

# EMPOWERED EDUCATORS

HOW HIGH-PERFORMING SYSTEMS SHAPE  
TEACHING QUALITY AROUND THE WORLD

DEVELOPING  
HIGH-QUALITY TEACHING



This paper is part of a series of policy and country briefs produced as part of *Empowered Educators* – a landmark, international comparative study of teacher and teaching quality in the world’s top-performing education systems, commissioned by the Center on International Education Benchmarking® of the National Center on Education and the Economy®. For a complete listing of the materials produced by the *Empowered Educators* project, including a searchable database of recorded interviews and authentic tools, please visit [www.ncee.org/empowered-educators](http://www.ncee.org/empowered-educators).

The National Center on Education and the Economy was created in 1988 to analyze the implications of changes in the international economy for American education, formulate an agenda for American education based on that analysis and seek wherever possible to accomplish that agenda through policy change and development of the resources educators would need to carry it out. For more information visit [www.ncee.org](http://www.ncee.org).

The Center on International Education Benchmarking, a program of NCEE, conducts and funds research on the world’s most successful education and workforce development systems to identify the strategies those countries have used to produce their superior performance. Through its books, reports, website, monthly newsletter, and a weekly update of education news around the world, CIEB provides up-to-date information and analysis on the world’s most successful education systems based on student performance, equity and efficiency. Visit [www.ncee.org/cieb](http://www.ncee.org/cieb) to learn more.

Research for the *Empowered Educators* study was coordinated by the Stanford Center for Opportunity Policy in Education (SCOPE) at Stanford University. SCOPE was founded in 2008 to foster research, policy, and practice to advance high-quality, equitable education systems in the United States and internationally.

## **Developing High-Quality Teaching**

High-performing countries and 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 countries 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. They also 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 created incentives for teachers to continue learning. These include requirements for recertification, opportunities for professional advancement, and others.

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 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, teacher organizations in high-performing countries have taken the lead in developing professional learning offerings, which provide more structured learning by teachers, for teachers. These offerings also enable teachers to take on additional roles as leaders of professional learning.

This brief will describe the opportunities for professional learning in five high-performing countries: Australia (particularly New South Wales and Victoria), Canada (Alberta and Ontario), Finland, Shanghai, and Singapore. It will present some common themes across the countries, such as how they structure schooling to allow teachers to participate in professional learning opportunities. And it will show how teachers in many cases lead learning in their schools and across schools.

## **Incentives for Professional 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, as well as the creation of organizations and funding streams that ensure a steady supply of good options.

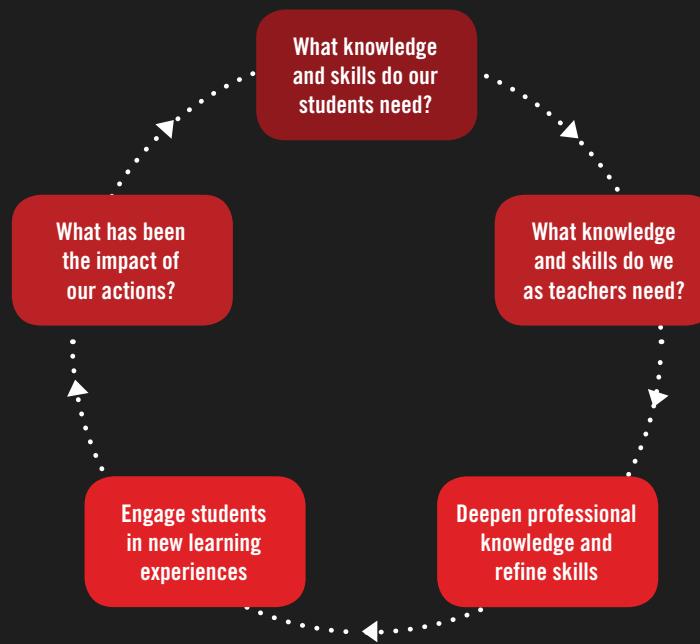
**High-performing education systems provide teachers with incentives to continue learning, time for collaboration and research, and opportunities to lead and develop their own professional learning.**

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 five years. Districts and higher-education institutions provide workshops for teachers, which cover topics such as education theory and practice and educational technology.

China offers incentives for teacher learning by sponsoring teaching competitions. The teaching competitions, which are held at the local, district, provincial, and national levels, 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.

Australian states also require teachers to continue their professional learning. Under national guidelines, professional learning is aligned with national standards for teaching. In New South Wales, 100 hours of continuing professional development are required every five years. These hours are a pre-requisite for maintaining certification, and must include at least 50 hours of professional development registered with the NSW Institute of Teachers. The state pays for five School Development days each year, when teachers can work together on school-identified professional learning. In Victoria, teachers must take part in 20 hours of professional development each year to maintain registration, and must show how professional learning addresses at least one standard in each of the seven domains of the national standards for teaching. Teachers are encouraged to use a cycle of reflective inquiry linking professional learning with student learning needs (see Figure 1, below.)

**Figure 1: Timperley Cycle of Teacher Inquiry and Knowledge Building**



Source: VIT (2013),  
Evidence of Professional  
Practice for Full Registration

Singapore offers 100 hours of paid professional development time (over 12 days) annually, and the Ministry has launched an Academy of Singapore Teachers (AST), under the auspices of the teachers' union, to provide teacher-led support for teachers. Working through networks of Master, Senior, and Lead teachers, AST offers a wide range of courses, workshops, consultancies, activities, resources, and expertise. The AST also supports professional learning communities (PLCs) within schools, offering training to school leaders and a toolkit to help them create and sustain PLCs. The Ministry of Education (MOE) created additional teacher-led academies in 2011, offering professional development for teachers in specific content areas, including physical education, arts, and English Language. Additional academies support development for Malay, Chinese, and Tamil Language teachers.

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 2014-15, the Ministry supported professional learning in special education K-12, professional learning communities 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 rewards teachers for Additional Qualifications (AQ) 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.

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.<sup>1</sup> In response, the Finnish government established a new program, called "Osavaa" (capable or skillful), to promote professional learning. The program added €8-10 million per year to the €40 million to €60 million annually provided by the Ministry and municipalities.

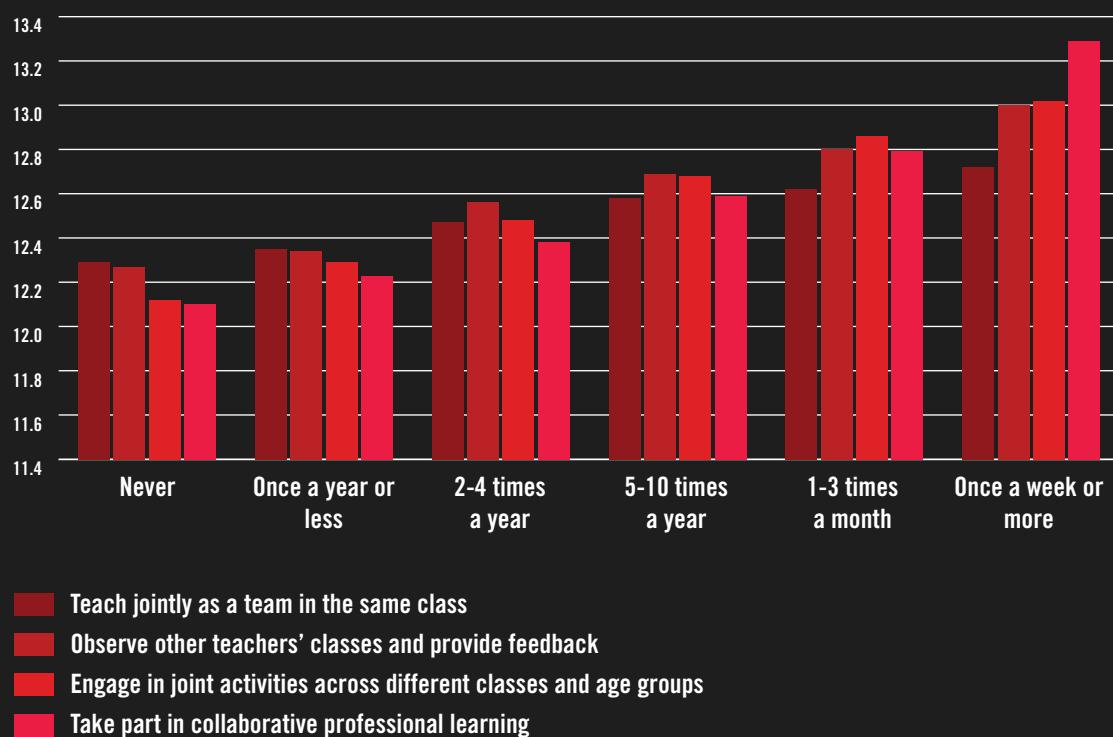
The program also establishes a "continuum" of professional learning, starting with induction for new teachers and including support for professional learning for educational leaders. About 20 percent of the funding was specifically allocated to support a mentoring program for new teachers; for supporting the use of educational technology in teacher training schools; and for a program of long-term professional development for educational leaders.

## Time and Opportunities for Collaboration

Collaboration is at the heart of effective schools. Although many policymakers 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 — like 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. The OECD's Teaching and Learning International Survey (TALIS) data provide evidence for this: participating in peer networks is a key element of teacher professionalism, which is associated with teacher satisfaction and self-efficacy (See Figures 2 and 3).<sup>2</sup>

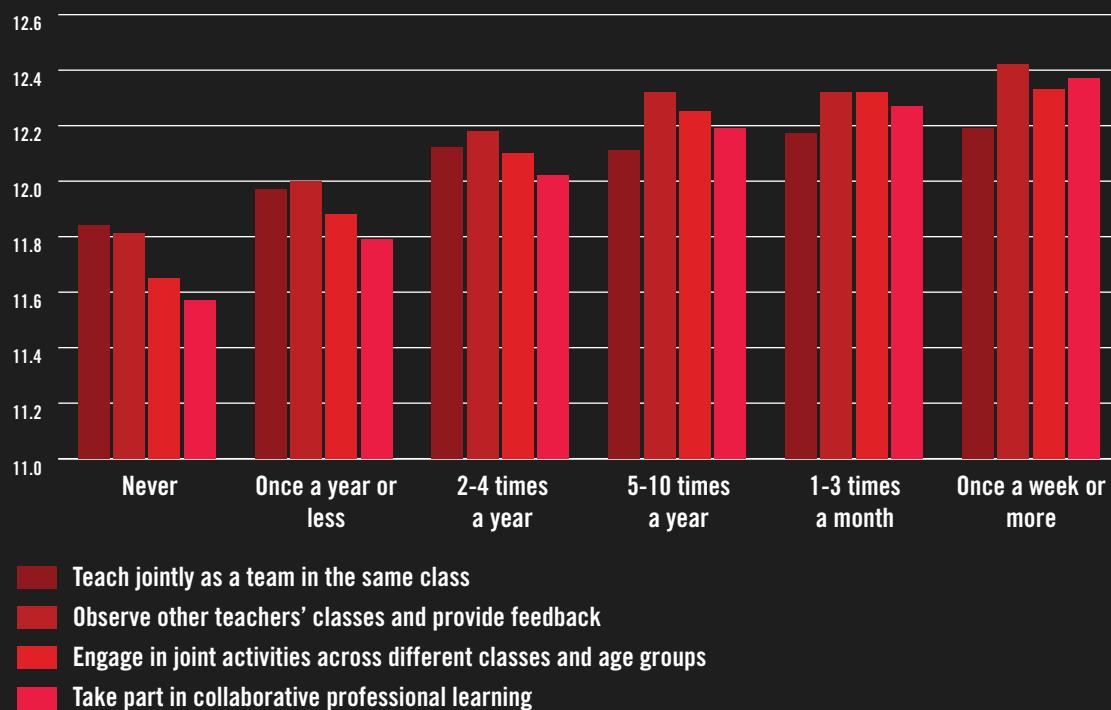
Teachers in high-performing countries spend a great deal of their learning time in collaboration with peers. This is possible because, in many of these countries, teachers spend less of their working day directly in front of students than do teachers in the United States. According to TALIS data, U.S. lower secondary teachers, for example, spend about 27 hours a week teaching students directly, about 50 percent more than the international average of about 19 hours. By contrast, teachers in Singapore spend about 18 hours a week teaching. In Shanghai it is about 15 hours.<sup>3</sup> The Australian Education Union has negotiated additional time for beginning teachers, and New South Wales has added to this time for both novices and veterans.

**Figure 2: Teacher Collaboration and Self-Efficacy**



Source: OECD, 2014.

**Figure 3: Teacher Collaboration and Job Satisfaction**



Source: OECD, 2014.

Finland 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.

Collaborative learning is also increasingly the rule in Victoria. Professional learning is regarded as a key school improvement strategy. For this reason, a significant proportion of professional learning takes place within schools among colleagues, or within school networks, in addition to traditional workshops. In these in-school activities, professional learning often takes the form of class observation and subsequent professional conversations to identify problems and improve practice. Observation may also be used as a follow-up to see that teachers are incorporating elements of professional learning into their classroom teaching.

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 where teachers work on specific problems of practice or school improvement initiatives.

In China, teaching is a collective activity, 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 practice allows teachers to hold images of "good teaching" in their heads and maintain the drive toward individual improvement by being immersed in an overall culture that allows him or her to see colleagues perform on a regular basis.

## Curriculum Planning and Assessment

Much of teachers' joint work in high-performing countries is organized around 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 serves as a valuable source of professional learning by helping teachers deeply understand the standards and curriculum goals and share their knowledge of content and students.

For example, 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.

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 which prepare them for the assessments they will later take, 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 in college and in life.

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.

Schools in both states also place a strong emphasis on using assessment data to inform instruction. At Willmott Park Primary School in Victoria, for example, teachers administer an array of assessments in literacy and numeracy and work as teams to analyze the data, building a rounded picture of student 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 includes 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 allows students to draw knowledge and skills from different disciplines and apply them to solving new problems or issues. These new assessments, like 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 allows teachers to better understand the standards embedded in the curriculum and to plan more effective instruction.

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.

**The result is a rich curriculum for students with extensive teacher participation and many opportunities for teacher growth and learning.**

Lesson design is a tightly choreographed activity in Shanghai that usually involves the input from many teachers within the school. Typically, teachers bring forward lesson plans for discussion, then one teaches the lesson in her classroom while other teachers and administrators observe, and then the group debriefs the lesson to give feedback on how to improve the lesson. The feedback discussion generally follows a common structure: The teacher gives 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 provides a few comments on what the lesson did successfully and then gives one or two suggestions for improvement. A few other teachers would then follow suit, giving a summary of what they thought went well and some suggestions for improvement. If a principal or other higher ranked person participates, they give 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 provides a summary of the comments. These meetings generally last as long as a typical school class period—about 35 minutes.

## Teacher Research

A major emphasis of professional learning in high-performing systems is research. In these countries, 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 this way, teachers develop their knowledge about student learning and instruction, and can use that knowledge to improve practice.

In Singapore, almost all teachers are involved in research and innovation projects examining their teaching and learning to better meet the needs of students. Every school has a Professional Learning Community (PLC), and there are learning teams organized by subject, by grade level, and by special interest. Schools provide structured time for teachers to come together as a group to discuss and implement their projects. The PLCs meet weekly; they select a key issue around student learning, collect and analyze data, develop and try out instructional solutions, and assess the impact of these solutions. Teachers often present their research findings at annual learning festivals, attended by academics, teacher educators, and other practitioners, with awards given for the best projects.

In Australia, teacher research is a key component of the Australian Charter for Professional Learning, which guides professional development throughout the country. It encourages teachers to seek out professional learning that “promotes action research and inquiry and develops teachers as researchers” and “supports teachers and school leaders to explore research that challenges their thinking, encourages them to develop their own theories of practice and promotes use of a range of effective pedagogical practices.”<sup>4</sup> In Victoria, the Department of Education and Training provides resources for teachers and school professional learning teams to undertake action research projects focused on students’ needs.

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 visits 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. Schools annually file some of their research reports with their district office and much teacher research is published in books and teaching magazines. In a national survey of teachers, about 75 percent of the respondents reported having at least one publication of their own research and 8 percent had more than nine publications.<sup>5</sup> 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 to subject matter specific questions, administration processes, and educational policies. Teachers give most attention to subject-matter specific questions.

Other countries provide support for teacher research as well. One of the most ambitious teacher research initiatives was the Alberta Initiative for School Improvement (AISI), which was launched in 2000-01 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 \$75 million budget per year, the AISI was able to support over 1,800 projects engaging 95 percent of the province’s schools. The initiative lasted 14 years—two more than originally planned—but was stopped after successive budget cuts.

Teachers were responsible for all aspects of their projects, including design, collection and analysis of data, sharing of findings, and fiscal accountability.

In Shanghai, the *jiaoyanzu*, or “teacher research groups,” spend much of their time developing hypotheses, collecting evidence, analyzing the evidence, and developing conclusions.

**Singapore organizes schools into clusters. This cluster system provides a professional learning platform for senior teachers and master teachers that can help to build their leadership capacity so that they can, in turn, build the capacity of teachers in their schools.**

The project operated in three-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. The projects produced results in improved student learning and classroom practice, and its influence spread to the professional learning opportunities sponsored by the Alberta Teachers Association.<sup>6</sup>

## **Teacher-Led Professional Learning**

Teachers lead professional learning not only in school-based contexts, but also in more formal settings outside the school.

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 professional learning communities. 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 Academy of Singapore Teachers (AST) in 2010 was explicitly to support teacher-led professional learning. As Singapore has institutionalized the practice of embedded professional learning within schools, AST, along with the Ministry and NIE, has provided training to department heads, senior teachers, and master teachers to enable these in-school practices. Each school has a school staff developer, a senior teacher who is 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.

To support the senior teachers, Singapore organizes schools into clusters of about 10-13 schools. The cluster system provides a professional learning platform for senior teachers and master teachers that can help to build their leadership capacity so that they can, in turn, build the capacity of teachers in their schools. Senior teachers and other teacher leaders both give and receive training in how to manage professional learning communities, action research projects, lesson study, and other aspects of in-school professional learning from their teaching colleagues in the AST and from the NIE, as well as the Ministry.

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 develops school professional learning; and a municipal subject leader sets curriculum and broad pedagogical objectives. All of these are veteran expert teachers who have advanced in the system.

Often, teacher-led professional development is sponsored by teachers' unions as well. 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 one- to three-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.

Unions play an important role in Australia as well, offering workshops for beginning teachers and sponsoring the Teacher Learning Network, co-owned by AEU and the Independent Education Union. The network 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. The New South Wales Teachers Federation, meanwhile, has created a Centre for Professional Learning to provide professional development and support to teachers. The Centre also publishes the Journal of Professional Learning to share ideas about practice.

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 have continued after the funding was devolved to the school sites. Teachers play a lead role in their functioning.

## **Lessons Learned**

Professional learning in high-performing countries 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.

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

**Professional learning in high-performing systems is, at its heart, professional.**

speakers or hotel ballrooms, schools in high-performing systems spend funds by providing teachers with time in the school day to continue their learning.

The policies and practices described here differ from country to country, but they share some common themes. These include:

***Teacher professional learning is continual and developmental.*** The standards for teaching in these countries spell out a clear set of expectations for the knowledge and skills all students 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 countries 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 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 are researchers.*** The emphasis on research that is a hallmark of teacher education in high-performing countries continues as teachers are in the classroom. Teachers not only are expected to stay well-versed in the literature, they also 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.

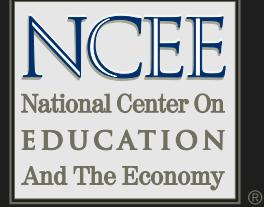
***Teachers lead learning for their colleagues.*** In Australia and Canada, for example, professional teachers' associations are key providers of professional development, offering workshops and other learning opportunities "by teachers, for teachers." This arrangement also underscores the collaborative 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 lead 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.

Professional learning in high-performing systems is, at its heart, professional. The countries 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 countries, like law, medicine, engineering, and other respected professions.

---

## Notes:

1. Piesanen, E. Kiviniemi, U., & Valkonen, S. (2007). Opettajankoulutuksen kehittamisohjelman seuranta ja arvointi. Opettajien taydennyskoulutus 2005 ja seuranta 1998-2005 oppiaineittain ja oppialoittain eri oppilaitos-muodoissa [Follow-up and evaluation of the teacher-education development program: Continuing teacher education in 2005 and its follow-up 1998-2005 by fields and subjects in different types of educational institutions]. Jyväskylä, Finland: University of Jyväskylä, Institute for Educational Research.
2. OECD (2016). Supporting teacher professionalism: Insights from TALIS 2013. Paris, France: OECD Publishing. <http://www.oecd.org/publications/supporting-teacher-professionalism-9789264248601-en.htm>.
3. OECD (2014). TALIS 2013 Results: An international Perspective on teaching and learning. Paris, France: OECD Publishing. [http://www.oecd.org/edu/school/Alberta%20\(Canada\)%20National%20TALIS%202013%20report.pdf](http://www.oecd.org/edu/school/Alberta%20(Canada)%20National%20TALIS%202013%20report.pdf).
4. AITSL. (2012, August). Australian Charter for the Professional Learning of Teachers and School Leaders. Australian Institute for Teaching and School Leadership. Retrieved from [http://www.itsl.edu.au/docs/default-source/default-document-library/australian\\_charter\\_for\\_the\\_professional\\_learning\\_of\\_teachers\\_and\\_school\\_leaders](http://www.itsl.edu.au/docs/default-source/default-document-library/australian_charter_for_the_professional_learning_of_teachers_and_school_leaders).
5. Gang, S. (2010). National survey and policy analysis for teacher professional development in primary and secondary schools. Shanghai, China: East China Normal University Press.
6. Crocker, R. (2009). Rethinking the AISI research model: Secondary data analysis and future applications. In A. Hargraves, R. Crocker, B. Davis, L. McEwen, P. Sahlberg, D. Shirley, D. Sumara, & M. Hughes, The Learning Mosaic: A multiple perspectives review of the Alberta Initiative for School Improvement (AISI) (9-33). Edmonton, Canada: Alberta Education.  
Parsons, J. & Beauchamp, L. (2012). Action Research: The Alberta Initiative for School Improvement (AISI) and its Implications for Teacher Education. *Action Researcher in Education*, 3(1), 120-131.  
Alberta Education. (2012). Spotlight on... professional development: What we have learned from AISI. Edmonton, Alberta. Author.
- Gunn, T. M., Pomahac, G., Striker, E., & Tailfeathers, J. (2011). First Nations, Metis, and Inuit Education: The Alberta Initiative for School Improvement Approach to Improve Indigenous Education in Alberta. *Journal Of Educational Change*, 12(3), 323-345.
- Hargreaves, A. et.al. (2009). The learning mosaic: A multiple perspective review of the Alberta Initiative for School Improvement AISI. Edmonton, Alberta: Alberta Education. <http://education.alberta.ca/>



2121 K Street, NW  
Suite 700  
Washington, DC 20037  
202-379-1800

[www.ncee.org](http://www.ncee.org)  
Follow us on Twitter: @CtrEdEcon  
Find us on Facebook: [facebook.com/theNCEE](https://facebook.com/theNCEE)