools in Ontario, meanwhile, are involved in initiating and leading a range of professional learning connected to local needs. The types of activities vary widely. For example, some schools provide opportunities for teachers to visit the classrooms of other practicing teachers to observe the implementation of particular teaching and learning strategies. School-based programs also include book study groups, “lunch and learn” mini-workshops, and a variety of school-based communities of practice and professional learning groups in which teachers work on specific problems of practice or school-improvement initiatives.

In many respects, teaching is a collective activity in China, built on the premise that the pooling together of good ideas and resources will reflect well on the school and better support the students. Teaching is an open and publicly examined practice. Teachers plan together and observe each other’s lessons. They conduct peer observations in their own school and in other schools, a practice referred to as *open classroom*. This openness creates a stronger collective set of ideals for which to gauge strong teaching versus weak teaching. It is still up to the individual teacher to execute lessons and manage large groups of students in tight fitting classrooms. However, the individual holds images of good teaching and the drive toward individual improvement by being immersed in an overall culture that enables him or her to see colleagues perform on a regular basis.

Given frequent peer observation and joint preparation, Chinese teachers are well informed about the teaching quality of their colleagues in the whole school and are able to make comments on colleagues’

teaching style, subject knowledge level, capacity for managing class discipline, strength and weakness in teaching, and reputation among students. They are proud of good teachers in the school and feel sorry for some colleagues who have trouble in teaching. Outstanding teachers are respected among their colleagues for their excellent teaching rather than their personality. (Paine & Ma, 1993, p. 682)

In a national survey of teachers about their professional learning activities 57% reported that they had participated in classroom observations, teaching competitions, and other teaching research activities in the past 2 years (Gang, 2010).

As we describe in later sections, many schools organize this in-school professional learning for curriculum planning and lesson study, teacher research groups, and other joint work to solve problems of teaching practice.

Curriculum Development and Lesson Study

Much of teachers' joint work in these countries is organized for curriculum planning and lesson study with colleagues. Working from national or state curriculum guides, teachers collaborate to develop curriculum units and lessons at the school level, and they frequently develop, use, and jointly review school-based performance assessments—which include research projects, science investigations, and technology applications—to evaluate student learning. This helps teachers deeply understand the standards and curriculum goals and share their knowledge of content and students.

Curriculum and Assessment Development

This deep collaborative work in curriculum design creates an ongoing learning context for teachers. One important way high-performing systems have enabled teachers' professional learning is by involving them in curriculum planning and developing and scoring assessments. The curriculum in these countries emphasizes the ability of students to use their knowledge to think critically, solve problems, and communicate effectively, so the assessments include extended performance tasks that engage students in complex work—both within schools and in formal examination systems. This provides substantial learning opportunities for teachers. By collaboratively developing and scoring assessments, teachers develop a strong shared understanding of the standards students are expected to reach and an understanding of the instruction needed to enable students to reach those standards.

Finland is well-known in the education world for the primacy of classroom-based assessment, using no external standardized student testing until the open-ended matriculation exam that is voluntary for students in 12th grade. In Finland, the national core curriculum provides teachers with curriculum goals, recommended content, and assessment criteria for specific grades in each subject and in the overall final assessment of student progress each year. Local schools and teachers then use those guidelines to craft a more detailed curriculum and set of learning outcomes at each school as well as approaches to assessing benchmarks in the curriculum. Teachers are treated as pedagogical experts who have extensive decision-making authority in the areas of curriculum and assessment in addition to other areas of school policy and management (Finnish National Board of Education, 2007; Lavonen, 2008).

According to the Finnish National Board of Education (2007), the main purpose of assessing students is to guide and encourage students' own reflection and self-assessment. Consequently, ongoing feedback from the teacher is very important. Teachers give students formative and summative reports through verbal and narrative feedback. Finland's leaders point to its use of school-based, student-centered, open-ended tasks embedded in the curriculum as an important reason for the nation's extraordinary success on international student assessments (Lavonen, 2008).

The voluntary matriculation examinations that provide information for university admissions are based on students' abilities to apply problem-solving, analytic, and writing skills. University and high school faculty members construct the examinations—which are composed of open-ended essays and problem solutions—under the guidance of the Matriculation Exam Board (“Finnish Matriculation Examination,” 2008). The board members (about 40 in number) are faculty and curriculum experts in the subject areas tested, nominated by universities and the National Board of Education. More than 300 associate members—also typically high school and college faculty members—help develop and review the tests. High school teachers grade the matriculation exams locally using official guidelines, and samples of the grades are reexamined by professional raters hired by the board (Kaftandjieva & Takala, 2002).

Currently, Finland is in the process of reviewing its national curriculum, as it does on a regular periodic basis, and teachers are playing an integral part in that process as well, providing them with another opportunity for professional learning. Because teachers have been so central to this process, as Hannele Cantell, a former teacher and faculty member at the University of Helsinki who teaches in the subject teacher education

program points out, they do not express stress or concern about the curricular change—because the teachers have already seen drafts, and they have read and reviewed multiple versions. “They know what is coming,” as she explained. The curriculum revision is an example of the ways in which the knowledge, expertise, and experience of teachers are placed at the center of key policy decisions and national efforts involved in education. It also reflects the strong sense of shared vision that underlies the Finnish approach (Halinen, 2014).

Victoria and New South Wales also provide substantial opportunities for teachers to develop and score assessments. High school examinations, developed by the state with teacher input, include mostly open-ended items with written, oral, and performance elements that are scored by classroom teachers in “moderation” processes offering training and calibration for consistency. In addition, classroom-based tasks that are given throughout the school year comprise at least half of the total examination score. Teachers design these required assignments and assessments—lab experiments and investigations on central topics as well as research papers and presentations—in response to syllabus expectations. The required classroom tasks ensure that students are getting the kind of learning opportunities that prepare them for the assessments they will take later, that they are getting feedback they need to improve, and that they will be prepared to succeed not only on these very challenging tests but also in college and in life (Adamson & Darling-Hammond, 2015; Darling-Hammond & Wentworth, 2014).

These tasks are graded according to criteria set out in the syllabus and count toward the examination score. The quality of the tasks assigned by teachers, the work done by students, and the appropriateness of the grades and feedback given to students are audited through an inspection system, and schools are given feedback on all of these elements. The result is a rich curriculum for students with extensive teacher participation and many opportunities for teacher growth and learning.

The Singapore assessment system is similarly designed and increasingly project-based as a function of the reforms under the “Thinking Schools, Learning Nation” initiative that began in the late 1990s. A new A-level curriculum and examination system for grades 11 and 12 include performance-based assessments that involve students in designing and conducting science investigations, engaging in collaborative project work, and completing a cross-disciplinary inquiry as part of a new subject called “Knowledge and Inquiry,” which requires students to draw knowledge and skills from different disciplines and apply them to solving new problems or issues. These new assessments, such as the essay

and problem-based examinations they supplement, are designed by the Singapore Examinations and Assessment Board with the help of teachers and scored by teachers, who engage in moderation processes to ensure consistency of scoring. This professional role enables teachers to better understand the standards embedded in the curriculum and to plan more effective instruction.

Lesson Study

Another key strategy is lesson study, used in Japan, China, and many parts of Asia and spreading to Australia, Canada, and the United States, among other countries. Schools in China, for example, form grade-level lesson-planning groups, or *beikezu*, that have a particular focus on lesson planning and focus on bringing the curriculum to the appropriate grade level of the student. The work of these groups reflects a more recent phenomenon of focusing on the child as learner and trying to make curriculum and instruction more learner-centered.

Lesson design is a tightly choreographed activity in Shanghai that usually involves the input from many teachers within the school. Lessons that will be used as demonstration lessons for other schools or in competitions will be taught and modified based on feedback from several teachers. In many schools the lesson plans have to be approved by the subject area lead teacher or, in smaller schools, by the principal.

The lesson plan format varies by school. Furthermore, although teachers may be working to teach the same content in a similar fashion, the objectives for the lesson may vary from one class to the next, because each class may have its own needs in terms of pacing the learning and focusing the lesson. Teachers are expected to think through their decisions and rationales for why and how they will teach the lesson in advance. This lesson analysis includes the teachers' reasoning behind what is being taught (textbook analysis), what they expect the students to learn and at what depth (knowledge and proficiency evaluation), and what they anticipate the students having difficulty with during the lesson (difficulty analysis).

Lesson Study in Shanghai

In each Shanghai school we visited, the teachers brought forward lesson plans for discussion, then one taught the lesson in her classroom while other teachers and administrators observed, and then the group

debriefed the lesson to give feedback on how to improve the lesson. The feedback discussion followed a common structure. The teacher gave some opening comments about the lesson and a summary of how he or she thought the lesson went. The group leader, typically the most senior teacher, then provided a few comments on what the lesson did successfully and then gave one or two suggestions for improvement. A few other teachers would then follow suit, give a summary of what they thought went well and some suggestions for improvement. If a principal or other higher ranked person was participating, he or she gave a longer summary at the end of the conversation, inserting some broader commentary about the kind of teaching the school should be striving toward. Otherwise, the leader of the group would provide a summary of the comments. These meetings lasted the same duration as a typical school class period—about 35 minutes.

At Qilun Elementary School in Minhang District, a manufacturing area of the city, 5th-grade teacher Jiaying Zhang presented a mathematics demonstration lesson, having prepared a formal lesson plan for several observers to see in advance and for observing teachers to be able to discuss after the lesson was completed. The very detailed lesson plan (see Appendix B), typical of planning in this school, begins with an analysis of the textbook and explores the mathematical concepts that the teacher is planning to teach. Her analysis shows her deep knowledge of the mathematics and how children might understand the concepts. She raises questions about how the textbook represents the geometric concepts and introduces her own thinking about how to build understanding of polygons and their relationship to their component parts.

Jiaying then analyzes the learning objectives through the lens of student learning. She is aware of what the students have learned about polygons prior to this lesson, the challenges the students might face in exploring new ideas about angles within polygons, and considers how she might help them make stronger connections between what they already know and the new concepts she is introducing in the lesson. Her analysis illustrates her knowledge of the mathematical concepts as well as her knowledge of how the students will engage with the ideas. The planned teaching and learning strategies include teacher questioning, the use of hands-on manipulatives, student hypothesizing, and students sharing their ideas in pairs. There is a lot of activity packed into the 35-minute lesson period, making the pace of the lesson fast-paced and nonstop.

The analysis in the lesson plan concludes with a question—“How to make students think further about the connections in addition to an understanding?”—which illustrates the research mind-set of Shanghai teachers. Instruction is a place to ask questions and learn more about how students are learning in order to continually refine teaching practices.

During the actual lesson, Jiaying stayed true to the lesson plan and the students were engaged from the moment she entered the room until she dismissed them. In the post-lesson debrief, the observers made several suggestions for improving the lesson. One teacher suggested having the students actively work through the process of making a hypothesis about the structure of the parallelogram before exploring with the materials and then drawing conclusions about what they find through their exploration. Another teacher suggested making the materials for the activity more challenging by having different lengths of sticks for building the polygons to allow the students more freedom to explore a wider variety of relationships. A principal commented that the questions a teacher asks of the students should be “bigger” questions that will allow the students to find relationships by themselves, rather than the direct teacher question and student response that he observed during the lesson. All of these suggestions support an approach to teaching that is driven by more student thinking and engagement with the learning process, envisioning the teacher’s role as that of a designer of materials and activities enabling student exploration and the ability to draw their own conclusions from what they discover.

In Singapore, teachers can learn or refine their lesson study practice (Link 4-2) with help from their teacher leaders in schools (i.e., senior and lead teachers) and master teachers at the AST.



Principal master teachers, Ms. Irene Tan and Ms. Cynthia Seto together described how teachers are supported to learn lesson study through workshops and networked learning communities:

For lesson study [workshops], we require the schools to send a group of at least three teachers so that they have each other’s support in the journey. There are four sessions. . . Before they come for our first lesson study, we will send them some reading material so that they have some idea of what lesson study is. This year, part of the learning [is done] in an online module so they will have some interactions in the online environment first.

Figure 4–3 Teacher Study Group Conducting a Post-Lesson Discussion with Professors from East China Normal University, Pujian No. 2 Elementary School, Shanghai



The first session is face-to-face, where we talk about what lesson study is and how the lesson is designed. In the second one, they will go into the lesson design and be critiqued to give each other feedback on their design [and] any of their perspectives about how [their] lesson has been designed. Then they refine the lesson [after it is taught in the school], so that we all have this experience of what is it like to facilitate a lesson observation as well as a post-lesson discussion. That will happen in the third session. In the fourth one, everyone will come and report. “What have you done, and moving forward, what you are going to do with your learning?”

We do not stop there. We encourage them to say, “Okay, we also have a lesson study networked learning community. If you want to continue this journey with us, you could participate. Bring your team.” The network [offers] a more fluid approach in the sense that the members will direct what they want to do. If someone was to say, “Okay, let’s look at how we could use technology to promote effective learning,” then we can work on a lesson together. Again, we observe the lesson and see how we can improve from there.

The AST emphasizes a discipline-specific approach that develops pedagogical content knowledge:

More often than not, the teachers will continue with lesson study . . . in their own department. One of the reasons I see this [is that] our

lesson study approach has not been done in a generic manner. When we conduct these series of workshops, we do it by subject. For example, if I do a lesson study workshop, it's for chemistry teachers only. Cynthia would do [a workshop] for elementary maths teachers. The conversation is very rich in terms of content. [We rely on] the signature pedagogy that comes with this particular subject: Maths has a way to teach mathematics. Science: there's a way to teach science. . . For us in AST, we have the luxury of a few of us all doing lesson study. Then we can really tailor the discussion to the subject.

Teacher Research

A major emphasis of professional learning in high-performing systems is research. As noted in Chapter 3, teachers gain a solid grounding of research methods in their preparation programs and are expected to be able to conduct their own inquiries and draw conclusions based on evidence. This focus carries through in their careers as well.

In Singapore, almost all teachers are involved in research and innovation (Link 4-3) projects examining their teaching and learning to better meet the needs of students. Every school has a PLC, and there are learning teams organized by subject, grade level, and special interest. Schools provide structured time for teachers to come together as a group to discuss and implement their projects. The PLCs may choose to use a variety of teacher inquiry approaches—action research, lesson study, learning study, and learning circle—to investigate their practices. The PLCs meet weekly; they select a key issue concerning student learning, collect and analyze data, develop and try out instructional solutions, and assess the impact of these solutions. A vice principal of a primary school described how the PLCs operated:

Individual teachers introduced changes in their own classes, collected evidence from class discussions and student work on what the students understood and have done. Teachers . . . would observe the lessons and discuss what had worked well and what are the areas for refinement. (Jensen et al., 2016, p. 35)

To facilitate teachers' development of research competence, they may receive support from teacher leaders within the school, who have typically had opportunities for action research training, and they may take seminars or workshop series at NIE or the AST. Research findings are also shared at various platforms at the departmental and school levels, other local schools, and at local and international conferences.



Jiaoyanzu in Shanghai

The emphasis on research and inquiry is particularly well-developed in Shanghai. There, the *jiaoyanzu*, or teacher research groups, spend much of their time developing hypotheses, collecting evidence, analyzing the evidence, and developing conclusions. The goal of the *jiaoyanzu* is the improvement of educational practices for individual teachers as well as the school. To accomplish this goal, the *jiaoyanzu* members meet weekly and engage in a variety of activities, including examining curriculum together, designing lessons, observing each other teach and discussing the lesson together, writing tests, coordinating teacher professional development such as lectures and visit to other schools, working with student teachers from preparation programs, soliciting input from students on the quality of teaching they are experiencing, and looking at student work.

Jiaoyanzu are led by a teacher who is recognized in the school as high-performing. The leader can be higher on the teaching ladder or a promising young teacher. The school principal works closely with the heads of the *jiaoyanzu*, who serve as an informal council or cabinet offering advice.

Teachers are taught in their preparation programs about research methods and how to think through a research problem, and throughout their careers, they conduct research on their teaching and their schools. Teachers also do their own research individually (Liang, Glaz, DeFranco, Vinsonhaler, Grenier, & Cardetti, 2012), and about 75% have published at least one study (Gang, 2010). Schools annually file some of their research reports with their district office, and much teacher research is published in books and teaching magazines.

Some teachers hold the title of *researching teacher* and have positions in the district offices. These teachers help coordinate and monitor the research happening in schools. Topics of research range from pedagogical issues, subject matter-specific questions, administration processes, and educational policies. Teachers give most attention to subject matter-specific questions.

The Alberta Initiative for School Improvement

One of the most ambitious teacher research initiatives was the Alberta Initiative for School Improvement (AISI)—launched in 2000–2001 as a project bringing together government, universities, the union, superintendents, and school boards—to encourage teachers and local communities

to develop collaborative, school-based action projects aimed at improving student learning across the province. With a CA\$75 million budget per year, the AISI was able to support more than 1,800 projects engaging 95% of the provinces' schools. Sahlberg (2009, p. 87) observed that it is "difficult to find anywhere a comparable change effort that would be of the scale and overall magnitude of AISI."

Teachers were responsible for all aspects of their projects, including design, collection and analysis of data, sharing of findings, and fiscal accountability. The project operated in 3-year cycles, with each one building on the learning in the previous cycle, ultimately enabling leadership capacity building and the networking of schools and projects across the province.

Projects developed under AISI used student learning as one of the measurable outcomes, and evaluators concluded that their positive outcomes accrued to make a difference in achievement province-wide (Crocker, 2009; Parsons & Beauchamp, 2012). Although numerous individual school strategies for improved teaching were developed throughout the various projects, the growth and success of two approaches, problem-based learning (PBL) and PLCs, were especially pronounced. The teaching community in Alberta realized the value of PBL, and many of the projects throughout the four 3-year cycles focused on combining technology and PBL strategies to improve student learning. The goal of PBL is for students to have an authentic experience with the problem or issue being examined and to work in groups to collaboratively discuss to develop a deeper understanding. Students take the lead in the PBL model with teachers acting as facilitators throughout the process. Through AISI projects, the province experienced particularly successful changes in how math and science were taught. Through the increased use of technology, Alberta's math and science teachers were able to create PBL lessons and units that students and teachers identified as more engaging than past pencil-and-paper activities, which facilitated their spread (Parsons, McRae, & Taylor, 2006).

Early in cycles 1 and 2, those participating in AISI projects began to recognize the role that PLCs could have in changing how curriculum was taught in Alberta. PLCs encouraged greater collaboration among stakeholders such as teachers and administration to address specific goals and issues in their schools and districts. Many of the AISI projects identified community building among school staff members as a key outcome in their proposals. Consider the following from a final report of an AISI project: "Teachers morale, skills, and sense of professionalism improved as they worked in teams to plan lessons, integrate technology

into curriculum, develop assessment tools, share teaching strategies, and implement school improvement initiatives” (University of Alberta, 2004, p. 12).

Assessments of AISI concluded that by the end of its 12 years of operation, the culture of teaching in Alberta had changed. These changes included teachers’ access to the wealth of curriculum resources teachers created and made available through the Internet, changes in the use of technology, the role of PBL and student-driven knowledge creation, and of course the importance of action research in classrooms and schools, as well as the emergence of teachers as leaders in Alberta’s education system (Alberta Education, 2010; Gunn, Pomahac, Striker, & Tailfeathers, 2011; Hargreaves et al., 2009; Parsons et al., 2006; Parsons & Beauchamp, 2012). In combination, these results of teacher action research changed thinking about pedagogy and professional development in Alberta (Alberta Education, 2012).

Funding from AISI went into the general budget to be controlled by schools, which are now responsible for continuing the work. Meanwhile, professional development for Alberta’s teachers incorporates many lessons learned over the four cycles of AISI. Teachers are now recognized as leaders and experts in their field and are now asked to deliver professional development to their colleagues—a shift from the previous practice of bringing in external experts. Schools support collaborative sharing and knowledge building through PLCs.

The Alberta Teachers’ Association (ATA, 2010) has developed a framework for professional development (Link 4-4) that acknowledges the insights gained from AISI:

1. *Process*: Professional development should encourage teachers to explore, reflect critically on their practice, and take risks in the planning and delivery of curriculum.
2. *Content*: Use current research highlighting effective teaching and learning strategies.
3. *Context*: Regardless of the professional development activity, teachers’ professionalism is recognized as well as their judgment in determining their needs.

To achieve these goals, professional development in Alberta takes many forms: the continued growth of PLCs, a structured approach to coaching, training and mentoring of teachers in Alberta, as well as traditional professional development events such as conferences and workshops. Critical to the success of professional development in Alberta is the follow-up after the session. Teachers are expected to initially apply what



was learned in conjunction with professional reflection and sharing with their peers. After this, the teacher adjusts the strategy and uses it in the classroom not only based on his or her reflection and peer feedback but also on student performance (ATA, 2010). The goal is to ensure that theory, reflection, and practice work together to improve student learning.

Teacher-Led Professional Development

Teachers lead professional learning within school-based contexts and in more formal settings outside the school. We discuss these opportunities in the following sections.

Developing Teachers' Skills for Leading Professional Learning Within Schools

In Singapore, a series of system-wide strategies was established to attain the vision of teacher-led professional learning. First, platforms for teacher leaders to lead professional learning were created via subject chapters, professional networks, professional focus groups, and PLCs. Second, strong organizational structures for professional learning were developed, among which are training entitlements for teachers, funding for MOE-organized courses, protected in-school time for teachers to engage in lesson planning, reflection and professional development activities, and an online portal providing one-stop access to learning, collaboration, and resources for all MOE staff. Third, awards and recognition for teachers were established to recognize role models in education.

The establishment of the AST and other academies and language centers was explicitly to support teacher-led professional learning. These academies and language centers support

the professional learning and development of teachers by drawing out pedagogical leadership from the fraternity, infusing expertise into the system, imbuing a sense of pride, identity and ownership among teachers, strengthening content mastery, building instructional capacity, raising the standards of practice, driving pedagogical innovations and change, advancing continuous learning. (Tan & Wong, 2012, pp. 452–453)

Because Singapore has institutionalized the practice of embedded professional learning within schools, the ministry and NIE provide professional development to department heads and teacher leaders to enable these in-school practices. Each school has a school staff developer and a team of senior or lead teachers who are responsible for professional

learning in the school. Based on school objectives, the school staff developer sets a school learning plan and works with department heads to determine teacher development needs. In addition, each teacher has an individual learning plan.

The idea of pedagogical leadership brings the skill and knowledge of senior, lead, and master teachers to bear on reform and improvement across the Singapore school system. The AST mantra, “for teachers, by teachers . . . epitomizes the Academy’s commitment and dedication to teacher professionalism, professional identity and to the growth and lifelong learning of teachers” (Tan & Wong, 2012, p. 452). The academies and language centers support teachers in learning communities and sponsors numerous teacher networks developed to address mutual interest, needs, or disciplines.

Singapore’s cluster system (each cluster is a network of about 10 to 13 schools) provides another professional learning platform for teacher leaders to help build their teacher leadership capacity so that they can, in turn, build the capacity of teachers in their schools. Teacher leaders provide and receive professional development in how to lead and facilitate learning communities, action research projects, lesson study, and other aspects of in-school professional learning.

Shanghai has also created a career ladder that includes roles for teachers to support professional learning throughout the system. Within schools, a subject mentor provides support for beginning teachers, a district subject leader develops professional learning across a district, a master teacher develops school subject teachers and school professional learning, and a municipal subject leader sets curriculum and broad pedagogical objectives (Jensen et al., 2016). All of these are veteran expert teachers who have advanced in the system.

Teacher-Led Learning Beyond the School Walls

Although job-embedded professional development is important, it is also important for teachers to get beyond their local venues to learn practices they would not encounter in their home sites and to work closely with other teachers, often within their specialty areas, who have valued ideas and techniques to offer. In any area of practice, some schools have gone further than others in developing more sophisticated approaches, and these advances need to be made accessible. This is critical in jurisdictions that seek to share promising practices and profession-wide learning broadly across the system.

In many cases, teacher-led professional development is sponsored by teachers' unions. In the jurisdictions we studied, teachers' unions play an important role as professional associations, setting the standards for the profession, holding their members to that high standard, and organizing learning experiences for their members to improve their practice.

In Ontario, for example, the teachers' federations play a significant role in the provision of professional learning, with thousands of teachers participating annually in activities, developed "by teachers, for teachers." Opportunities throughout the school year include short-term experiences such as 1- to 3-day workshops as well as longer-term experiences on a variety of topics, including leadership skills, curriculum delivery, and equity mindedness. Teacher organizations also partner with subject matter associations, the Ministry of Education, and other appropriate organizations to deliver a range of professional learning resources and activities during the school year and over the summer months. As we describe in Chapter 5, some of these teacher-led learning experiences derive from a province-wide program to develop teacher leadership.

Unions play an important role in Australia as well, offering workshops for beginning teachers and sponsoring the Teacher Learning Network, (Link 4-5) co-owned by AEU and the Independent Education Union, which provides professional learning workshops, courses, and resources free or at reduced cost to its members. The organization references each of its professional learning activities against the national professional teaching standards, helping to facilitate its members' registration renewal processes.



School networks have been a vehicle for teacher-led professional learning as well. Victoria once funded and organized such networks through its department regional offices, and schools found them so valuable, they continued after the funding was devolved to the school sites. A newly elected government has indicated it will again increase resources to support school and leadership networks. Teacher Seona Aulich explains how the school networks function to provide professional learning:

Across our networks, once a term we have network meetings. I'm a grade five/six teacher. All the grade five/six teachers will get together from the schools within our cluster. The idea is to share best practice. Last week we had a network professional development where there were 12 sessions running. These sessions were run by classroom teachers who are doing something particularly well in their classrooms. [For example] I went to a literacy session for middle years' literacy at a different school. You're seeing something new that you

haven't seen before, but there's no cost at all to the school. We're trying to continually do that sharing of best practice, not just within the school, but within network schools.

Interestingly, in a survey of 750 highly regarded teachers in Australia, the respondents cited many ways that collaboration improved their practice. They also noted that the act of leading the professional learning of other teachers influenced their own learning and practice (McIntyre, 2013). This insight has emerged from a number of studies of teacher leaders who are involved in mentoring or supporting other teachers: they find they learn from supporting others (see, for example, Darling-Hammond, 2006).

Teaching Competitions

Whereas many countries spend considerable energy on sports contests and competitions in everything from cooking to fashion designing to Ninja warring, China offers incentives for teacher learning by sponsoring teaching competitions. The teaching competitions require a teacher to conduct a lesson in front of a panel of judges and receive a rating on an observation protocol. The lesson plan for that lesson is also made available to the judges so that they can see how the teacher reasoned about their selection of teaching strategies and student engagement strategies. Teaching competitions and demonstrations at provincial and national levels are open events with many observers and do not necessarily take place in a classroom. In Figure 4-4, a classroom has been set up in an auditorium to enable judges and observers to participate. In school settings, open classroom sessions look similar with several adult observers pressed against the walls of the classroom while the teacher conducts a lesson.

Winners of competitions are celebrated in their schools, and their pictures are often on display on school walls. More than that, the standards for the competitions incorporate the country's standards for teaching toward 21st-century competencies, and winners are looked at as exemplars and teachers of teaching. Thus, these competitions serve broader purposes of education reform and professional learning. The evaluation form for the competitions (Link 4-6) (see example in Appendix C) articulates the aspects of valued teaching reflected in the teaching standards; these illustrate a student-centered approach to inquiry-oriented teaching and learning. These criteria include respecting, motivating, and appreciating students; differentiating instruction for individuals; caring for struggling students and using various ways



Figure 4-4 Teaching Competition Photo Posted by a Teacher on WeChat, a Social Networking Platform in China



to involve them in learning; challenging students “responsively and appropriately”; giving timely feedback; engaging students with diversified ways of learning that involve “independent, explorative, and cooperative learning;” ensuring that students have a good grasp of the learning content, make progress in challenging areas, and have successful learning experiences.

The evaluation form also indicates that award-winning teaching in Shanghai is focused on meaningful content that is appropriate for the teaching context. The lesson should show students engaging in learning activities prior to the teachers engaging in instruction, encouraging students to think and participate in the lesson activity. The teachers’ role is to encourage and motivate, to guide, prompt, and inspire the students to engage in active learning during the lesson. At least 80% of the lesson should focus on exploration, cooperation, presentation, and communication. Broad-based student engagement is expected, with attention to all the students regardless of their performance standing in the class so that students meet the learning goals.

These standards stressed in the teaching competitions are also emphasized in daily practice. For example, in line with the evaluation form in Appendix C just described, we saw in our observations for this study that teachers used a variety of tracking techniques during lessons to help them know how many and which students participated in the lesson. Lessons had a high degree of interaction between the teacher and the students through questioning, call and response with the whole class, paired conversations between the students, student's demonstrating their work on chalkboards, and students showing their work with math manipulatives and demonstration materials they brought from home. Thus, the standards are illustrated in practice and teachers learn by engaging in these demonstrations as well as observing and critiquing them.

Feedback and Appraisal

Because of the strong emphasis in high-performing systems on teacher learning, feedback on teaching is frequent, and evaluation in these systems tends to take on a developmental quality. That is, the goal of teacher appraisal systems tends to be to provide information to help teachers improve their performance, rather than to identify and sanction low performers. As we described in Chapter 3, with careful selection and preparation, along with the closely mentored work teachers do in their probationary period, these systems, by and large, do not expect to fire teachers later.

With continuous improvement in mind, the appraisals are based on the standards for teaching described in Chapter 3 and are tied to professional learning opportunities. In some cases, such as in Singapore and Shanghai, the appraisals are tied directly to opportunities for teachers to advance in their careers as well as in salaries. (For more on the career ladders and how they operate, see Chapter 5.)

And the appraisal systems provide an opportunity for feedback. Whereas in some countries, the principal is the primary source of feedback to teachers on their performance, in many countries, teachers provide feedback to their peers. Quite often, feedback from teaching colleagues is especially relevant to the specific curriculum and students being taught, especially if it is from colleagues in the same content area or teaching field within the school. According to TALIS, 42% of teachers across the countries surveyed report that they receive feedback from their peers on their teaching (OECD, 2014d). In Finland, Singapore, and Australia, the proportions were even higher (ranging from 43% to 51%) and much higher than the rate in the United States (27%).

In the jurisdictions we studied where appraisal practices are most frequent (Australia, Singapore, and Shanghai), a substantial share of the observation and feedback process involves teachers working with other teachers. Teachers learning from teachers is a strong norm in these countries. It is also often the most highly valued form of learning by teachers. In a national survey of Chinese teachers about their professional learning activities, teachers reported that experienced teachers, colleagues teaching the same grade level, and colleagues teaching the same subject had a larger impact on their professional learning than school leaders, experts outside of the school, or students did (Gang, 2010, p. 201). Furthermore, TALIS analyses found that teachers' job satisfaction was higher when the appraisal and feedback they received impacted their classroom teaching (OECD, 2014d).

Approaches to Appraisal

In some of the jurisdictions we studied, such as Finland and Canada, formal appraisal is not a major element of the teacher development system, unless a teacher is having difficulty. In the others it is an annual event for all teachers, with varying degrees of organizational investment in the process. In all, however, there is yearly attention to teacher development in the form of an annual learning plan or goal setting tied to teachers' plans for improvement. These plans, similar to the evaluation processes themselves, are tied to the professional teaching standards we described in Chapter 3.

Canada

The Ontario teacher performance appraisal (TPA) is designed to foster teacher development and identify opportunities for additional support when required. Once they have successfully completed their induction process, teachers are evaluated by the principal or his or her designee once every 5 years (unless there is a performance concern) in a traditional format: a pre-observation meeting, classroom observation, a post-observation meeting, and a summative report. The appraisals are based on 16 competencies that reflect the standards of practice set out by the OCT. New teachers are evaluated on 8 of the 16 competencies; experienced teachers are appraised on all 16.

In addition to the TPA, each year experienced teachers must also complete an annual learning plan (ALP), which outlines their plan for professional growth. In collaboration with their principals, teachers set growth goals, along with a rationale, a set of strategies, and an action plan for

achieving them. In doing this they reflect on their previous performance appraisal, the prior year's professional learning, and input from parents and students.

Similarly, although formal teacher evaluation in Alberta is rare (occurring only when teachers apply for certification or a leadership position and when they request one from their principal), teachers prepare an annual professional growth plan. The plan (1) reflects goals and objectives based on an assessment of learning needs by the individual teacher, (2) shows a demonstrable relationship to the Teaching Quality Standards, and (3) takes into consideration the education plans of the school, the school authority, and the government. This is reviewed and approved either by the principal or by a group of teachers delegated by the principal.

Finland

Much of the appraisal function in Finland is integrated into the ongoing work of teachers with their principal, and personnel evaluation occurs informally. Indeed, according to the TALIS surveys, almost 26% of teachers in Finland teach in a school where the principal reports that teachers are not formally appraised (OECD, 2014d). Much of the appraisal function is integrated into the ongoing work of teachers with their principal. In general, evaluation involves a one-on-one private conversation that may focus on issues such as individual growth, participation in professional development, contributions to the school, and personal professional goals. The focus is more on steering than on accounting for teacher's work (Hatch, 2013).

In Helsinki, principals do use a common form to guide the conversation with teachers about how they have fulfilled the objectives the teacher set for the year. This form focuses on some key features of teaching that are considered important: "personal performance," "versatility," "initiative," and "ability to cooperate." In addition to the teacher's general classroom practice, the "versatility" of the teacher refers to whether she or he uses or has mastered "good pedagogical skills," can "acknowledge and meet diverse students in different circumstances," and can "acknowledge diverse learning needs." The form (Link 4-7) asks teachers and principals to consider the degree to which the teacher demonstrates "initiative" (which includes, for instance, "using new and meaningful working methods and practices" and "active participation in in-service training, [within-school] work groups, development initiatives, district workgroups"). As described by Anna Hirvonen, principal of Myllypuro Primary School in Helsinki,



the process relies on many interactions with teachers over a sustained period of time:

I have, every year, a discussion . . . with every teacher in which I evaluate how [a teacher's] personal objectives have been reached in terms of ability to cooperate, versatility, initiative, and performance. . . Every teacher told me how they see things going, and then I brought out my viewpoints of their work; how they have reached every objective. If we agreed on things it was easy, but we did not always agree, and that was rough. Before the first evaluation round, I arranged my schedules and was able to go around the school and visit classes while teachers were teaching. It was not a short visit; I spent time there. And I see teachers engaged in many different situations in school: with students, in the hallways, and if we have to solve out some challenges together. In addition, I observe how teachers participate in school life in general, how they bring in their knowledge for the whole school community's use, how they develop themselves, how they participate in development processes, and so on.

This conversation results in the teacher setting goals for the following year and, sometimes, in identification of learning opportunities within or outside the school.

The communal notion that teachers are evaluated in part on how they contribute to the welfare of the school and share their knowledge “for the whole school community's use,” as Anna put it, is a common thread across the jurisdictions. Teacher appraisal is not about ranking teacher's individual competence or effectiveness against that of other teachers. It is about building a thoughtful and effective teaching team that collaborates and continues to learn and improve. This notion was central in every jurisdiction.

Appraisal is more frequent and formal in Australia, Singapore, and Shanghai, where teacher evaluation is an annual event, closely tied to the professional teaching standards and individual teacher performance goals that are annually established in relation to growth needs.

Australia

In New South Wales, for example, the annual Performance and Development Plan (Link 4-8) documents a concise set of three to five professional goals that are explicitly linked to teachers' performance and development needs and the professional standards. There is an expectation that the goals should align to the school plan (Link 4-9) and systemic strategic directions. There is also an expectation that the goals establish a



personalized pathway for each teacher through the alignment to standards by recognizing existing expertise while also identifying areas for professional growth. Principals or their designees are responsible for conferencing with the teacher and observing and documenting performance.

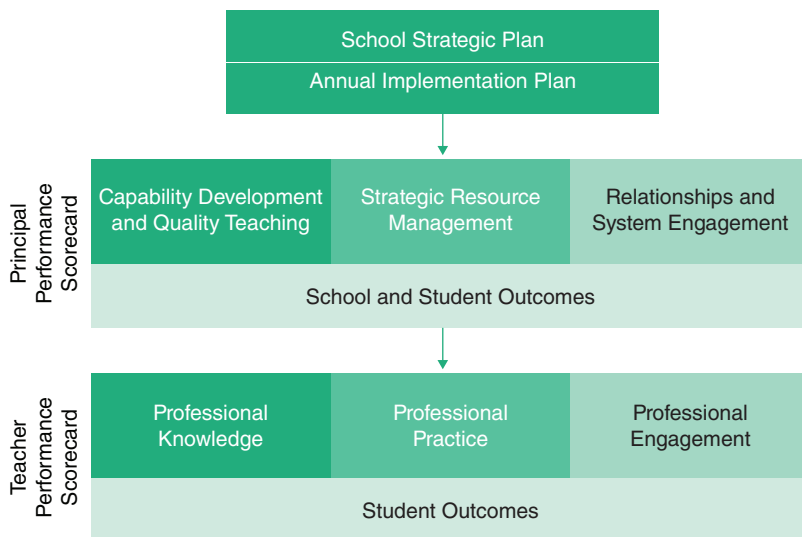
In Victoria, teacher evaluation, known as performance and development, is intended to connect teachers' performance against specified standards and goals with their development through professional learning opportunities and feedback on their work, to be underpinned by principles of collective efficacy, peer collaboration, and professional accountability (DEECD, 2014a). The Department of Education and Training has sought to build collective capacity by fostering a visible culture of instructional practice (City, Elmore, Fiarman, & Teitel, 2009) with schools viewed as the sites for PLCs (DuFour & Marzano, 2011).

In Australia, teacher performance is linked to school improvement and student learning in several ways. First, teachers' individual performance and development plans are closely aligned to school goals and, in Victoria, three broad categories: student learning, student engagement and well-being, and student pathways and transitions. Among these, student learning goals are the most tangible, and outcomes on a variety of assessments feed into teachers' plans. Senior teacher Seona Aulich explains:

As a staff, we look at whole-school data a lot, and we look at trends. Collectively, we're accountable as a school. We set new goals for our strategic plan and our annual implementation plan from looking at the previous year's data. What realistically can we improve for the following year? That's where our [performance and development plan] goals are coming from.

Second, the evaluation process is tied to state, and now national, teaching standards. Beginning in 2014, Victoria has used a balanced scorecard approach in which teachers are assessed against their performance in four domains. The first three are directly connected to the domains of the national professional teaching standards—professional knowledge, professional practice, and professional engagement—and the fourth is student outcomes. Teachers and principals together discuss and set goals in each of the four domains using the level of the national standards appropriate for their career stage and job classification. Schools have considerable flexibility in the use of school-based professional learning and the use of portfolios as evidence of performance, and they have discretion in the relative weighting of each of the four domains in assessing individual teacher performance.

Figure 4–5 Example of a Balanced Scorecard Approach



Source: Reproduced from DEECD (2013b, p. 15).

Embedded in the process are two mechanisms that direct the focus of evaluation toward teacher professional development and student learning outcomes. Under Victoria's performance and development culture framework, teachers' individual performance plans, which can include team goals—typically a grade-level team—are connected to those of the school. This is intended to promote collective accountability: teachers are accountable to each other by furthering team goals, and teachers are accountable to the community through school strategic plans. Moreover, by situating individual goals in the context of team goals, the process is intended to contribute to fostering collaborative practices within the school.

By tying the process to national teaching standards, teacher evaluation also becomes connected to professional learning and the annual registration and accreditation process in New South Wales and Victoria. Evidence of professional learning in practice may become evidence for renewal of registration and for evaluation. It connects a school-based process to state policy, national professional standards, and a common language for discussing what quality teaching looks like.

Teachers and principals are expected to undertake professional conversations based on teaching standards and continual improvement—what their students need to progress, what teachers need to learn to

engage their students, and evaluating teachers' impact on student learning. In this way, the performance and development process provides another mechanism for teachers to be reflective about the practice of the school and about their own teaching practice. This process has further embedded the national standards as a common language for articulating teaching quality within the school and profession.

Performance against individual plans is also intended to be based on multiple forms of feedback. This typically includes feedback on observed classes by peers within the school, including leading teachers or those with a role in school management. Recent international survey data showed that, nationwide, teachers in Australia were more likely to receive feedback on their work from members of the school management team (57%) or other teachers (51%) than they were from their school principal (27%) (OECD, 2014d). Feedback may also include information from student and parent surveys or structured observations (DEECD, 2014a). Plans may incorporate team goals as well as individual goals.

For example, at Willmott Park Primary School in Victoria, teachers' performance plans are agreed through discussion with the school principal, incorporating individual goals and team goals for each grade level. Teachers select six improvement goals, two from each of the three domains—professional knowledge, professional practice, and professional engagement—then use these together with evidence from student achievement data to create S.M.A.R.T. goals (specific, measurable, agreed, realistic, and time-based) that include specific targets. Structured feedback is based on periodic lesson observation throughout the year, primarily from one of the professional learning leaders and supplemented by occasional informal walk-throughs by the assistant principals and principal.

Shanghai

Shanghai's teacher evaluation system also seeks many forms of input and feedback for teachers, including from other teachers and students. Although the principal plays a role in the evaluation and makes final ratings determinations, the actual appraisal and feedback process is substantially teacher-to-teacher. As a Shanghai teacher explained:

Teachers are required to write a summary about their work, and the principal and the other teachers evaluate [their] work according to the summary. In most schools, teachers are also evaluated according to their teaching. His or her lessons are observed by the *jiaoyanzu zhang* [leader of teaching and research team] and other teachers and

the students are required to fill in some evaluation forms. The result will be fed back to the teacher and sent to the principal, but not the district office. It does not make a huge difference in the salary, but helps the principle to decide which teachers can shoulder more important responsibility.

As this quote suggests, student feedback is a routine part of the evaluation process for teachers. Schools and the district administer surveys to students and parents as part of the school evaluation process and questions about the teacher and classroom operations are reviewed by the principal. As in Australia and Singapore, there is a cycle of goal setting, mid-year review, and end-of-year review. And, as we describe further in Chapter 5, evaluation in Shanghai also ultimately fits into a career ladder scheme by which teachers can be promoted in rank.

Singapore

Singapore's appraisal system is one part of its teacher development strategy. To appraise and develop teachers, the MOE uses a system known as the Enhanced Performance Management System (EPMS). The EPMS is designed to be holistic in nature and customized to the role each teacher plays on the career path she or he has selected. Essentially, EPMS lays out a range of professional competencies as the basis for teacher appraisal and development; these specify teachers' performance in three key result areas (KRAs): (1) student outcomes (quality learning of students, character development of students); (2) professional outcomes (professional development of self, professional development of others); and (3) organizational outcomes (contributions to projects and committee work). With these areas, competency is divided into individual attributes (e.g., professional values and ethics); professional mastery (e.g., student-centric, values-driven practice); organizational excellence (e.g., visioning and planning); and effective collaboration (e.g., interpersonal relationships and skills). Teachers are appraised not only on their own teaching but also on how they contribute to the professional learning of the other teachers in the school, cluster, or fraternity. The KRAs are open-ended with no rating scale.

As an appraisal and development tool, the EPMS functions as a formative and summative review of teachers' work. It is used as a self-evaluation tool for teachers. It can help teachers identify areas of strength, assess their own ability to nurture the whole child, track their students' results, review teaching competencies, develop personal training and development plans, and articulate innovations and other contributions

to school development. Second, EPMS forms a basis for coaching and mentoring. The work review cycle begins with one-on-one target setting at the start of the year conducted with the teacher's immediate supervisor, followed by a mid-year and end-of-year work review. The review cycle helps specify areas for improvement and enables developmental and career pathways to be mapped.

In Singapore, teachers receive important feedback on their practice through the formal appraisal and development process that is married with a less formal but an equally important mentoring process in the schools. The conversations between teachers and their senior colleagues cover what the teachers have done well, along with areas for development. The Teacher Growth Model (TGM) (Link 4-10), with its comprehensive set of necessary competencies for teacher growth, often guides these developmental conversations. Azahar Bin Mohamed Noor, a teacher specialist at Raffles Girls School, explains the nature of the feedback and follow-up:



Assessment is both evaluative and developmental. The conversation is done in a very developmental way. We have our own tools such as a classroom observation tool to assess teaching competency. We also use the EPMS, where we have two conversations a year with our reporting officer [RO]. The EPMS document is to document what are our plans for the year, what we have done and the impact it has on the school or the students. It also records teachers' training needs.

Tan Hwee Pin, the principal of Kranji Secondary School, explained:

We want to emphasize to the teachers that this is a developmental process. It is a journey and we want them to have ownership of this journey. Our HODs [heads of department] work with the teachers very closely and they provide feedback on a regular basis. This ongoing conversation enables teachers to chart their progress and develop their plans throughout the year.

Links to Professional Learning

In high-performing jurisdictions, the links among appraisal, feedback, and professional learning are well developed. The NSW Department of Education and Communities makes these connections explicit:

All teachers have a right to be supported in their professional learning as well as a responsibility to be involved in performance and development processes that facilitate their professional growth for the provision of quality teaching and learning. The overarching purpose of

the performance and development process is to support the ongoing improvement of student outcomes through continuous development of a skilled and effective teaching workforce.

NSW teachers and school leaders are required to work with colleagues and their supervisor to document appropriate strategies and professional learning to support the achievement of their goals. Throughout the implementation of the plan, teachers are required to collect evidence, sourced from their everyday work, that when considered holistically will demonstrate their progress toward their goals. The evidence that is required must include data on student learning and outcomes, feedback from peer observations of teaching practice, and the results of collaborative practice with colleagues.

According to a survey of 750 highly respected teachers in New South Wales, all of these are sources of professional learning. The teachers reported that, in addition to collaborative planning and peer observations, the most useful feedback for them came from evidence of assessment from student work and feedback from their students. The second most useful source of feedback was feedback from other teachers and their supervisors. Data from external testing were less highly rated than evidence from student work samples (McIntyre, 2013). The teachers' responses suggested that a key driver of teacher learning is formative assessment based on rich evidence of learning conducted during the teaching process. This assessment is most closely connected to the classroom and creates a cycle of continuous feedback for teachers to monitor the impact of their teaching as well as for students to chart the progress of their learning. These highly accomplished teachers were constantly evaluating the difference they make and how they made it. When asked what types of feedback they sought more often, the teachers identified feedback from other teachers.

In Singapore, professional learning connections are made in the conversation between teachers and their reporting officers and in mentoring conversations between teachers and their mentors. These conversations, often guided by the TGM, cover what the teacher has done well and where there are areas for development. After the conversation with the reporting officer, teachers compose their own evaluation where they write down their thoughts and plans for the future, addressing questions such as, In what ways have you improved? How you are going to improve yourself further? What professional learning activities would you like to take on? The teacher and the reporting officer identify in- and out-of-school learning opportunities that will help the teacher

pursue these goals. The same process occurs in the systems in Canada and Australia whereby an annual learning plan is developed from the teachers' goals.

In Singapore, the appraisal may also launch professional learning tied to teachers' career options. For example, Rosmiliah Bte Kasmin of Kranji Secondary School described how her appraisal (Link 4-11) helped her specifically to refocus her professional development plans when she decided to shift from the leadership track to the teaching track (interview with senior teacher, Rosimiliah Bte Kasmin, 2014):



At the beginning of every year, you discuss with the Head your career options for the next 3 to 5 years, taking into consideration the teacher's performance in the previous year. That particular conversation will help you see which direction you would like to go. For example, if you intend to take up the leadership track as the Head of Department, probably the school needs to expose you a bit more to different projects and responsibilities in the school. If you choose the teaching track, there are certain projects and things that you need to complete, or certain skills that you need to have before you can get to be promoted to the Senior Teacher position.

When I was on the leadership track, I was doing more of activity organization for the students at the departmental level and was not very involved in mentoring teachers directly. So with the evaluation, I could narrow down the kind of skills that I need to mentor the teachers and exactly how I can improve on my mentoring of the teachers.

The ministry then provides these learning opportunities through NIE, the academies, and language centers, or direct mentoring is coupled with leadership opportunities on-site or in one of the many venues where teacher leaders are working.

Links to Compensation

Several countries, including Singapore, China, and Australia, have also sought to link evaluation to compensation. The nature of the compensation strategy appears to have an influence on how successful these efforts have been. As described, the career ladder systems in Singapore and Shanghai are of long-standing and appear well accepted, and teachers see benefits in the opportunity to grow and be recognized for their levels of teaching accomplishment and take on additional responsibilities that share their expertise. More junior colleagues are grateful to be mentored by more senior colleagues who have progressed into and received training and time to enact these roles.

In Australia, the initial federal government merit pay reform proposed annual salary increments awarded by the principal based on teacher performance. The proposal suggested that evidence of teacher performance would include student assessment outcomes and evidence of practice against the professional teaching standards. There were significant differences in the approach in New South Wales to that in Victoria. In New South Wales, the government supported the assessment of teaching practices as defined by the professional teaching standards. This approach was supported by the profession. In Victoria, the short-lived Liberal-National coalition government in power from 2010–2014 sought to introduce a form of merit pay by requiring that principals provide an annual salary increment only to those teachers deemed to have adequately met the goals articulated in their plans. There was also some effort to encourage principals to link these merit pay decisions to student test scores.

This approach to merit pay caused significant pushback from teachers and school leaders. The new government does not appear to be emphasizing this approach. Principals largely ignored the guidance, and salary increments were awarded for virtually all teachers. Senior teacher Seona Aulich described the notion as antithetical to the culture of teaching in Victoria:

People are not interested in the whole performance pay concept at all. Teachers are fairly irate about it. Teachers are groups of people that work very closely together and care about one another and there are no secrets in a school. If [a teacher] fails, then everyone knows about it. . . Then you start to break down the culture of the school. . . Particularly in a primary school, you've got all these roles that may not necessarily contribute to the academic success of the student or a school but are really important in the running of the school. . . It's this holistic view of what a teacher is. Maybe you've got children in your grade who perhaps have been incredibly shy. I'm the teacher this year who managed to get the student to open up. Now his or her school attendance has greatly improved, and s/he is actually smiling. All that sort of stuff. How do you measure that?

The educators' union opposed the government's desire to introduce performance pay, arguing that the idea would damage schools. As AEU Victoria deputy vice president Justin Mullaly stated:

It was something that was very much the antithesis of what we wanted to see in our schools, largely around the impact it would have on collegiality [and] on the benefit that comes from teachers being able to freely and fairly work with each other, on the basis that it's

through that kind of collaboration that ideas get shared and that students are in the best place to be—having teachers [who] have well-resolved and developed teaching and learning plans that're going on into the classroom.

Although the allocation of annual salary awards by principals was not accepted by the education community, the idea of a career ladder tied to the new professional teaching standards, with a well-developed externally administered process of appraisal used for advancing through the ladder, has been embraced by the union and by educators generally. Those advances to teacher leadership roles also have salary implications, but these seem more acceptable because the standards are clear and the process of appraisal by outside experts using a common, rigorous process is credible to teachers. In addition, the awards are open to all teachers who meet the standards, and teachers are not ranked against each other in a context in which one teacher's gain comes as another teacher's loss. Finally, the career ladder is intended to expand the expertise of the profession as a whole because the advances are associated with roles that enlist teachers in helping others. Thus, the result is not an individualized bonus but a collective step forward toward ever more effective teaching. We describe that approach in Chapter 5.

Shanghai's and Singapore's well-accepted career ladders—which recognize expertise as teachers are rewarded with greater rank, responsibility, and compensation (described in Chapter 5)—also award salary allocations to recognize performance each year. The annual salary determinations did not occasion much comment in Singapore, but the career ladder was highly salient to teachers and to the functioning of schools' professional learning systems. In Shanghai, we learned that China's recently added merit pay requirements, enacted as part of an overall increase in salaries in 2009, are viewed by some school leaders as counterproductive and less helpful to the support of expert teaching than the career ladder itself.

The Shanghai merit pay rules call for annual differentiation of 30% of salary based on performance. Base pay (70% of the total) is distributed to teachers primarily based on the number of classes they teach as well as the additional tasks and responsibilities that the teacher takes on, such as being the *banzhuren* (advisor) for a class, being the head of the *jiaoyanzu* (teacher research group), or conducting demonstration lessons for colleagues in the school or at other schools.

The merit determination process varies from school to school. There are no specific metrics or weighted formulas used to deter-

mine the merit salary allocation for individual teachers. Principals rely on many different sources of information and indicators of success, including performance of the teacher's students and professional advancements that the teacher makes. The introduction of merit pay appears to have made the evaluation process more frustrating for some principals. One principal, for example, described how the evaluation approach is not specific enough to administer based on detailed differences among his teachers, so he relies on his knowledge of teachers' skill to group teachers in three big categories to make the salary system merit based.

It is the toughest when it comes to performance incentives . . . The rationales behind these evaluations are not of high quality in particular situations when some teachers' performances are close in evaluation. For example, Teacher Li is outstanding, whereas the performance evaluation for you and me is close. But there should be some differences between our performance evaluations. This is the toughest part of the work, right? So the key issue is designing an evaluation system to the greatest details [and that] takes time and effort, which we don't have; the evaluation system that is broad and general fails to capture differences between teachers . . . What is your decision based on? . . . We cannot afford the time and effort to designing an evaluation system to the greatest details; we won't be able to have a solid base for incentives if the evaluation system is broad and general. So what we do now is global evaluation. In Chinese language arts, for example, we first determine who are the best teachers and then the worst. What is left is pretty much those in the middle. This way is efficient and it sounds fair. You are placed in the top/first rank whereas I am in the second as I should be. If one's teaching performance is apparently worse than others, or one breaks some minor regulation, they are downgraded.

To provide information that will allow teachers to be ranked for these purposes, schools and the district administer surveys to students (Link 4-12) and parents as part of the school evaluation process. The following are some questions on one school's annual student survey:



- Who is your favorite male teacher? And/or who is your favorite female teacher?
- Who is full of goodwill among your teachers?
- Which subject do you like best in your curriculum? Who teaches (taught) this subject?
- If you face difficulties in life or study, who will you seek for help?

- Up till now, which teacher do you think helps you a lot in life or study?
- In addition to those academic lessons, such as Chinese, math, and English, which subject do you like most? Who is the teacher?

Although there is some discomfort with this approach, these survey results are often used as the principal judgment when making evaluation and merit pay decisions about a teacher. A study conducted in Beijing after the merit pay system was implemented found that, overall, the system was not a motivating program for teachers to perform differently than they had in the past (Niu & Liu, 2012). Our research suggests that the career ladder and other recognitions of and roles for teachers appear to have more substantial motivational effects.

Lessons Learned

Professional learning in high-performing jurisdictions is part and parcel of their systems for developing a high-quality educator workforce. It builds on their efforts to recruit and prepare effective teachers; once teachers have been hired and mentored, they are expected to continue their learning, hone their craft, and become better and better each year. Feedback and evaluation is a key element: Teachers receive feedback that guides them through additional learning opportunities.

The professional learning in these countries is costly, but the costs are different from those in the United States. Rather than spend funds on nationally recognized speakers or hotel ballrooms, schools in high-performing nations spend funds by providing teachers with time in the school day to continue their learning.

The policies and practices described here differ from one jurisdiction to the next, but they share some common themes:

Teacher professional learning is continual and developmental. The standards for teaching in these jurisdictions spell out a clear set of expectations for the knowledge and skills all teachers are expected to develop and demonstrate. But they make clear that beginning teachers are not expected to be at the same level as veterans, and most veterans are not expected to be at the same level as master teachers. The standards and the systems for evaluation and career advancement imply levels of expertise to which teachers can aspire and work toward.

Professional learning is collaborative. Schools in high-performing systems have learning plans for individual teachers and school-wide learning

plans. Teachers pursue learning opportunities to fulfill their own goals as well as those of the school. But in many cases the activities teachers undertake for both sets of goals involve working with other teachers. They meet regularly in groups to review student work, lesson plans, and research, and they conduct action research and report back to the group on the results. They regularly visit other classrooms and schools to observe different approaches to instruction. And evaluation provides feedback to teachers on their practice.

Teachers lead learning for their colleagues. In Australia and Canada, for example, professional teachers' associations are key providers of professional development, offering workshops and other learning opportunities "by teachers, for teachers." This arrangement also underscores the collaborative nature of professional learning in these countries. Singapore's AST performs a similar function. There and in Shanghai teachers also engage in lesson study, action research groups, and PLCs led by teachers. And in Finland the notion of peer mentoring and co-mentoring are part of the shared learning commitment teachers make to each other and their school.

Teachers are researchers. The emphasis on research that is a hallmark of teacher education in high-performing jurisdictions continues as teachers are in the classroom. Teachers not only are expected to stay well-versed in the current literature but also they are expected to conduct their own practice-based research. This research informs their practice and that of their colleagues. And, in many cases, the research informs the field; teachers regularly publish in professional journals.

Evaluation is organized to support teacher development and growth. The purpose of teacher evaluation in high-performing countries is not primarily to reward high performers and identify and eventually get rid of low performers. Rather, it is to create goals for learning and improvement, provide feedback on performance, enable teachers to see how they are meeting their goals for improvement, and suggest what they can do to strengthen their practice. The process is linked to professional learning opportunities so that teachers have help in making progress on their own and their schools' objectives.

Professional learning in high-performing systems is, at its heart, *professional*. Countries and provinces define a body of knowledge and skills for the profession, prepare teachers to develop those competencies, and provide them with the responsibility to continue to develop them throughout their career. In that respect, teaching is, in these jurisdictions, similar to law, medicine, engineering, and other respected professions.

Teachers are also expected to remain in the profession; turnover is very low compared to the United States. But these countries also provide structures and opportunities for teachers to advance in responsibility, find new avenues for sharing their expertise, and experience greater compensation for taking on these roles. Chapter 5 discusses the ways in which these countries create teaching careers and pathways to leadership.