Thoughts on the Future of Teaching

Andreas Schleicher

Directorate of Education and Skills, OECD

andreas.schleicher@oecd.org

Abstract

Top school systems select and educate their teaching staff carefully, they provide an environment in which teachers work together to frame good practice, they encourage teachers to grow in their careers; and they have moved on from administrative control and accountability to professional forms of work organisation.

Still, the laws, regulations, structures and institutions on which education policy tends to focus are just like the small visible tip of an iceberg. The reason why it is so hard to move school systems is that there is a much larger invisible part under the waterline. This invisible part is about the interests, beliefs, motivations and fears of the people who are involved in education, parents and teachers included. This is where unexpected collisions occur, because this part of educational reform tends to evade the radar screen of public policy. That is why educational leaders are rarely successful with reform unless they build a shared understanding and collective ownership for change, and unless they build teacher capacity and create the right policy climate, with accountability measures designed to encourage innovation rather than compliance.

The most essential reason why teachers' ownership of the profession is a must-have rather than an optional extra lies in the pace of change in 21st century school systems. Even the most effective attempts to translate a central curriculum into local classroom practice will drag out over a decade, because it takes so much time to communicate the goals and methods through the different layers of the system and to build them into traditional methods of teacher education. In a fast-changing world, when what and how students need to learn changes so rapidly, such a slow process leads to a widening gap between what students need to learn and what and how teachers teach. The only way to shorten that pipeline is to professionalise teaching, that is to ensure that teachers not only have a deep understanding of the curriculum as a *product*, but equally with the *process* of curriculum and instructional design and the pedagogies to enact and enable the ideas behind the curriculum. The challenge is to build on the expertise of the

teachers and school leaders and to enlist them in the design of superior policies and practices. Where systems fail to engage teachers in the design of change, teachers will rarely help systems in the implementation of change.

Keywords

schooling – teachers – high-quality – international comparison – teachers as professionals

1 A Changing World

Educational improvement is difficult. Schools are inherently conservative social systems. It is so much easier to educate students for our past, than for their future. As parents we get easily anxious when our children learn things we don't understand, and even more so when they no longer study things that were so important for us. Teachers are more comfortable to teach how they were taught, then how they were taught to teach. And politicians can lose an election over education issues, but they rarely win one over education, because it takes so much more than an election cycle to translate good intentions into better results.

The biggest risk to schooling today is not its inefficiency, but that our way of schooling is losing its purpose and relevance. And when fast gets really fast, being slower to adapt makes education systems really slow and easily disoriented. We live in this world in which the kind of things that are easy to teach and test have also become easy to digitize and automate. Education has won the race with technology throughout history, but there is no automaticity it will do so in the future. Students growing up with a great smartphone but a poor education are going to face unprecedented risks.

The future will be about pairing the artificial intelligence of computers with the cognitive, social and emotional skills and values of humans. If we want to stay ahead of technological developments, we have to find and refine the qualities that are truly human, and that complement, not compete with, capacities we have created in our computers.¹ So one of the things artificial intelligence does is push us harder to think what makes us really human.

¹ Schleicher (2018), *World Class: How to build a 21st century school system*. OECD publishing.

Tomorrow's schools need to help students think for themselves and join others in work and citizenship. They need to help students develop a strong sense of right and wrong and sensitivity to the claims that others make. At work, at home and in the community, people will need a deep understanding of how others think, whether as scientists or artists, and how others live, in different cultures and traditions. Whatever tasks machines may be taking over from humans at work, the demands on our capabilities to contribute meaningfully to social and civic life will always keep rising.

That is where our current model of schooling gets to its limits. We invented schooling in the industrial age, when the prevailing norms were standardisation and compliance, and where the reproduction of subject-matter content was the criterion for success. There was a time when it both effective and efficient to educate students in batches and to train teachers once for their entire working lives. The curricula that spelled out what students should learn were designed at the top of the pyramid, then translated into instructional material and teacher education, often through multiple layers of government, and then rolled out across classrooms. I started my career in medical research, and there, the first thing you do is take the patient's temperature and diagnose what treatment will be most effective. In school, we tend to give all students the same treatment, and it's only years later when they graduate that we ask ourselves whether that treatment was effective.

This industrial model of schooling makes change in a fast-moving world far too slow. Even the best education minister can no longer do justice to the needs of millions of students, hundreds of thousands of teachers and tens of thousands of schools. The challenge is to build on the expertise of teachers and school leaders and enlist them in the design of superior policies and practices. This means turning teaching into a profession of advanced-knowledge workers governed by professional norms and work organisation in lieu of bureaucratic and administrative control.

2 The Importance of Quality Teachers

We demand a lot from our teachers. We expect them to have a deep and broad understanding of what they teach and whom they teach, because what teachers know and care about makes such a difference to student learning. That entails professional knowledge (e.g. knowledge about a discipline, knowledge about the curriculum of that discipline, and knowledge about how students learn in that discipline), and knowledge about professional practice so they

can create the kind of learning environment that leads to good learning outcomes. It also involves enquiry and research skills that allow them to be lifelong learners and grow in their profession. Students are unlikely to become lifelong learners if they don't see their teachers as lifelong learners.

But we expect much more from our teachers than what appears in their job description. We also expect them to be passionate, compassionate and thoughtful; to encourage students' engagement and responsibility; to respond to students from different backgrounds with different needs, and to promote tolerance and social cohesion; to provide continual assessments of students and feedback; to ensure that students feel valued and included; and to encourage collaborative learning. And we expect teachers themselves to collaborate and work in teams, and with other schools and parents, to set common goals, and plan and monitor the attainment of those goals.

There are aspects that make the job of teachers much more challenging and different from that of other professionals. As the head of Singapore's prestigious National Institute of Education, Oon Seng Tang, describes,² teachers need to be experts at multitasking as they respond to many different learner needs all at the same time. They also do their job in a classroom dynamic that is always unpredictable and that leaves teachers no second to think about how to react. Whatever a teacher does, even with just a single student, will be witnessed by all classmates and can frame the way in which the teacher is perceived in the school from that day forward. And most people remember at least one of their teachers who took a real interest in their life and aspirations, who helped them understand who they are and discover their passions; and who taught them how to love learning.

As a consequence, the quality of an education system can never exceed the quality of its teachers. So attracting, developing and retaining the best teachers is the greatest challenge education systems have to face. To meet that challenge, governments can look to corporations to see how they build their teams. They know that they have to pay attention to how the pool from which they recruit and select their staff is established; the kind of initial education their recruits get before they present themselves for employment; how to mentor new recruits and induct them into their service; what kind of continuing education their employees get; how their compensation is structured; how they reward their best performers and how they improve the performance of those who are struggling; and how they provide opportunities for the best performers to acquire more status and responsibility.

2 See Tan, O. et al. (2017), *Educational Psychology: An Asia Edition*, Cengage Learning Asia Ltd., Singapore.

3 Attracting High-quality Teachers

One of the first things I learned when studying how high-performing education systems recruit teachers is that they make the teaching profession exclusive and teaching inclusive.

When any industry or organisation recruits professionals, they will do whatever is possible to create a pool of potential employees that comes from the highest-performing segment of the population. Most firms and industries rely heavily on schools and universities and the exam system to do that sorting for them. That is what the top Japanese ministries are doing when they decide to recruit from Tokyo University and what the top Wall Street law firms are doing when they recruit mainly from among Harvard, Yale and Stanford graduates. They target these institutions because they believe they are good at recognising the most talented young people, not because of any specific knowledge or skills their graduates can offer. Because no industry can afford to source all of its professionals from the highest-performing segment of graduates, they also structure their operations so that they can put the best of the best in key positions and use others who might not be quite as good in supporting positions. More often than not, they use career structures that permit them to make the most of their most advanced professionals.

So what shapes the pool from which industry selects its professionals? Generally it is a combination of the social status associated with the job, the contributions a candidate feels he or she can make while in the job, and the extent to which the work is financially and intellectually rewarding.

The status of the teaching profession in a country has a profound impact on who aspires to enter the profession. Teaching is a highly selective occupation in Finland, with highly skilled, well-educated teachers spread throughout the country. Few occupations in the country have a higher reputation. In the traditionally Confucian cultures, teachers have long had higher social status than most of their counterparts in the West. In some East Asian countries, teachers' pay is fixed by law to make sure that teachers are among the highest paid of all civil servants.

In England, Tony Blair's Labour administration faced one of the worst shortages of teachers in British history when it took office. Five years later, there were eight applicants for every opening. To some extent this had to do with raising initial pay, and with significant changes in teachers' work environment. But a sophisticated and powerful recruitment and advertising programme also played an important part in the turnaround.³

---

3 See Barber, M. (2008), *Instruction to Deliver*, Methuen Publishing Ltd., London.

Singapore is notable for its sophisticated approach to improving the quality of the pool from which it selects candidates for teacher education. The government carefully selects its teacher candidates and offers them a monthly stipend, during initial teacher education, that is competitive with the monthly salary for fresh graduates in other fields. In exchange, these teachers-in-training must commit to teaching for at least three years. Singapore also keeps a close watch on starting salaries and adjusts the salaries for new teachers. In effect, the country wants its most qualified candidates to regard teaching as just as financially attractive as other professions. PISA data show that schools in Singapore have comparatively limited leeway in making hiring decisions. But the principal of the school to which student-teachers are attached will sit on the recruitment panel and weigh in on those decisions, well aware that wrong hiring decisions can result in 40 years of poor teaching. So it's not all just about your school, but about the success of the system.

While it is relatively easy to make teaching more financially attractive, it tends to be much harder to make teaching more intellectually attractive. But it is the latter that is key to attracting highly talented individuals into the profession, particularly as many people who go into teaching do so to make a difference to their society. It is hard because it depends on how the work of teachers is organised, the opportunities teachers have for professional growth, and how their work is regarded in the profession and by society at large (Figure 1 and Table 1). Given this, it is remarkable that the teaching profession does not have more ways of recognising and rewarding excellence internationally. In 2016, the film industry presented its 88th Academy Awards, but it was the first time that a Global Teacher Prize⁴ was awarded.

But as data from the OECD Survey of Adult Skills show, there is no country where teachers are drawn from the top third of the highest-achieving college graduates.⁵ In fact, teachers tend to come out remarkably similarly to the average employee with a college or university degree. Even more interesting is that some of the countries where the skills of teachers do not compare favourably either internationally or with regard to the average college graduate (Poland is one such country) have seen the most rapid progress. That shows that recruiting top-performing graduates is only one component of improving education;

4 <http://www.globalteacherprize.org/about/>.

5 See Hanushek, E., M. Piopiunik and S. Wiederhold (2014), *The Value of Smarter Teachers*, National Bureau of Economic Research, Cambridge, MA.

FIGURE 1 AND TABLE 1

The value of the teaching profession – In some countries, most teachers feel their work is not valued by society. Percentage of lower secondary teachers who “agree” or “strongly agree” with the statement: “I think that the teaching profession is valued in society”.

Countries are ranked in descending order, based on the percentage of teachers who “strongly agree” or “agree” that they think that the teaching profession is valued in society.

SOURCE: OECD, TALIS 2013 DATABASE, TABLES 7.2 AND 7.2 WEB.

Note: The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

TABLE 1

	Strongly disagree	Disagree	Agree	Strongly agree	
Slovak Republic	60.7	35.3	3.0	0.9	4.0
France	58.0	37.1	4.3	0.6	4.9
Sweden	62.5	32.5	3.6	1.3	5.0
Spain	45.1	46.4	7.7	0.8	8.5
Croatia	45.4	45.0	8.8	0.8	9.6
Portugal	41.0	48.6	9.5	1.0	10.5
Czech Republic	29.8	58.0	11.5	0.7	12.2
Italy	49.1	38.4	9.4	3.0	12.5
Brazil	43.0	44.4	10.0	2.6	12.6
Estonia	36.0	50.3	11.7	2.0	13.7
Iceland	36.5	46.0	16.0	1.5	17.5
Poland	28.1	54.0	15.9	2.0	17.9
Denmark	35.1	46.5	16.5	1.9	18.4
Bulgaria	28.2	52.3	16.6	2.9	19.6
Serbia	34.9	44.6	16.6	3.9	20.4
Latvia	22.0	55.2	21.3	1.5	22.8
Japan	20.5	51.4	26.0	2.1	28.1
Norway	15.6	53.8	28.6	2.1	30.6
Average	27.6	41.5	25.3	5.6	30.9
Chile	38.0	28.4	24.8	8.7	33.6
Israel	18.6	47.7	28.5	5.3	33.7
Romania	20.2	45.1	29.3	5.4	34.7
England (United Kingdom)	21.1	43.5	30.1	5.3	35.4
Australia	17.6	43.9	32.8	5.7	38.5
Netherlands	13.6	46.0	37.9	2.5	40.4
Flanders (Belgium)	11.1	43.1	42.4	3.5	45.9
Alberta (Canada)	13.9	39.1	39.5	7.5	47.0
Mexico	17.8	32.7	32.2	17.3	49.5
Finland	6.0	35.4	53.3	5.3	58.6
Abu Dhabi (United Arab Emirates)	11.9	21.6	44.7	21.8	66.5
Korea	7.4	26.0	50.8	15.7	66.5
Singapore	7.9	24.5	54.6	13.0	67.6
Malaysia	1.8	14.4	55.2	28.6	83.8

SOURCE: OECD, TALIS 2013 DATABASE.

the investments countries make in teachers' continued professional development are at least as important.

4 Educating High-quality Teachers

What makes an effective teacher? Education researchers Thomas L. Good and Alyson Lavigne⁶ summarise some of telling characteristics: these teachers believe their students are capable of learning and they themselves are capable of teaching; they spend the bulk of their classroom time on instruction; they organise their classrooms and maximise student learning time; they use rapid curriculum pacing based on taking small steps; they use active teaching methods; and they teach students until the students achieve mastery.

But how do we educate such teachers? I'll use an analogy from nature: frogs release a very large number of eggs in the hope that some of their tadpoles will survive and ultimately metamorphose into the next generation of frogs; in contrast, ducks lay a few eggs, protect and warm them until they hatch, then defend their ducklings with their life. In a way, these different philosophies of reproduction are mirrored in the approaches towards teacher education in different countries. In some countries, teacher education is open to everyone, but it often becomes an option for those with few options, and one with a high dropout rate. In other countries, teacher education is highly selective. In these countries, resources are focused on helping those who are admitted become successful teachers.

Many top-performing education systems have moved from recruiting teachers into a large number of specialised, low-status colleges of teacher education, with relatively low entrance standards, towards a relatively smaller number of university-based teacher-education colleges with relatively high entrance standards and relatively high status in the university. By raising the bar to enter the teaching profession, these countries discourage young people with poor qualifications from becoming teachers. They understand that capable young people who could go into other high-status occupations are not likely to enter a profession that society perceives as easy to get into and therefore attractive to people who could not get into more demanding professions.

Finland has made teacher education one of the most prestigious academic programmes. Each year there are typically more than nine applicants for every place in Finnish teacher education; those who aren't selected can still become attorneys or doctors. Applicants are assessed on the basis of their high school

---

6 See Good, T. and A. Lavigne (2018), *Looking in Classrooms*, Routledge, New York.

record and their score on the matriculation exam. But the more rigorous selection comes afterwards. Once applicants make it beyond the initial screening of their academic credentials, they are observed in teaching-like activity and interviewed. Only candidates with a clear aptitude for teaching in addition to strong academic performance are admitted.

A combination of raising the bar for entry and granting teachers greater autonomy and control over their classrooms and working conditions has helped lift the status of the profession. Teaching is now one of the most desirable careers among young Finns. Finnish teachers have earned the trust of parents and the wider society, not least by showing that they can help virtually all students become successful learners.

Top-performing education systems also work to move their initial teacher-education programmes towards a model based less on preparing academics and more on preparing professionals in classroom settings, in which teachers get into schools earlier, spend more time there, and get more and better support in the process. These programmes put more emphasis on helping teachers develop skills in diagnosing struggling students early and accurately, and adapting instruction correspondingly. They want prospective teachers to be confident in drawing from a wide repertoire of innovative pedagogies that are experiential, participatory, image-rich and enquiry-based.

In some countries the initial preparation of teachers includes instruction in research skills. Teachers are expected to use those skills as lifelong learners to question the established wisdom of their times and contribute to improved professional practice. Research is an integral part of what it means to be a professional teacher. In Finland every teacher finishes his or her initial education with a research master's-degree thesis. Because Finland is at the frontier of curriculum design to support creativity and innovation, teachers' work has many of the attractions of the professions that involve research, development and design.

One of the biggest challenges for the future is that we become better at recognising teachers for what they know and can do, rather than how they became a teacher.

5 Updating Teachers' Skills

If we want schools to support more powerful learning for students we need to think harder about how to offer more powerful learning opportunities for teachers. But how do good teachers become excellent teachers in a way that is consistent and can be repeated across schools?

Teacher development tends to focus on initial teacher education: the knowledge and skills that teachers acquire before starting work as a teacher. Similarly, most of the resources for teachers' development tend to be allocated to pre-service education. But given the rapid changes in education and the long careers of many teachers, teachers' development must be viewed in terms of lifelong learning, with initial teacher education the foundation for ongoing learning, not the summit of professional development. Think about the challenges teachers face as a result of technological innovations and new media, or those European teachers face as a result of the recent influx of migrants. No initial teacher-education programme could have predicted these challenges decades ago when today's teachers were educated.

Ontario's former premier, Dalton McGuinty, explained to me in 2010 how, rather than wait for a new generation of teachers, he invested in the existing schools and teachers, enlisting their commitment to reform and supporting their improvement. This involved extensive capacity-building in schools, and quarterly meetings between system leaders and teachers' unions, superintendents' organisations, and school leaders' associations to discuss how the reform strategies were developing.

Other countries have also made significant investments in teacher professional development. Teachers in Singapore are entitled to 100 hours of professional development per year to stay up-to-date in their field and to improve their practice. Teacher networks and professional learning communities encourage peer-to-peer learning. The Academy of Singapore Teachers was opened in September 2010 to further encourage teachers to continuously share best practices. The usual complaint that teacher education does not provide sufficient opportunity for recruits to experience real students in real classrooms in their initial education isn't unknown in Singapore. It is difficult, disruptive and expensive to get an annual cohort of 2 000 teacher recruits into classrooms.

So what can be done? Do you follow the example of the United States and some parts of Europe where teacher education is shaped by myriad decisions made by local authorities who have no idea how their choices are affecting the overall national quality of the teaching profession? Or do you follow the elite universities that offer teacher-education places to a small, select group, while national standards are sinking all around them? Singapore has been experimenting with very different approaches. On top of school teaching-practice attachments of between 10 to 22 weeks, its National Institute for Education uses digital technology to bring classrooms into pre-service education, with real-time access to a selection of the country's classrooms. The Institute also carries out an impressive range of classroom-based research to help teachers personalise learning experiences, deal with increasing diversity in their classrooms

and differences in learning styles, and keep up with innovations in curricula, pedagogy and digital resources.

In Shanghai, each teacher is expected to engage in 240 hours of professional development within five years. Shanghai is no exception in China. I hold a guest professorship at Beijing Normal University, China's premier teacher education institution. Every time I give a lecture there, I am deeply impressed by teachers' professionalism and dedication to continued improvement; and how keenly they are interested in the teaching practices used in other countries.

Effective professional development needs to be continuous and include education, practice and feedback, and provide adequate time for follow-up. Successful programmes involve teachers in learning activities that are similar to those they will use with their students.

But the key is often not just a large amount of class-taking by serving teachers; it is the underlying career structures and how they inter-relate with the time teachers work together in a form of social organisation that both requires and provides new knowledge and skills that make the difference. Successful programmes encourage the development of teachers' learning communities through which teachers can share their expertise and experiences. There is growing interest in ways to build cumulative knowledge across the profession, for example by strengthening connections between research and practice, and encouraging schools to develop as learning organisations.

David Hung, at Singapore's National Institute for Education, found changing teachers' belief to be the most important point of leverage for change in education.⁷ He describes the challenge as a shift in instruction from knowledge transmission to knowledge co-creation, from receiving abstractions in textbooks to learning by experimenting, from summative evaluation to formative monitoring. This often requires transforming a fear of failure to a willingness to try. Teachers with a very high or very low sense of self-efficacy may be less likely to use the new skills they have learned, while those with moderate confidence in their own ability might be the most likely to do so. Self-efficacy, in turn, is related to the ways in which work is organised: the more teachers observe other classrooms, engage in collaborative professional development, and teach jointly, the more they perceive themselves as being effective teachers (Figure 2).⁸

7 See Hung, D., S.C. Tan and T.S. Koh (2006), "From Traditional to Constructivist Epistemologies: A Proposed Theoretical Framework Based on Activity Theory for Learning Communities", *Journal of Interactive Learning Research*, Vol 17/1, pp. 37–55. 17(1), 37–55.

8 See OECD (2014c), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264196261-en>.

And yet, surprisingly little is known about the ways in which teachers continue to learn throughout their careers. That was motivation for me to give teachers a voice through the first OECD Teaching and Learning International Survey (TALIS). When first results from this survey came out in 2009,⁹ they showed how teachers reported far less participation in the kinds of professional development activities that are usually considered to be the most effective. The subsequent TALIS survey in 2013¹⁰ also showed that, across countries, teachers frequently co-ordinate and engage in informal exchanges, while the kinds of professional development activities that are most closely related to teachers' efficacy, such as classroom observations and lesson study, or team teaching, still occurs much more rarely (Figures 2 and 3).

The evidence from TALIS suggests that professional development activities that have an impact on teachers' instructional practices are those that take place in schools and allow teachers to work in collaborative groups. Teachers who work with a high degree of professional autonomy and in a collaborative

FIGURE 2 AND TABLE 2 Teacher professionalism, and its components, vary considerably around the world.
SOURCE: OECD (2016), SUPPORTING TEACHING PROFESSIONALISM: INSIGHTS FROM TALIS 2013.

9 See OECD, 2009.
10 See OECD (2014c), TALIS 2013 Results: An International Perspective on Teaching and Learning, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264196261-en>.

TABLE 2

Country	Knowledge	Autonomy	Networks	Total
Abu Dhabi (United Arab Emirates)	2.8	1.2	3.7	7.7
Alberta (Canada)	2.6	2.3	3.1	8
Australia	2.8	2.2	3	8
Brazil	2.4	1.6	2.8	6.8
Bulgaria	2.9	2.3	3.3	8.5
Chile	2.4	1.7	2.4	6.5
Croatia	3	2.3	3.2	8.5
Cyprus	2.5	1.9	2.6	7
Czech Republic	2.3	3.5	2.7	8.5
Denmark	2.5	3.4	2.1	8
England (United Kingdom)	2.9	2.9	3.6	9.4
Estonia	3.1	4.1	2.6	9.8
Finland	2.5	2.9	1.4	6.8
Flanders (Belgium)	2.7	2.1	2.2	7
France	2.7	2	1.9	6.6
Georgia	2.7	0.9	2.6	6.2
Iceland	2.3	3.6	1.9	7.8
Israel	2.6	2.4	3	8
Italy	2.3	3.7	2.2	8.2
Japan	2.4	1.2	2.9	6.5
Korea	2.6	1.9	3.6	8.1
Latvia	2.9	3.3	2.6	8.8
Malaysia	2.8	1	4.3	8.1
Mexico	2.4	1.2	2.9	6.5
Netherlands	3.1	3	2.9	9
New Zealand	3	2.9	3.6	9.5
Norway	2.4	2.9	2.2	7.5
Poland	3	3.1	3.2	9.3
Portugal	2.2	1.4	2.1	5.7
Romania	2.6	2.3	3.4	8.3
Russia	3.3	3	3.8	10.1
Serbia	2.5	3.2	3	8.7
Shanghai (China)	3.3	1.1	4.2	8.6
Singapore	3.2	2.4	4	9.6
Slovakia	2.4	3	3.1	8.5
Spain	2.2	1.9	1.9	6

FIGURE 3 AND TABLE 3 Feeling effective as a teacher is linked to collaborating with colleagues.
SOURCE: OECD, TALIS 2013 DATABASE, TABLE 7.10.

TABLE 3

		Teachers' self-efficacy
		Mean
Teach jointly as a team in the same class	Never	12.29
	Once a year or less	12.35
	2-4 times a year	12.47
	5-10 times a year	12.58
	1-3 times a month	12.62
	Once a week or more	12.72
Observe other teachers' classes and provide feedback	Never	12.27
	Once a year or less	12.34
	2-4 times a year	12.56
	5-10 times a year	12.69
	1-3 times a month	12.80
	Once a week or more	13.00
Engage in joint activities across different classes and age groups	Never	12.12
	Once a year or less	12.29
	2-4 times a year	12.48
	5-10 times a year	12.68
	1-3 times a month	12.86
	Once a week or more	13.02
Take part in collaborative professional learning	Never	12.10
	Once a year or less	12.23
	2-4 times a year	12.38
	5-10 times a year	12.59
	1-3 times a month	12.79
	Once a week or more	13.29

SOURCE: OECD, TALIS 2013 DATABASE.

culture – characterised by high levels of both co-operation and instructional leadership – reported both that they participate more in in-school professional development activities and that those activities have a greater impact on their teaching.¹¹ Turning this into practice is not easy. There is often a tension

11 See OECD (2014c), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264196261-en>.

between bottom-up, teacher-led collaboration and guided, systemic improvement processes. In many schools teachers appreciate opportunities to work together, but they don't maximise this time. On the other hand, attempting to overly steer the direction of professional collaboration is poorly received by teachers.

Indeed, building a collaborative culture in schools is easier said than done. Andy Hargreaves, Thomas More Brennan Chair in the Lynch School of Education at Boston College, has often drawn attention to the difficulties of building collaborative cultures in schools, and of extending these beyond a few enthusiastic well-led schools and school districts.¹² He argues that the approach adopted by some school systems amounts to "contrived collegiality", that is, collaboration imposed from above that, by crowding the collegial agenda with requirements about what is to be done and with whom, inhibits bottom-up professional initiative and true collaboration.

But policy can do a lot to encourage genuine collaboration by establishing leadership-development strategies that create and sustain learning communities; building indicators of professional collaboration into school-inspection and accreditation processes; linking evidence of commitment to professional learning communities to performance-related pay and measures of teacher competence; and by providing seed money for self-learning in and among schools. Structures and processes that encourage teachers to co-operate, including providing time and opportunities for collective apprenticeships, are needed to foster collective teacher efficacy. Such activities can include teacher-initiated research projects, teacher networks, observation of colleagues, and mentoring or coaching. By supporting the conditions and activities most associated with effective teacher professional development, policy makers can increase the likelihood that students are positively affected too.

In Finland, teachers are encouraged to contribute to research on effective teaching practices throughout their career. The Chinese teacher-education system also emphasises the importance of research, and improvement to the system relies on research conducted by teachers. I have always been impressed by the amount of teacher-led research conducted in China, and by how easy it is for teachers to obtain government grants for such work. Teachers need to show that they can replicate their findings in other schools with other teachers. Zhang Mingxuan, former director of an experimental school in Shanghai and later president of Shanghai's premier teacher-education university, explained to me how schools are given research grants to pilot new programmes

---

12 See OECD (2013c), *Synergies for Better Learning: An International Perspective on Evaluation and Assessment*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264190658-en>.

or policies and to test their scalability in other schools. The most experienced teachers in those schools are then enlisted as co-researchers to evaluate the effectiveness of the new practices.

But elsewhere in Asia too, countries make the most of their top-performing teachers. The education authorities often identify the best teachers and relieve them of some of their teaching duties so that they can give lectures to their peers, provide demonstrations, and coach other teachers in their district, their province, or even across the country. At the school level, the best teachers typically lead the process of lesson development. Experienced teachers are also called upon to coach novice teachers and to play a key role in analysing why certain students are having difficulties learning.

These policies and practices influence the quality of the teaching force itself. For example, the Japanese tradition of lesson study means that Japanese teachers work together to improve the quality of the lessons they teach. Teachers whose practice is inferior to that of teacher leaders can see what good practice is. Because the structure of the profession provides opportunities for teachers to move up a ladder of increasing prestige and responsibility, it also pays for a good teacher to become even better.

Singapore encourages teacher development through its Enhanced Performance Management System. The system, which was first fully implemented in 2005, is part of the career and recognition system under the “Education Service Professional Development and Career Plan”. This structure has three components: a career path, recognition through monetary rewards, and an evaluation system. The plan recognises that teachers have different aspirations and provides for three career tracks for teachers: the Teaching Track, which allows teachers to remain in the classroom and advance to the level of Master Teacher; the Leadership Track, which provides opportunities for teachers to assume leadership positions in schools and the ministry’s headquarters; and the Senior Specialist Track, where teachers join the ministry’s headquarters to become part of a “strong core of specialists with deep knowledge and skills in specific areas in education that will break new ground and keep Singapore at the leading edge”, according to the government of Singapore.

The Enhanced Performance Management System is competency-based, and defines the knowledge, skills and professional characteristics appropriate for each track. The process involves performance planning, coaching and evaluation. In performance planning, the teacher starts the year with a self-assessment and develops goals for teaching, instructional innovations and improvements at the school, and professional and personal development. The teacher meets with his or her reporting officer, who is usually the head of a department, for a discussion about setting targets and performance

benchmarks. Performance coaching takes place throughout the year, particularly during the formal mid-year review, when the reporting officer meets with the teacher to discuss progress and needs. In the performance evaluation held at the end of the year, the reporting officer conducts the appraisal interview and reviews actual performance against planned performance. The grade given for performance influences the annual performance bonus received for the year's work. During the performance-evaluation phase, decisions regarding promotions to the next level are made based on "current estimated potential". The decision about a teacher's potential is made in consultation with senior staff who have worked with the teacher. It is based on observations, discussions with the teacher, portfolio evidence and the teacher's contribution to the school and community.

This, too, is an area where international exchanges can greatly enrich policy and practice. In 2014, England's Schools Minister Liz Truss, a former mathematics teacher, was inspired by Shanghai's high performance in the PISA mathematics assessment. She went to visit Shanghai and was impressed by the mathematics teaching that she observed and the teacher-to-teacher and school-to-school programmes in the province. She worked with the Chinese to create an exchange programme for teachers between China and England.¹³ As part of the government's "maths hubs", a national network of mathematics centres of excellence, the initiative was designed to spread best teaching practice and raise standards in mathematics.

The initiative was met with some scepticism at first. I saw that first-hand when the BBC interviewed me and a leader of the National Union of Teachers when the programme was launched. The union representative raised the usual question of whether what works in one country and culture could be transposed to another context. I countered that the Chinese had spent a thousand years refining methods for teaching mathematics, and asked whether there was nothing that England could learn from their experience. He seemed unconvinced.

Shortly afterwards, the programme took off. Some 50 English-speaking mathematics teachers from China were deployed to more than 30 maths hubs in England. They showed the teaching methods they use, including teaching to the top and helping struggling students one-on-one. They gave daily mathematics lessons, homework and feedback. The Chinese teachers were also running masterclasses for local schools and provided subject-specific, on-the-job

13 <https://www.gov.uk/government/news/network-of-32-maths-hubs-across-england-aims-to-raise-standards>.

teacher education. In turn, leading English mathematics teachers from each of the maths hubs went to work in schools in China. The programme attracted considerable attention in both countries, showing how much teachers can and want to learn from other cultures if they are given the opportunities to do so, and if we dare to pull down ideological walls.¹⁴

6 Seeing Teachers as Independent and Responsible Professionals

The concept of “professionalism” historically referred to the level of autonomy and internal regulation exercised by members of an occupation. In 18th- and 19th-century Europe, the distinction between occupations and professions lay in the level to which a profession required special knowledge, a formal code of conduct and a state-issued mandate to carry out particular services. Over time, the classic definition of the professions was expanded, and university professors and upper secondary teachers were recognised as experts in education.

In the 20th century, the professionalism of teaching was countered by the growing standardisation of curricula and, with it, the emergence of an industrial work organisation. The expansion of education opportunities around the world during the past 100 years led not only to an increase in the number of teachers but also to more structured and scripted curricula and lesson plans.

At the turn of the 21st century, however, there was renewed focus on teacher professionalism as key to education reform. As improving teacher quality became viewed as the key to student achievement, teacher professionalism gained prominence. Indeed, a strong and coherent body of professional knowledge that is owned by the teaching profession, and to which teachers feel responsible and accountable, together with teachers’ continuous professional development, are now widely seen as essential for improving teachers’ performance and effectiveness. But the meaning of teacher professionalism varies significantly across countries, and often reflects cultural and historical differences, as well as disparities in national and local policy priorities.

In some countries, educators consider teaching to be entirely in the purview of the individual teacher in the sanctuary of his or her classroom; but that often leads to a profession without an accepted practice. The challenge is moving from a system where every teacher chooses his or her own approach towards

14 See also <http://www.bbc.co.uk/programmes/b06565zm> and <https://m.youtube.com/watch?v=DYGxAwRUpaI>.

one where teachers choose from practices agreed by the profession as effective. We should not take freedom as an argument to be idiosyncratic. What seems most important in this context is that professionalism and professional autonomy do not mean that teachers do what they think or feel is right in a given situation, but rather that they do what they know is right based on their deep understanding of professional practice.

As data from TALIS show, when rated on their professional knowledge base, their decision-making power over their work, and their opportunities for exchange and support, teachers still have significant challenges ahead of them. Rarely do teachers own their professional standards to the extent other professionals do, and rarely do they work with the level of autonomy and in the collaborative work culture that people in other knowledge-based professions take for granted. But the data also show that when teachers teach a class jointly, when they regularly observe other teachers' classes, and when they take part in collaborative professional learning, they are more satisfied with their careers and feel more effective in their teaching.

It is instructive to turn to the high-performing education systems to see what teacher professionalism looks like on the ground. Interestingly, there is almost just as much variation in approaches to teacher professionalism among the high performers as in the rest of the world. Hong Kong, for example, has introduced greater teacher autonomy than its neighbours in East Asia. School administrators and teachers in Hong Kong are given the freedom to customise the curriculum, materials and teaching methods. This breadth and depth of autonomy has fostered high professional self-esteem among teachers and internal motivation for continuous professional development. The government does not intervene in school management even for low-performing schools; it relies instead on the decision-making power of the school administration and teachers.

By contrast, in Shanghai the municipal government designs the policies, manages the schools and works to improve instruction. Teachers in Shanghai are comprehensively and rigorously educated in pre-service programmes and subsequent regular professional-development activities. They are expected to adhere to the standards and curricular approaches defined by the government, and generally have a narrower space for interpreting curricular objectives.

High-quality teachers and school leaders form the cornerstone of Singapore's education system and are a major reason for its high performance. Singapore has developed a comprehensive system for selecting, educating, compensating and developing teachers and principals, thereby creating strong capacity on the frontlines of education. Much professional development is school-based, led by staff developers who identify teaching-based problems or introduce new practices. This gives teachers greater autonomy over professional

development and facilitates a teacher-led culture of professional excellence. Australia, Canada, Finland and the Netherlands pursue similar strategies and are also known for the latitude they give to their teachers to customise their teaching.

These differences in the degree of autonomy that teachers are granted suggest that the impact of that autonomy depends on the context. In countries in which teacher education and selection procedures produce a well-prepared and independent teaching workforce, autonomy will allow creativity and innovation to flourish; in other cases, autonomy may simply amplify poor judgement and wrong decisions.

The cases of Finland and Ontario provide examples of how formerly centralised systems have shifted emphasis towards improving the act of teaching; towards giving careful attention to implementation, along with opportunities for teachers to practice new ideas and learn from their colleagues; towards developing an integrated strategy and set of expectations for both teachers and students; and towards securing support from teachers for reform.

Other countries, too, have rebalanced their systems to provide more discretion to school heads and school faculties – a factor that, when combined with a culture of collaboration and accountability, seems to be closely related to school performance.

In some countries, great discretion is given to the faculty, as a whole, and its individual members; in others, more discretion is given to schools that are doing well and less to those that might be struggling. In some countries, the school head is little more than the lead teacher; in others, the authorities continue to look to the school head to set the direction and manage the faculty. But common to all is the degree to which these countries are moving away from bureaucratic management of schools to forms of work organisation that are more likely to be found in professional partnerships.

In many cases, these countries concluded that top-down initiatives were insufficient to achieve deep and lasting changes in practice, because reforms were focused on things that were too distant from the instructional core of teaching and learning; because reforms assumed that teachers would know how to do things they actually didn't know how to do; because too many conflicting reforms asked teachers to do too many things simultaneously; or because teachers and schools did not buy into the reform strategy. Therefore, public policy was focused on creating strong social institutions that connect deeply with society, as opposed to assuming that government can directly interact with schools, teachers and other stakeholders.

At one end of the spectrum, the Estonian and Finnish systems of accountability are entirely built from the bottom up. Teacher candidates are selected,

in part, based on their capacity to convey their belief in the core mission of public education. The preparation they receive is designed to build a sense of individual responsibility for the learning and well-being of all the students in their care. The next level of accountability rests with the school. Again, the level of trust that the larger community extends to its schools seems to engender a strong sense of collective responsibility for the success of every student. While every comprehensive school in Finland reports to a municipal authority, authorities vary widely in the quality and degree of oversight that they provide. They are responsible for hiring the principal, typically on a six- or seven-year contract, but the day-to-day responsibility for managing the schools is left to the teachers and other education professionals, as is the responsibility for assuring students' progress.

7 Making the Most of Teachers' Time

One of the most striking findings in the PISA 2015 assessment is the weak link between the ratio of students to staff in the education system and the size of classes in schools (Figure 4). It seems intuitive that having more teachers per student will translate into smaller classes, but that is far from evident in the data. For 15-year-old students, Brazil and Japan both have an average class size of around 37 students, but Brazil has one teacher for every 29 students while Japan has one teacher for every 11 students. Conversely, in the United States and Viet Nam, there are around 15 students per teacher, but classes in Viet Nam are almost twice as large as those in the United States.

What might look like a statistical fluke has a lot to do with education policy. While teachers in Brazil and the United States have little time for things other than teaching, their peers in Japan and Viet Nam have a fraction of their teaching load and can devote plenty of time to other things besides teaching, such as working with individual students, with parents and, most important, with other teachers.

One might still think that large classes leave teachers little room for dedicating sufficient time to the needs of individual students; but the level of teacher support that students reported in PISA does not seem to correlate with class size.¹⁵ Indeed, I have observed many classes in Japan where there was little lecturing by teachers, but where teachers developed a class discussion that focused on conceptual understanding and the underlying concepts involved in

15 See OECD (2016b), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264267510-en>.

FIGURE 4 AND TABLE 4 Similar student-teacher ratios can be found in classes of very different sizes.

TABLE 4

	Class size in language-of-instruction class	Student-teacher ratio in the school
CABA (Argentina)	40.5	10
Costa Rica	27.7	17
Sweden	23.3	11
Bulgaria	25.0	12
Romania	27.0	15
Jordan	32.7	17
Luxembourg	21.4	10
Viet Nam	40.1	16
Uruguay	27.2	14
Poland	24.4	9
United States	25.8	16
Norway	23.9	10
Chile	33.8	21
Denmark	21.6	13
Hungary	28.2	10
Italy	23.3	10
Czech Republic	24.0	13
Australia	25.1	13
B-S-J-G (China)	45.6	14
Turkey	47.2	15
Georgia	39.1	14
Chinese Taipei	36.8	16
Mexico	39.1	28
Portugal	25.7	11
Iceland	20.3	10
Russia	22.8	15
Korea	31.0	15
Albania	27.4	8
Hong Kong (China)	30.7	13
Qatar	29.3	12
Japan	36.1	12
Belgium	19.7	9
Israel	29.6	12

TABLE 4 (cont.)

	Class size in language-of-instruction class	Student-teacher ratio in the school
Trinidad and Tobago	29.3	13
Croatia	24.8	12
Lithuania	24.1	10
FYROM	26.4	14
United Arab Emirates	30.1	14
Montenegro	28.2	14
Algeria	29.4	17
Ireland	24.6	14
Indonesia	30.9	16
Greece	23.5	10
New Zealand	25.3	15
Colombia	36.0	28
Tunisia	27.8	11
Peru	27.7	19
Macao (China)	35.3	15
Spain	26.9	13
Switzerland	20.1	12
Malta	20.1	7
Estonia	25.1	12
Lebanon	28.5	12
Dominican Republic	36.0	30
Netherlands	25.7	20
Germany	25.0	15
Singapore	34.4	12
Slovak Republic	22.1	13
Austria	24.2	12
Canada	26.4	16
United Kingdom	24.4	15
Slovenia	25.9	11
France	29.3	12
Brazil	36.4	29
Kosovo	28.1	19
Finland	19.1	10
Thailand	37.1	20
Latvia	21.3	10

	Class size in language-of-instruction class	Student-teacher ratio in the school
Moldova	24.6	13
Cyprus ^{a,b}	23.5	8

- a Note by Turkey: The information in this document with reference to « Cyprus » relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the “Cyprus issue”.
- b Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

problem solving, in a way that reached both the quickest and the slowest students in the class. In this way, Japanese teachers maximise their contact time with each student in the class. Students are not whiling away their time when the teacher is dealing with a small group in the classroom. In fact, a Japanese teacher in Fukushima once complained to me that classes were becoming too small to show a wide enough range of student solutions to a given problem – the basis for conducting a good lesson.

The Finnish education system pursues similar goals but with different strategies. Finnish schools devote about a third of instruction time to learning outside the classroom, thus giving teachers ample opportunity to tackle underperformance and nurture talent. In Finland, special-needs education is not synonymous with teaching students with learning difficulties. Rather, virtually every student will become a special-needs student at some point in his or her education, simply because the school has recognised that it can do more for him or her outside classroom instruction.

Inside the classroom, there is a considerable emphasis on self-regulated learning and self-assessment by students. By the time students enrol in upper secondary school, they are expected to be able to design their own programme in which, without a grade structure, each student proceeds at his or her own pace.

In Shanghai, the enquiry-based curriculum component asks students to identify research topics based on their experiences, with support and guidance

from teachers. The aim is to develop students' capacity to learn to learn, think creatively and critically, participate in society and promote social welfare. In fact, one significant change implemented in Shanghai through the slogan "return class time to students" was the increase in student activities in class relative to teachers' lecturing.¹⁶ This has resulted in a fundamental change in the perception of what makes a good class, which was once typified by well-designed presentations by teachers. Training videos showing examples of good teaching used to concentrate on teachers' activities; now, model classes are filmed with multiple cameras, one recording student activities. Teachers are evaluated according to the time given to student participation and how well student activities are organised.

In places as different as Finland, Japan and Shanghai, teachers' work is reviewed by the other teachers in the school. No teacher's classroom is a private domain.

8 In Conclusion

Nowhere does the quality of a school system exceed the quality of its teachers. Top school systems select and educate their teaching staff carefully. And they provide an environment in which teachers work together to frame good practice, and they encourage teachers to grow in their careers. Top-performing school systems have also moved on from administrative control and accountability to professional forms of work organisation. They encourage their teachers to be innovative, to improve their own performance and that of their colleagues, and to pursue professional development that leads to better practice. In top school systems, the emphasis is not on looking upwards within the administration of the school system. Instead it's about looking outwards to the next teacher or the next school, creating a culture of collaboration and strong networks of innovation.

The best-performing school systems provide high-quality education across the entire system so that every student benefits from excellent teaching. To achieve this, these countries attract the strongest principals to the toughest schools and the most talented teachers to the most challenging classrooms. And high-performing systems tend to align policies and practices across the entire system. They ensure that the policies are coherent over sustained periods of time, and they see that they are consistently implemented.

16 See <http://ncee.org/what-we-do/center-on-international-education-benchmarking/top-performing-countries/shanghai-china/shanghai-china-instructional-systems/>.

Still, knowledge is only as valuable as our capacity to act on it. To transform schooling at scale, we need not just a radical vision of what is possible, but also smart strategies that make change happen. The road of educational reform is littered with good ideas that were poorly implemented.

The laws, regulations, structures and institutions on which educational leaders tend to focus are just like the small visible tip of an iceberg. The reason why it is so hard to move school systems is that there is a much larger invisible part under the waterline. This invisible part is about the interests, beliefs, motivations and fears of the people who are involved in education, parents and teachers included. This is where unexpected collisions occur, because this part of educational reform tends to evade the radar screen of public policy.

That is why educational leaders are rarely successful with reform unless they build a shared understanding and collective ownership for change, and unless they build capacity and create the right policy climate, with accountability measures designed to encourage innovation rather than compliance.

Successful education systems will also do whatever it takes to develop ownership of professional practice by the teaching profession. Some argue one cannot give teachers and educational leaders greater autonomy because they lack the capacity and expertise to deliver on it. And that, of course, often holds some truth. But a response that simply perpetuates a prescriptive industrial model of teaching will continue to disengage teachers, like someone who was trained to heat up pre-cooked hamburgers will rarely become a master chef. In contrast, productive learning takes place when teachers feel a sense of ownership over their classrooms, and students feel a sense of ownership over their learning. So the answer is to strengthen trust, transparency, professional autonomy and the collaborative culture of the profession all at the same time.

But the most essential reason why teachers' ownership of the profession is a must-have rather than an optional extra lies in the pace of change in 21st century school systems. Even the most effective attempts to translate a government-established curriculum into classroom practice will drag out over a decade, because it takes so much time to communicate the goals and methods through the different layers of the system and to build them into traditional methods of teacher education. In a fast-changing world, when what and how students need to learn changes so rapidly, such a slow process is no longer good enough because it inevitably leads to a widening gap between what students need to learn and what and how teachers teach. The only way to shorten that pipeline is to professionalise teaching, that is to ensure that teachers not only have a deep understanding of the curriculum as a *product*, but equally with the *process* of curriculum and instructional design and the pedagogies to enact and enable the ideas behind the curriculum.

The challenge is to build on the expertise of the teachers and school leaders and to enlist them in the design of superior policies and practices. Where systems fail to engage teachers in the design of change, teachers will rarely help systems in the implementation of change.

While governments can establish directions and curriculum goals, the teaching profession needs to take charge of the instructional system and governments need to find ways to enable and support professionalism. However, increased professional autonomy also implies challenging idiosyncratic practice. It means moving away from every teacher having their own approach towards the common use of practices agreed as effective, making teaching not just an art but also a science.

Paradoxically, the highly standardised industrial work organisation of teaching has often left teachers alone in the classroom. Zero per cent school autonomy has meant a hundred per cent teacher isolation behind closed classroom doors.

Changing this will hinge on effective leadership. Effective leadership is central to virtually every aspect of education, and most importantly so when there is little coherence and capacity in education. There are many great teachers, schools and educational programmes in every education systems, but it takes effective leadership to build a great education system.

Last but not least, educational leaders need to look not just forward but also outwards. And that's not about copying and pasting solutions from other places; it's about looking seriously and dispassionately at good practice in our own countries and elsewhere to understand what works in which contexts. School systems that feel threatened by alternative ways of thinking get trapped in old practice. The ones that progress are those that are open to the world and ready to learn from and with the world's education leaders.

It's a tough agenda but we don't need to be passive. True, technology and globalisation have disruptive implications for our economic and social structure, but they don't have predetermined implications. It's the nature of our collective responses to these disruptions that determines their outcomes – it's the interplay between the technological frontier and the cultural, social, institutional and economic agents that we mobilise in response.