Teachers in Ibero-America
Insights from PISA and TALIS

OECD
BETTER POLICIES FOR BETTER LIVES

Teachers in Ibero-America

Insights from PISA and TALIS

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Foreword

Teacher policy is high on national agendas and the demands on schools and teachers are becoming more complex. The economic and social changes currently underway have made high-quality schooling more important than ever before. That said, most Ibero-American countries need to invest in innovation as well as in the quality and relevance of the skills of their workforce if they are to weather the current stormy economic climate. Having a real strategy for education, skills and innovation will be essential if they are to keep up with the developing world's fast economic growth. This will include not only updating traditional education, but also improving workplace training to update workers' skills. Thus, focusing on the region's teachers will be an essential policy tool to help ensure sustainable growth in the long term.

The Organisation for Economic Co-operation and Development (OECD) has been working closely with Ibero-American countries on education and skills for over two decades. We are helping individuals and governments in the region to identify and develop the knowledge and skills that drive better jobs and better lives, generate prosperity, and promote social inclusion. We also encourage countries to compare experiences and learn from each other, and we accompany them in the difficult process of policy implementation.

Insights from the OECD Programme for International Student Assessment (PISA) and the Teaching and Learning International Survey (TALIS) will be instrumental in addressing many of the region's challenges. They are becoming the leading measure for evaluating the quality, equity and efficiency of school systems. However, the evidence base that PISA and TALIS have produced goes well beyond statistical benchmarking. By identifying the characteristics of high-performing education systems, these international evaluations allow Ibero-American governments and educators to identify effective policies that they can then adapt to their local contexts.

This report uses the most recent OECD data, primarily from the PISA 2015 and TALIS 2013 cycles, and seeks to evaluate the Ibero-American teaching profession in support of policy makers across the region. It provides contextual evidence about the environment in which Ibero-American teachers work and develop, underlining the need for concerted support for teachers in the region. It provides a general overview of the teaching workforce in the Ibero-American countries, analysing the key characteristics of the region's teachers and the extent of teacher sorting across schools and its relationship to equity in education. The report emphasises the importance of creating attractive teaching career structures and teacher-related policies that can lead to effective learning environments, and also discusses the policy implications of what the data do and do not show. It complements this country-level analysis with examples of excellence both from within the region and from more developed counterparts outside the region.

The OECD will continue to support efforts in the Ibero-American region to ensure that teachers are lifelong learners who can continue to add value to the mutual process of educational exchange that takes place in the classroom; this report is a first step in that direction.

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Editorial

By Andreas Schleicher

Ibero-America is a land of untapped potential. The region is young, facing a unique demographic opportunity. This demographic bonus provides an opportunity for inclusive growth in the region, and high-quality education could be a potential driver of domestic growth to support future progress.

Many Ibero-American countries have begun to reap this potential by placing education and skills higher on their policy agendas. Many have made significant changes to their educational laws and regulations. Most have introduced national assessments and monitoring tools. Educational expenditure has also risen. And yet, with a few notable exceptions like Colombia, Peru and Portugal, most countries in the region have not seen those efforts translate into significantly better learning outcomes.

Part of the issue is that the laws, regulations, structures and institutions on which public policy in the Ibero-American region tends to focus are just the small, visible tip of an iceberg. The reason why it is so hard to move education systems forward is that there is a much larger, invisible part under the waterline. This invisible part is composed of the knowledge, skills, interests, beliefs and fears of the stakeholders who are involved, most notably teachers. This is where unexpected collisions occur, because this part tends to evade the radar of public policy. To achieve real change, public policy needs to help teachers at the frontline recognise what needs to change, and build a shared understanding and collective ownership for change; focus resources, build capacity, and create the right policy climate with accountability measures designed to encourage innovation and development, rather than compliance; and tackle institutional structures that too often are built around the interests and habits of institutions and teachers rather than learners.

This is not easy. 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 help teachers to be lifelong learners and grow in their profession. Students are unlikely to become lifelong learners if they don't see their teachers doing the same.

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. 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.

Attracting, developing and retaining capable teachers and ensuring that every student benefits from excellent teaching remains a formidable challenge for all of the Ibero-American countries. What shapes the pool from which countries can select their teachers 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.

While it is relatively easy to make teaching more financially attractive – and this report shows that many Ibero-American countries provide relatively favourable pay for their teachers – 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.

Some Ibero-American countries have begun 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. Modern programmes put more emphasis on helping teachers develop skills to diagnose struggling students early and accurately, and adapt their 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.

As the report shows, teacher development in Ibero-America 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 in these countries 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. Such professional development needs to be continuous and include education, practice and feedback, and provide adequate time for follow-up.

Rather than wait for a new generation of teachers, Ibero-American countries need to invest more in their existing schools and teachers, enlisting their commitment to reform and supporting their improvement. 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 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.

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 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.

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 across schools.

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, just as 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 change 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.

In short, the changes in the demands of our societies have vastly outpaced the structural capacity of our current governance systems to respond. And when fast gets really fast, being slower to adapt makes education systems really slow and disoriented. 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 the hundreds of thousands of teachers and tens of thousands of 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.

Successful policy implementation requires the mobilisation of the knowledge and experience of teachers and school leaders, who can make the practical connections between the classroom and the changes taking place in the outside world. That is the fundamental challenge of policy implementation in our times. It is not accomplished just by letting a thousand flowers bloom and asking parents to figure out which schools are best, but it requires a carefully crafted set of conditions that can unleash teachers' and schools' initiative and build capacity for change.

As the prescriptive approach weakens, the position of the classroom practitioners needs to be strengthened. 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 percent school autonomy has meant a hundred percent 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.

The education crisis, mirrored in flat-lining educational outcomes despite rising costs in Ibero-America is, at least in part, an education policy crisis. Finding adequate and forward-looking responses to the interrelated changes in technology, globalisation and the environment is ultimately a question of leadership.

Most of the Ibero-American school systems are still designed to sort students and weed students out, not to open opportunities and address the diverse needs of learners. That was a very efficient and effective approach for the industrial age, where education was about finding and training a small minority of leaders and then giving everyone else just basic knowledge and skills. In a modern society, where we need to capitalise on all talent and ensure equitable access to learning, such an approach has become a principal barrier to success. There need to be incentives and support for schools to address the needs of all their pupils, rather than gaining an advantage by shifting difficult learners elsewhere.

For schools to be entrepreneurial and able to adapt, system leaders need to be able to mobilise the human, social and financial resources needed for innovation; to work as social entrepreneurs both within and beyond their own organisations; and to build stronger linkages across sectors and countries, to establish partnerships with government leaders, social entrepreneurs, business executives, researchers and civil society.

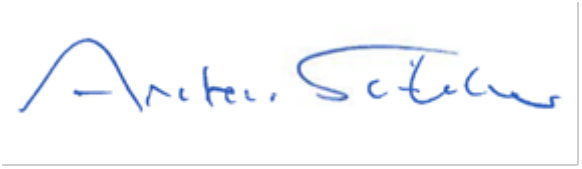
For education policy it will also be important to get beyond the unproductive wrangling between forces pushing for greater decentralisation and those aiming for greater centralisation of the school system that have often dominated the political debate in Latin America. That debate detracts from the real question of what aspects of education are best

managed at what level of the education system, and the overriding principle of subsidiarity where every layer of the school system should continuously ask itself how it can best support learners and teachers at the front line.

That means also that teachers, schools and local authorities recognise that certain functions, particularly those regarding the establishment of curriculum frameworks, course syllabi, examinations, or teaching standards do require a critical mass of capacity and therefore tend to be best supported by some level of centralisation. The test of truth is a coherent instructional system that is available to all students, and in which world-class educational standards feed into well-thought-out curriculum frameworks that guide the work of teachers and publishers of instructional materials.

System leaders need to be strategic – to be aware of how organisational policies and practices can either facilitate or inhibit transformation and be ready to confront the system where it inhibits change. They need to be design thinkers, capable of recognising emerging trends and patterns and see how these might benefit or obstruct the innovation they want to achieve. They need to be politically savvy, in terms of working with organisations as well as people. They need to use their knowledge about what motivates people to get them to support their plans for change, and they need to use their understanding of power and influence to build the alliances and coalitions needed to get things done.

Many teachers and schools are ready for that. To encourage their growth, policy needs to shift towards inspiring and enabling innovation, identifying and sharing best practice. That shift in policy will need to be built on trust: trust in education, in educational institutions, in schools and teachers, in students and communities. In all public services, trust is an essential part of good governance. Trust is a key determinant of where great people want to work. But trust cannot be legislated and mandated and that is why it is so hard to build into traditional administrative structures. And trust is always intentional. Trust can only be nurtured and inspired through healthy relationships and constructive transparency. At a time when command and control systems are weakening, building trust is the most promising way to advance and fuel modern education systems.



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Reader's guide

Data sources

This report contains information and analysis based on PISA 2015, TALIS 2013 and the *Education at a Glance* reports.

The Programme for International Student Assessment (PISA) 2015

PISA is an ongoing programme that offers insights for education policy and practice, and helps monitor trends in students' acquisition of knowledge and skills across countries and in different demographic subgroups within countries. Its findings allow policy makers around the world to compare the knowledge and skills of students in their own countries with those in other countries, set policy targets against measurable goals achieved by other education systems, and learn from policies and practices applied elsewhere. While PISA cannot identify cause-and-effect relationships between policies or practices and student outcomes, it can show educators, policy makers and the interested public how education systems are similar and how they differ – and what that means for students (OECD, 2016, p. 25[1]).

The PISA 2015 survey focused on science, with reading, mathematics and collaborative problem solving as minor areas of assessment. PISA 2015 also included a background questionnaire for students, which took 35 minutes to complete. The questionnaire sought information about the students themselves, their homes, and their school and learning experiences. School principals also completed a questionnaire covering the school system and the learning environment. For additional information, some countries and economies decided to distribute a questionnaire to teachers. It was the first time that this optional teacher questionnaire had been offered to participating countries and economies. In some countries and economies, optional questionnaires were distributed to parents, who were asked to provide information on their perceptions of and involvement in their child's school, their support for learning in the home, and their child's career expectations, particularly in science (OECD, 2016, p. 28[1]).

The PISA survey in 2015 encompassed the 35 OECD countries, and 37 partner countries and economies. In Ibero-America, the participating countries were the four OECD members (Chile, Mexico, Portugal and Spain) – and seven partner countries (Argentina, Brazil, Colombia, Costa Rica, the Dominican Republic, Peru and Uruguay). Besides student performance, PISA 2015 also measured other important aspects of schooling in these countries such the resources invested in education as well their quality (in this case, human capital or teachers).

Teaching and Learning International Survey (TALIS) 2013

TALIS is the first international survey which focuses on teachers' working conditions. It also offers teachers and school leaders an opportunity to give their views on the contexts and characteristics of the learning environments in their schools. TALIS seeks to help

education systems with recruiting top candidates into the profession, raising the status of the teaching profession and providing insights needed to formulate policies to support the development of a high-quality and professional teaching workforce. Insights from TALIS can also be used to identify systems facing similar challenges, with a view to comparing and learning from different policy approaches. In addition, TALIS seeks to empower individual teachers and school leaders by providing examples of practices that can be implemented at the school level, such as teacher collaboration. To date TALIS has been administered twice – in 2008 and 2013; the third round of TALIS, planned for 2018, is currently in preparation (OECD, 2014[2]).

The data presented in this report are drawn from the TALIS 2013 cycle. The second round involved 24 countries and economies (4 additional education systems collected TALIS data in 2014, after the publication of the main TALIS 2013 report). TALIS 2013 also offered countries the option to collect data from primary teachers (ISCED 1), upper secondary teachers (ISCED 3) and teachers in schools which took part in PISA, in addition to the lower secondary teachers (ISCED 2) who are the focus of the main survey (OECD, 2014[2]).

Five Ibero-American countries took part in the 2013 cycle: Brazil, Chile, Mexico, Portugal and Spain. It provides an international perspective on their teachers' situation, and enables countries in Ibero-America to be compared with highly effective educational systems in other parts of the world.

Education at a Glance (EAG)

Education at a Glance: OECD Indicators is the authoritative source for information on the state of education around the world. It provides key information on the output of educational institutions; the impact of learning across countries; the financial and human resources invested in education; access, participation and progression in education; and the learning environment and organisation of schools (OECD, 2016[3]).

The 2016 edition introduced new indicators on the completion rate of tertiary students and on school leaders. It provided more trend data and analysis on diverse topics such as teachers' salaries, graduation rates, expenditure on education, enrolment rates, young adults who are neither employed nor in education or training, class sizes and teaching hours. The publication examines gender imbalances in education and the profile of students who attend, and graduate from, vocational education (OECD, 2016[3]).

The report covers all 35 OECD countries and a number of partner countries (Argentina, Brazil, China, Colombia, Costa Rica, India, Indonesia, Lithuania, the Russian Federation, Saudi Arabia and South Africa).

Country coverage

Data collected from PISA, TALIS and EAG cover more than 70 countries. All 35 OECD countries are included in the data collected from PISA and EAG. In the case of TALIS, comparable data are only available for 25 OECD countries, with Austria, Germany, Greece, Hungary, Ireland, Luxembourg, Slovenia, Switzerland and Turkey not taking part in the TALIS 2013 study.

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.

International averages

The "OECD average" corresponds to the arithmetic mean of the respective country estimates. It was calculated for most indicators presented in this report.

The label used in figures and tables indicates the number of countries included in the average:

OECD average (for PISA and EAG data): Arithmetic mean across all 35 OECD countries.

OECD 25 average (for TALIS data): Arithmetic mean across all OECD countries, excluding Austria, Germany, Greece, Hungary, Ireland, Luxembourg, Slovenia, Switzerland and Turkey. Data from the United States did not meet the international standards for participations rates and, as such, were not considered in the OECD average for TALIS (for more information see OECD, 2014[2]).

Rounding figures

Because of rounding, some figures in tables may not add up exactly to the totals. Totals, differences and averages are always calculated on the basis of exact numbers and are rounded only after calculation. All standard errors in this publication have been rounded to one or two decimal places. Where the value 0.0 or 0.00 is shown, this does not imply that the standard error is zero, but that it is smaller than 0.05 or 0.005, respectively.

Abbreviations and acronyms

BSJG	Beijing-Shanghai-Juanitas-Guangzhou (China)
CABA	Ciudad Autonoma de Buenos Aires (Autonomous City of Buenos Aires; Argentina)
CPEIP	Centro de Perfeccionamiento, Experimentación e Investigaciones Pedagógicas (Centre for Training, Experimentation and Pedagogical Research; Chile)
ECLAC	Economic Commission for Latin America and the Caribbean
EIMLE	Estrategia Integral para la Mejora del Logro Educativo (Integral Strategy for the Improvement of Educational Achievement; Mexico)
ESCS	Economic, social and cultural status
GDP	Gross domestic product
ISCED	International Standard Classification of Education
ITE	Initial teacher education
PISA	Programme for International Student Assessment
PPP	Purchasing power parity
PTA	Programa para la Transformación Educativa “Todos a Aprender” (“Let’s All Learn”; Colombia)
SDG	Sustainable Development Goal
SEP	Secretaría de Educación Pública (Secretariat of Public Education; Mexico)
SNTE	Sindicato Nacional de Trabajadores de la Educación (National Union of Education Workers; Mexico)
TALIS	Teaching and Learning International Survey
TFP	Total factor productivity

Executive summary

As the factors linked to improvements in student outcomes become more apparent, governments around the world are looking at the quality of their teaching workforce. Teacher practice is at the heart of many policy discussions, while efforts to develop and support teachers are continually being implemented and studied. If education, learning and skills are to act as both enablers and drivers of inclusive and sustainable development, it is important to review the teaching profession. This report takes a step in that direction for the Ibero-American region.

Ibero-America needs an education policy upheaval. Its teachers function in a volatile economic climate: although most Ibero-American economies posted average annual gross domestic product (GDP) growth of about 3% over the past 15 years, momentum has been faltering since 2012. The region's countries have made great efforts to increase school enrolment, yielding increases of up to 24% in Brazil, Colombia and Mexico between 2003 and 2015, but their education systems suffer from a high degree of grade repetition, low relative expenditure and low performance levels among secondary students, all suggesting the need for policy reform to meet the demands of the changing times.

Designing, implementing and monitoring policies is an effective way to channel a country's educational effort. One key attribute of successful educational systems is that they address teacher policies from a systemic and holistic perspective. Educational systems must strive to design policy so that each element is clearly articulated and complements the others.

Who are the teachers of Ibero-America?

The teaching profession in Ibero-America is largely "feminised", with women making up more than half the teaching workforce at all levels of education. The region has a high proportion of middle-aged teachers, suggesting the profession is failing to attract new talent. On average, very few teachers (2%) have not completed tertiary education in Ibero-America and have at least 15 years of experience. While Spain and Portugal have fewer students per teacher than the OECD average from primary to secondary level, some other Ibero-American countries have twice the student-teacher ratios seen across the OECD. Principals' reports suggest there is considerable socio-economic inequity across Ibero-American schools, with advantaged schools being better staffed than disadvantaged ones. Principals also reported that 55% of teachers work in schools where students arrived late on a weekly basis (rising to 70% or more in Chile), and 41% in schools where absenteeism occurs every week. Overall levels of teacher professionalism in the region are low, particularly compared with high-achieving countries like Estonia and Singapore. Governments will need to devise effective mechanisms to improve working conditions, increase pay and reduce workloads in order to enhance student learning outcomes.

Attracting and selecting the best teachers

Teachers need to be able to prepare students for a society and an economy in which they will be expected to be self-directed learners, able and motivated to keep learning over a lifetime. The type and quality of the training teachers receive, and the requirements to enter and progress through the teaching profession, shape the quality of the teaching workforce. However, the value afforded to a profession can also affect the quality of the candidates who choose to enter. In many Ibero-American countries, the 15-year-olds who plan to become teachers have lower levels of academic proficiency than those planning to join other professions, whereas in high-performing countries the differences between these groups are not significant, indicating that in Ibero-America the profession lacks prestige.

Attracting, developing and retaining effective teachers are priorities for public policy. Teaching careers are increasingly seen in lifelong learning terms, with initial teacher education providing the foundations. The region shows a great deal of variety over the selection criteria for initial teacher education programmes and their length, and whether they require a competitive exam or have to be certified by an authority to enter the profession.

Developing better career structures is another crucial dimension for attracting, developing and retaining effective teachers. The development of career structures can also respond to the policy need to provide teachers with the knowledge and skills necessary to face the changing demands of their schools and classrooms. A good career structure should also be able to acknowledge and reward effective teachers who are continuing to develop and learn. Some Ibero-American countries seem to be in transition to a mixed approach, combining elements of both career-based and position-based systems (e.g. Brazil, Chile, Colombia and Portugal). Such "mixed" formulations often combine performance evaluation and training with seniority as criteria for career advancement.

Creating more equitable learning systems across Ibero-America

Educators and policy makers in many countries seem acutely aware that inequities in access to high-quality teachers may jeopardise disadvantaged students' chances of succeeding at school. In an effort to level the field, several Ibero-American countries have invested more teaching resources in disadvantaged schools or areas, to reduce class sizes and/or increase teaching hours. Results from the Programme for International Student Assessment (PISA) have found that an unequal distribution of high-quality teachers – using both objective and subjective quality measures – is associated with larger performance gaps among disadvantaged students. In many countries, the best-qualified and most-experienced teachers were less likely to teach in disadvantaged schools; the more pervasive this situation, the greater the socio-economic gap in student performance. Any teacher policy that aims to tackle student disadvantage should thus strive to allocate good-quality teachers – not just more teachers – to under-served students.

Developing an effective teaching workforce

Ensuring teachers receive support and training throughout their professional life is crucial to establishing attractive and effective career structures. Professional development activities must be engrained in the lifelong learning curriculum, providing teachers with relevant and effective knowledge and skills. The 2013 Teaching and Learning

International Survey (TALIS) found that, of the five Ibero-American countries participating in the survey (Brazil, Chile, Mexico, Portugal and Spain) only Spain and Chile had professional development participation rates lower than the OECD average – indeed Chile had the lowest participation rate of all 38 countries participating in TALIS. Teachers seem to face more pronounced barriers to professional development in Ibero-American countries, with around two-thirds declaring the lack of relevant training on offer as a reason for not accessing professional development.

In order to assess what professional development teachers need, education systems need information about how they work and how these results can aid their motivation, preparation and teaching strategies. Teacher evaluations seem to be the most direct way to identify and improve every teacher's professional practice. In recent years, a large number of Ibero-American countries, growing increasingly aware of the importance of good teachers to the quality of their education systems, have started to develop and apply teacher evaluation systems. Such evaluation models will need to be adapted to suit the context of each country as there is no universally valid model for improving the quality of education.

Chapter 1. Overview of the Ibero-American context

The chapter provides a general overview of the economic and educational situation facing the Ibero-American region. It provides some of the social context needed to help understand the concrete educational policy needs. It starts with the recent economic history and current situation of Ibero-American countries, particularly in Latin America. It then considers the educational context of the region along with student attainment and educational expenditure levels. The chapter concludes with an overview of the type of teacher policies governments might need to develop to improve educational and social outcomes in the region.

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.

Ibero-America is a land of untapped potential. The region is young, facing a unique demographic opportunity. This demographic bonus provides an opportunity for inclusive growth in the region, and high-quality education could be a potential driver of domestic growth to support future progress. Inevitably, teachers have an integral and indispensable part to play in such an education-induced growth story.

This chapter seeks to set the stage for the rest of the report by providing the economic backdrop for Ibero-America, and particularly Latin America, highlighting the need to boost investment in education and skills to improve the economic and social outcomes of its citizens. This context is followed by a brief description of the current situation for education and education-based expenditure in the region. It then tackles how these educational efforts can be framed into substantive policy directions. This background detail helps to understand the importance of the following chapters; it highlights the challenging environment in which teachers work and develop, thus motivating governments to improve these circumstances through the design of targeted policies for not just teachers in the region but by extension, for long-term sustainable growth.

The analysis primarily refers to the Ibero-American countries that participated in the OECD's Programme for International Student Assessment (PISA) 2015, the Teaching and Learning International Study (TALIS) 2013 and *Education at a Glance 2016* (OECD, 2016[1]). These comprise Argentina, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Mexico, Peru and Uruguay (in Latin America), and Portugal and Spain (in Europe). However, it also makes reference to other Latin American countries where data are available. The reader's guide provides more information about these studies.

Economic context

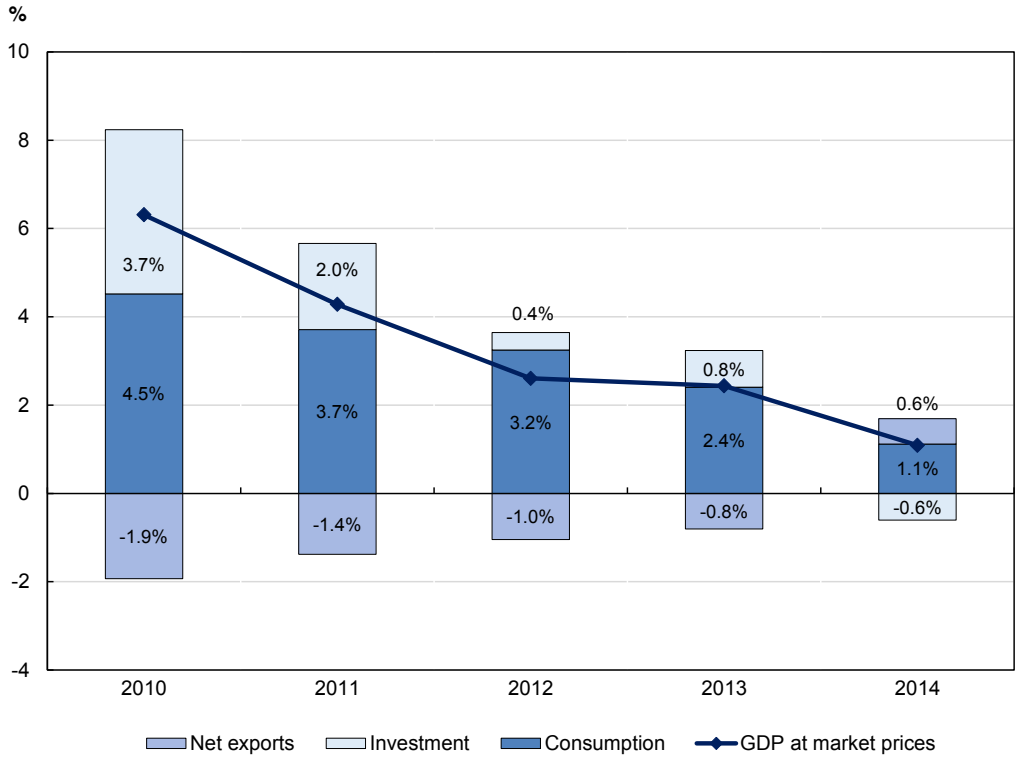
Over the past 15 years, most Ibero-American economies have posted an average annual growth in gross domestic product (GDP) of about 3%. That was superior to the rates achieved by most developed economies but lagged far behind those of developing regions. China, South Asia and sub-Saharan Africa exhibited faster annual growth, averaging more than 5% a year over this period (Cadena et al., 2017[2]). Now growth in the region is coming under further pressure from both domestic and foreign factors and this will have long-term socio-economic consequences. Following a swift recovery in the aftermath of the global financial crisis in 2009, the momentum in Ibero-America (especially the Latin American bloc) has been faltering since 2012. GDP expanded just 1% in 2014, well below the 5% average growth rates of the previous decade. Strong global demand, high commodity prices and abundant liquidity boosted growth in the region between 2003 and 2011, but weaker global growth, lower commodity prices and subdued capital flows are now reducing activity (OECD/CAF/ECLAC, 2015[3]). More recently, after five years of slowing growth, activity in the region entered negative territory in 2015 and contracted further in 2016, remaining at between -0.5% and -1%. While only four countries showed negative GDP growth in 2016 (Argentina, Brazil, Ecuador and Venezuela), the medium-term prospects for recovery are bleak or modest across Ibero-America.

One of the key factors behind the recent slowdown in Ibero-American economies is a loss of investment momentum. While investment was pivotal to growth in 2010 in the aftermath of the 2009 crises, it made a negative contribution in 2014 (Figure 1.1). Investors' expectations deteriorated over the past few years, affecting investment plans in most Latin American and Caribbean economies. Two different types of factors may be responsible. First, changes in the global context led to subdued external conditions for

Latin America within the Ibero-American region (e.g. softer global demand, lower commodity prices and tighter financial conditions). Second, domestic factors such as policy uncertainty and the passing of reform bills, notably on taxes, in some countries (Argentina, Chile, Colombia, Ecuador, El Salvador and Venezuela) may have deferred investment plans. While the domestic factors may be short lived, the global ones may be more persistent and influence future investment prospects as agents adapt to less favourable external conditions. Public investment has not been enough to compensate for the retrenchment of private investment.

Figure 1.1. Components of GDP growth in Latin America (2010-14)

Percentage annual growth



Note: The Latin American simple average includes Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, Guatemala, Mexico, Paraguay, Peru, Uruguay and Venezuela.
Source: OECD/CAF/ECLAC (2016[4]), *Latin American Economic Outlook 2017: Youth, Skills and Entrepreneurship*, http://dx.doi.org/10.1787/leo-2017-en; calculations based on Economic Commission for Latin America and the Caribbean (ECLAC) compilation from official sources.

The region's aggregate economic performance masks internal differences. The strongest annual growth rates over the past 15 years (2000-15) have been achieved by the Andean economies of Colombia and Peru, Costa Rica and the Dominican Republic, which had growth rates of between 4.2% and 6.5%. The largest economies, Brazil and Mexico, attained low annual growth rates of 2.2% and 2.7% respectively. The recent economic crises in Argentina and Venezuela also pushed their growth rates below the average for the region, to 2.5% and 2.1% respectively (Cadena et al., 2017[2]). The economies of Argentina and Venezuela are currently contracting, while Brazil remains stuck in its deepest recession in three decades (OECD/CAF/ECLAC, 2016[4]). Similarly, although the average investment rate in Latin America – which is just shy of 20% of GDP – is close to

investment rates in more capital-intensive industrial economies and much lower than in other emerging economies, the average conceals wide differences. Low investment rates in the largest economies, Argentina, Brazil and Mexico, bring down the regional average (OECD/CAF/ECLAC, 2015[3]).

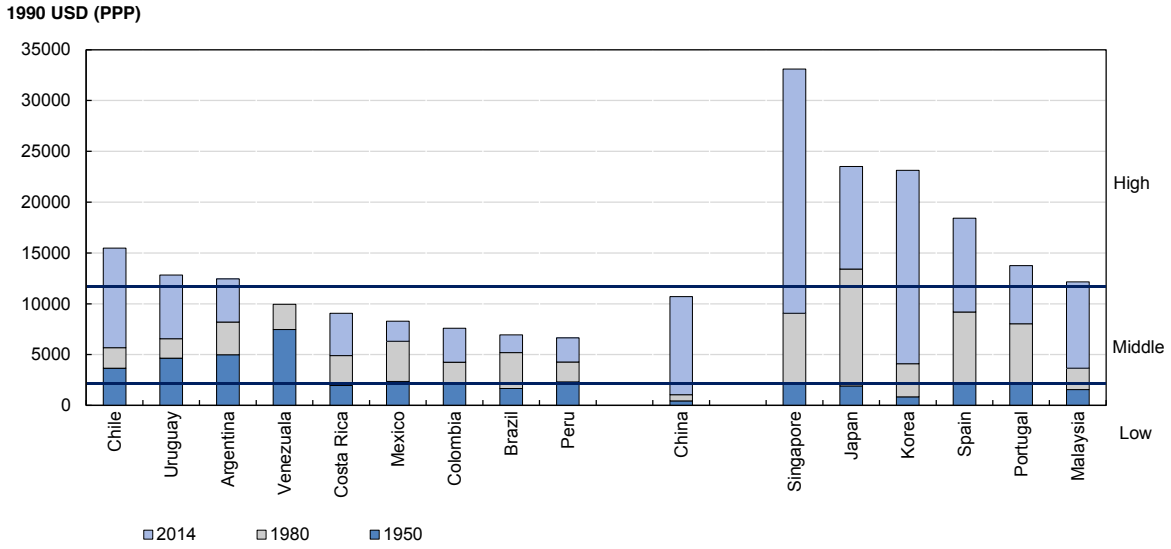
The composition of the region's growth also raises concerns about sustainability. The growth gap between Latin America and emerging Asia during the past decade is attributed largely to lower total factor productivity growth. Total factor productivity (TFP) is the portion of output not explained by the amount of inputs used in production. As such, its level is determined by how efficiently and intensely the inputs are used in production. Almost 80% of GDP growth over the period 2000-15 has come from rising labour inputs reflecting growing populations rather than productivity (Cadena et al., 2017[2]). The contribution to growth from employment has been larger in Latin America than in any other region in the world. Output per worker has risen at only 0.6% per year since 2000, which was one of the weakest productivity performances of any region (Cadena et al., 2017[2]). Productivity growth is key to driving income and wage growth; the two move closely in tandem. In developing countries overall, productivity grew by 3.9% a year and per capita GDP by 4.2% between 2000 and 2015. In Latin America, the equivalent figures were only 0.6% and 1.6%. By 2030, the rate of employment growth is expected to fall to only 1.1% a year. If productivity growth does not change, this implies that GDP growth in Latin America could drop by 40% percent over the next 15 years compared with the previous 15 (Cadena et al., 2017[2]).

This underlying economic turmoil means the middle-income trap could be a challenge for most Ibero-American economies. This phenomenon refers to the long-term slowdown in growth that many countries endure when they approach middle levels of per capita income as the rapid growth registered by some countries in the early stages of development is followed by persistent stagnation (Eichengreen, Park and Shin, 2011[5]; Felipe, Abdon and Kumar, 2012[6]; Aiyar, 2013[7]).

So far, only Spain, Portugal, Chile and Uruguay have managed to escape the middle-income trap in Ibero-America (Figure 1.2). Many of the rest of the region's economies have suffered recurrent and pronounced episodes of stagnation in per capita income, particularly after the 1980s. The middle-income trap is due in part to shortcomings in the rule of law, corruption and productive structures less concentrated in knowledge-intensive activities. The Latin American bloc within Ibero-America exhibited a 2.5% average growth rate of per capita GDP during 2006-16. At this pace, the region could remain in the middle-income trap for another four decades, on top of the nearly seven decades already spent there. This average also hides strong differences across countries: economies such as Argentina, Costa Rica and Panama should escape the trap in the early 2020s, while El Salvador, Honduras and Nicaragua might have to wait up to ten decades.

Figure 1.2. GDP per capita in selected Latin American, Asian and OECD countries (1950, 1980 and 2016)

1990 USD in purchasing power parity terms



Note: Low= Low-income; Middle= Lower-middle-income; High= Upper-middle-income.
Source: OECD/CAF/ECLAC (2016[4]), *Latin American Economic Outlook 2017: Youth, Skills and Entrepreneurship*, http://dx.doi.org/10.1787/leo-2017-en. Calculations based on the methodology proposed by Felipe, Abdon and Kumar (2012[6]). Data extracted from IMF (2016[8]), *World Economic Outlook Database: April 2016 Edition*, http://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx and Bolt and van Zanden (2014[9]), "The Maddison Project: Collaborative research on historical national accounts".

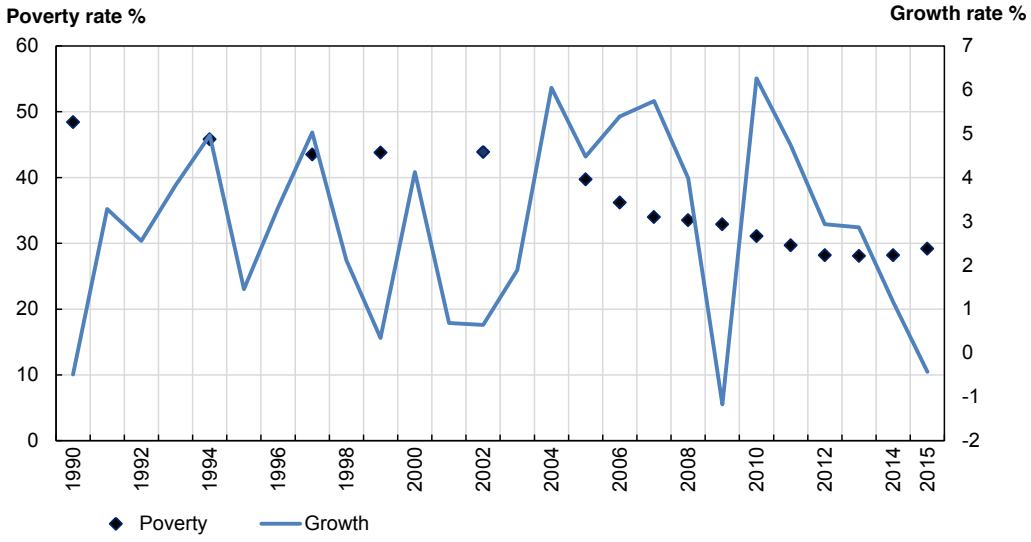
Growth matters immensely because it drives improvements in people's lives, but the link between growth and well-being is not always straightforward and a number of dimensions need to be considered. Overall, Latin America has made remarkable socio-economic progress during the last two decades. Based on ECLAC's (2010[10]) measures of poverty and indigence, between 1990 and 2014, poverty rates fell from 48.4% to 28.2% of the total population. Some 60 million people escaped poverty, although 168 million people remain below the poverty line. The indigence rate also declined in 2014, with 25 million people escaping indigence (ECLAC, 2016[11]). In 2014, the share of the population in Latin America earning USD 10-50 a day (in 2005 purchasing power parity terms; PPP) – considered the "consolidated middle class" – reached 35%, a significant increase on the 21% in 2001 (World Bank, 2016[12]). The share of Latin Americans living on USD 4-10 (2005 PPP) a day – who are considered "vulnerable" – has also increased steadily since 2000, to a peak of 39% in 2014. That left 23% of the population living on less than USD 4 (2005 PPP) a day in 2014, which is below the moderate poverty line. Similarly, inequality decreased considerably in Latin America as the average Gini coefficient fell below 0.49 in 2010, reflecting a fall of 0.1 points a year since 2002 (Gasparini, 2016[13]).

After the significant progress made up to 2014 discussed above, estimates for 2015 suggest poverty and indigence rates will have increased as the region faced a contraction and rising inflation, and similar results can be expected in 2016 as the recession continues. In 2015, around 7 million Latin Americans became poor, increasing the total

regional poverty rate up to 29.2% (175 million people) from 28.2% in 2014 (ECLAC, 2016[11]) and more than 5 million people became indigent in 2015, (ECLAC, 2016[11]). This represents the largest increase in poverty rates since the late 1980s. More importantly, this reflects a loss of the resilience shown by Latin America in the last few decades; poverty rates did not increase during the economic slowdown of the early 2000s or the financial crisis (Figure 1.2).

Income inequality has also declined at a slower pace since the 2010s in Latin American economies, except for Colombia, Ecuador and Uruguay (Gasparini, 2016[13]). This deceleration is due to the weakening of the factors that had fostered earlier advances: expansions of cash programmes and minimum wage increases, as well as slowdowns in the reduction of unemployment and fertility rates among low-income households. This situation will also test the robustness and the living standards of the middle class emerging over the past decade in Latin America (OECD, 2010[14]).

Figure 1.3. GDP growth and poverty rates in Latin America (1990-2015)



Note: Poverty rates as defined by ECLAC refer to Latin America; annual GDP growth rates to Latin America and the Caribbean.
Source: OECD/CAF/ECLAC (2016[4]), *Latin American Economic Outlook 2017: Youth, Skills and Entrepreneurship*, http://dx.doi.org/10.1787/leo-2017-en; based on data from ECLAC (poverty) and CEPALSTAT (GDP).

In low-income countries, growth generally arises through the reallocation of labour from low- to high-productivity activities and industries. Reaching middle-income levels usually requires new engines of economic growth, which are based on capital- and skill-intensive manufacturing and service industries (Kharas and Kohli, 2011[15]). Economies that successfully transition to these activities need a large pool of skilled labour, favourable investment rates, a developed system of national innovation, and a macroeconomic and institutional environment conducive to entrepreneurship. Even with these foundations, they may struggle to co-ordinate all the elements needed to reach the goal of productive diversification.

Besides product diversification, most Ibero-American countries need to invest in innovation, the quality and relevance of their workforces' skills, and on closing the infrastructure gaps to reverse this period of negative growth. Innovation capital in Latin America is far lower than in the OECD. This will need efforts to invest domestically and attract innovation, but also foreign investment. Projections estimate that by 2030 90 million Latin Americans will have attained tertiary education (19% of its workforce), which would be close to half the figure for other developing giants like China (OECD/CAF/ECLAC, 2015[3]).

Designing a real strategy for education, skills and innovation will be essential for keeping up with the developing world's strengthening of its human capital. This includes not only traditional education, but also workplace training to update workers' skills. Focusing on the region's teachers will be an essential policy tool that can help ensure long-term sustainable growth.

Educational context

Many Ibero-American countries have slowly begun to place education and skills high on their policy agendas. Many have made significant changes to their educational laws and regulations. Most have introduced national assessments and monitoring tools. Educational expenditure has also risen. For example, between 2003 and 2012, the resources allocated to secondary school students increased by 2-5 percentage points in Argentina, Brazil, Chile, Colombia, Portugal and Spain. (OECD, 2018[16]). This section looks at the wider educational context, changes, student achievement and educational investment in the region, drawing on information from the recent OECD report, *Skills in Ibero-America: Insights from PISA 2015* (OECD, 2018[16]).

Access to schooling, which is a prerequisite for achieving inclusion and equity in education, has also risen considerably over the past decade in Ibero-America, as evidenced by data from PISA 2015. While having all eligible 15-year-olds enrolled in school does not guarantee every student will acquire the skills needed to thrive in an increasingly knowledge-intensive economy, it is the first step towards building an inclusive and fair education system. Regardless of its average level of performance, any education system where a large proportion of 15-year-olds does not attend school cannot be considered an equitable system (OECD, 2016[17]).

Between 2003 and 2015, Mexico added more than 300 000 students to the total population of 15-year-olds enrolled in Grade 7 or above, an increase of 24%, and more than the growth in the population of 15-year-olds. Over the same period, Brazil added more than 493 000 students (an increase in enrolment of 21%) and Colombia added more than 130 000 students between 2006 and 2015, an increase of 24%, despite a shrinking population of 15-year-olds in both countries. This means that all three increased their enrolment rates by improving their capacity to retain students as they progress through higher grades (OECD, 2016[17]).

Student achievement in Ibero-America

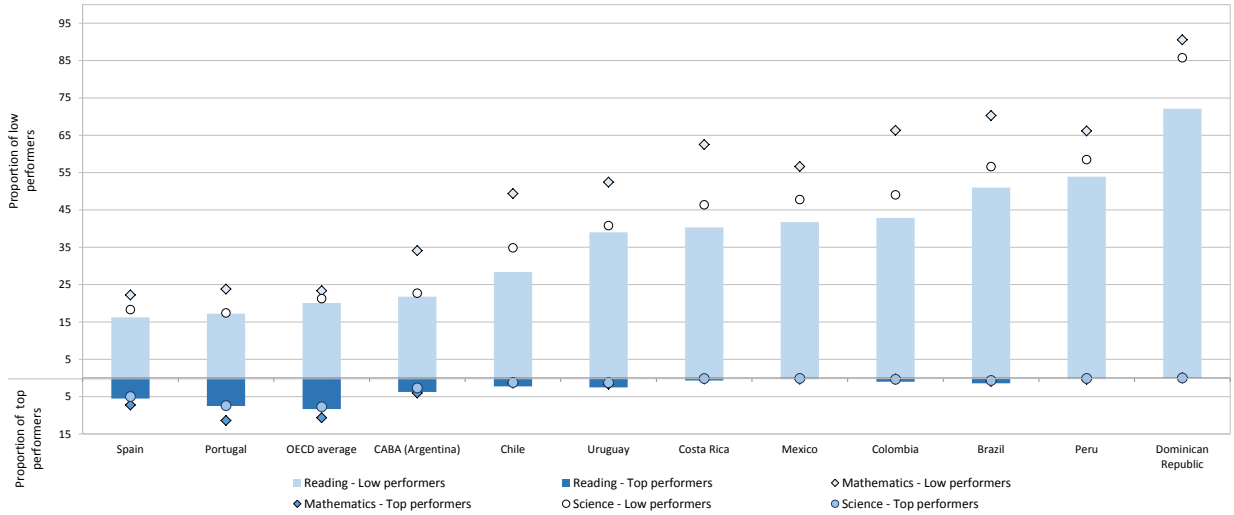
Despite these very encouraging improvements in access to education, the region has done less well to improve educational outcomes and the skills of the population. Analysis of PISA results shows that Latin American countries tend to perform worse than their Asian counterparts, which were the top performers in PISA (IDB, 2016[18]), even after controlling for per capita GDP or the cumulative level of expenditure on education on students aged 6 to 15. Very high levels of grade repetition, together with high levels of

school truancy, signal the inefficiency of Latin American education systems. Although Spain and Portugal performed relatively well in PISA 2012, performing close to the OECD average, they still suffer from issues of quality and efficiency. Although their relative performance improves once per capita GDP and country-level socio-economic background are taken into account, they still lag behind Korea, Japan, Poland and Slovenia, which have similar levels of expenditure per student. This suggests that Spain and Portugal have some room to increase the efficiency of the human and financial resources within their education systems (see the reader's guide for more information on PISA 2015 and Annex A for more details of the 2015 results).

The performance of students at the age of 15 has implications for their future skills, so the performance of Ibero-American students in PISA should be considered carefully, as they are likely to constitute a limitation on the development of a skilled workforce. As well as overall standings, PISA also breaks down student performances into levels of proficiency; in particular, it identifies a baseline level of performance (called Level 2) in all three PISA subjects. This is the level at which students are able to tackle tasks that require, at least, a minimal ability and disposition to think autonomously. Students who do not reach this level are considered to be unable to understand basic concepts and procedures (OECD, 2016[17]), and are likely to face greater difficulties when learning more technical skills in the future.

Among the Latin American countries in Ibero-America, except Chile, almost half of all students did not reach this basic level of competencies (Level 2 in the PISA scale). In the Dominican Republic only one in five students reached this level. These numbers are much higher than in other OECD countries (Figure 1.4). Colombia and Portugal are the only Ibero-American countries to have significantly reduced the percentage of students who did not reach Level 2 in science performance between 2006 and 2015: from 60.2% to 49.0% in Colombia and from 24.2% to 17.7% in Portugal.

Figure 1.4. Share of low- and top-performing students, PISA 2015



Note: The figure shows the share of students not acquiring baseline proficiency (below Level 2) and the share of top-performing students (Level 5 and above) in reading, mathematics and science in PISA 2015.
Countries are ranked in ascending order of the percentage of students scoring below Level 2 in reading.
Source: OECD (2016[19]), *PISA 2015 Database*, www.oecd.org/pisa/data/2015database/.

In reading, the baseline level of skills is defined as the level at which students can not only read simple and familiar texts and understand them literally, but also demonstrate, even in the absence of explicit directions, some ability to connect several pieces of information, draw inferences that go beyond the explicitly stated information, and connect a text to their personal experience and knowledge.

In mathematics, the baseline level of skills is defined as the level at which students can not only carry out routine procedures, such as an arithmetic operation, in situations where all the instructions are given to them, but can also interpret and recognise how a (simple) situation (e.g. comparing the total distance across two alternative routes, or converting prices into a different currency) can be represented mathematically.

In science, the baseline level of proficiency corresponds to the level at which students can draw on their knowledge of basic science content and procedures to interpret data, identify the question being addressed in a simple experiment, or identify whether a conclusion is valid based on the data provided.

Table 1.1. Snapshot of performance in science, reading and mathematics, PISA 2015

	Science		Reading		Mathematics		Science, reading and mathematics	
	Mean score in PISA 2015	Range of ranks across all countries and economies	Mean score in PISA 2015	Range of ranks across all countries and economies	Mean score in PISA 2015	Range of ranks across all countries and economies	Share of top performers in at least one subject (Level 5 or 6)	Share of low achievers in all three subjects (below Level 2)
	Mean	Rank is between…	Mean	Rank is between…	Mean	Rank is between…	%	%
OECD average	493		493		490		15.3	13.0
Portugal	501	18-25	498	16-27	492	21-31	15.6	10.7
Spain	493	25-31	496	19-28	486	29-34	10.9	10.3
Chile	447	44-45	459	41-43	423	47-51	3.3	23.3
Uruguay	435	46-49	437	46-49	418	49-55	3.6	30.8
Costa Rica	420	53-57	427	49-55	400	58-61	0.9	33.0
Colombia	416	55-60	425	50-55	390	60-63	1.2	38.2
Mexico	416	55-59	423	51-55	408	55-57	0.6	33.8
Brazil	401	62-64	407	57-61	377	64-65	2.2	44.1
Peru	397	63-64	398	61-64	387	61-64	0.6	46.7
Dominican Republic	332	70	358	65-67	328	70	0.1	70.7

Note: Countries and economies are ranked in descending order of the mean science score in PISA 2015. Cells shaded in blue indicate a mean performance/share of top performers above the OECD average or a share of low achievers below the OECD average. Cells shaded in grey indicate a mean performance/share of top performers below the OECD average or a share of low achievers above the OECD average. Cells that are not shaded indicate a mean performance/share of top performers/share of low achievers not significantly different from the OECD average.

Source: OECD (2016[19]), *PISA 2015 Database*, Figures I.1.1 http://dx.doi.org/10.1787/888933431961; I.2.14 http://dx.doi.org/10.1787/888933432060, I.4.2 http://dx.doi.org/10.1787/888933432516 and I.5.2, http://dx.doi.org/10.1787/888933432613.

Table 1.1 compares the average performance of students in Ibero-America across the three domains with the OECD average, as well as their relative standing among the 70 countries and economies with valid and comparable results in PISA 2015.

Four main observations emerge from this table and from the comparisons of mean performance across countries and subjects [OECD (2016[17]), Figures I.2.13, I.4.1 and I.5.1]:

1. Portugal scores above the OECD average in science and reading, and close to the OECD average in mathematics, while Spain scores close to the OECD average in science and reading, but below the OECD average in mathematics. However all the Latin American countries participating in PISA perform consistently below the OECD average in all three subjects.
2. When considering only significant differences – those that are unlikely to occur in the PISA samples unless there was a genuine difference in the populations from which samples are drawn – the relative standing among Ibero-American countries is quite consistent for reading and science. Portugal has the highest mean score in science, while the difference between Portugal's and Spain's mean scores is not significant in reading. Chile scores below Spain and Portugal in reading and science, but above all other countries in Latin America. Uruguay comes next, followed by Colombia, Costa Rica and Mexico, which have similar mean performance in both reading and science. Brazil scores above Peru in reading, but not significantly higher than Peru in science. Finally, the Dominican Republic scores consistently below the other Latin American countries participating in PISA.
3. In mathematics, the rankings are somewhat different. Portugal and Spain share a similar mean performance, followed by Chile and Uruguay, whose mean scores are not statistically different from each other. Mexico scores below Chile and Uruguay, but above Costa Rica, which in turn scores above Colombia, whose mean score is not significantly different from Peru's. In mathematics, Brazil scores below all other Latin American countries except the Dominican Republic.
4. Mathematics appears to be the weakest of the three PISA subjects for most Ibero-American countries, in relative terms, while reading is often the strongest subject. This can be seen by comparing both the range of plausible ranks for each country and the gap to the OECD average across the three subjects. For all countries except Portugal and Peru, the ranking in reading is higher than the ranking in mathematics. The gap separating the mean performance of Spain and the Latin American countries from the OECD average is particularly large in mathematics. This relative weakness is particularly pronounced in Brazil, Chile, Colombia, Costa Rica and the Dominican Republic.

Low performers in science, reading and mathematics

One important indicator for monitoring countries' progress towards achieving Goal 4 Target 4.1 of the United Nation's Sustainable Development Goals (ensuring inclusive and equitable quality education and promote lifelong opportunities for all) is the proportion of 15-year-olds who have achieved at least minimum proficiency in reading, mathematics and science. The baseline levels of proficiency, defined above, can be used to monitor countries' success. As discussed above, all the Latin American countries have a high share of students performing below the baseline level of proficiency in all three subjects.

However, PISA can also help describe the limited skills of low-performing students, and thereby highlight how far countries have to go to ensure that schools are places of learning for all students. Figure 1.5 breaks down the PISA scores in more detail, including the shares of students performing at levels below the baseline.

In science, students who perform at Level 1a can use common content and procedural knowledge to recognise or identify explanations of simple scientific phenomena while who perform at Level 1b can use common content knowledge to recognise aspects of simple scientific phenomena. In reading, students who perform at Level 1a in reading can retrieve one or more explicitly stated independent pieces of information, identify the main theme or the author's intent in a text about a familiar topic, or make a simple connection between information in the text and everyday knowledge. This level identifies students who perform below the baseline, but not too far from it. At Level 1b, students can solve only the easiest tasks included in PISA assessments, such as retrieving a single piece of explicitly stated information (OECD, 2017[20]).

In mathematics, students who perform at Level 1 in mathematics can answer questions involving familiar contexts where all the relevant information is present and the questions are clearly defined. Below Level 1, students may be able to perform straightforward mathematical tasks but they are typically unable to do calculations that do not use whole numbers, or if they are not given clear and well-defined instructions (OECD, 2017[20]).

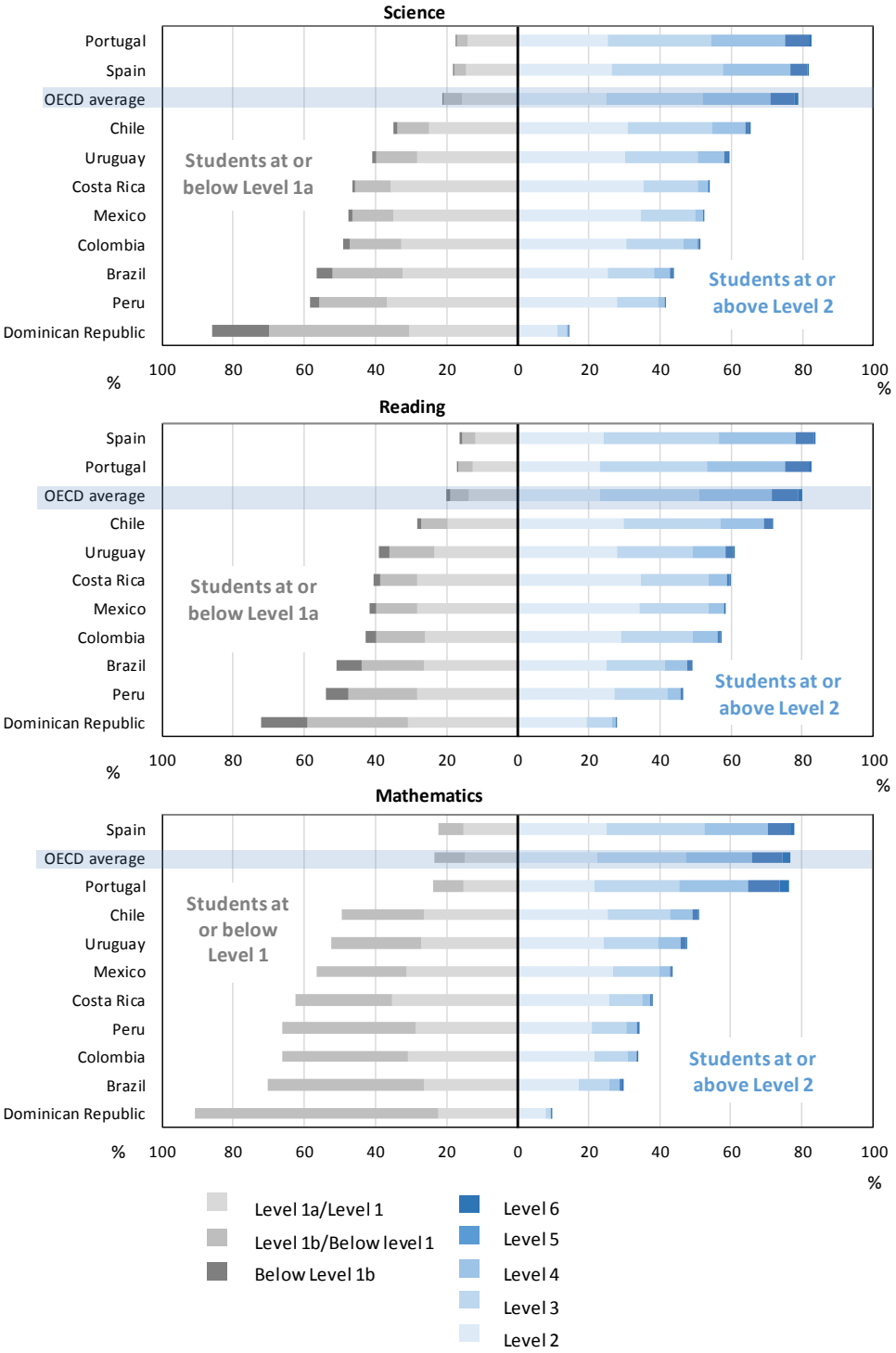
As Figure 1.5 shows, across OECD countries on average, 15.7% of students perform at Level 1a in science, and only 5.5% of students perform below it. In the Dominican Republic, in contrast, fewer than half of students (about 45%) attain Level 1a or more. In Brazil, Colombia, Costa Rica, Mexico, Peru and Uruguay, the largest share of students performs at this level.

While less than 5% of students in Spain and Portugal achieved Level 1b and below in science, and between 10% and 15% of students in Chile, Costa Rica, Uruguay and Mexico, the figure rises to 16% of students in Colombia, 22% in Peru, 24% in Brazil and over 50% of students in the Dominican Republic.

In reading, across OECD countries, an average of 14% of students can solve Level 1a tasks, but not tasks located above this level, while 6.5% of students do not even attain Level 1a (Figure 1.5). In Brazil, the Dominican Republic and Peru, Level 1a is the modal proficiency level of students, meaning that more students perform at Level 1a than at any other. Level 1a is the highest level of proficiency for about 12% of students in Spain, 13% in Portugal, 20% in Chile, 24% in Uruguay and over 25% of students in the remaining Latin American countries. At lower achievement levels, as many of 41% of students are at best proficient at Level 1b in the Dominican Republic, 26% in Peru and 25% in Brazil.

Figure 1.5 also highlights the severe difficulty many Ibero-American students have with situations that require mathematical problem-solving ability. While between 20% and 25% of students perform at Level 1 or below in Portugal and Spain, similar to the OECD average, 49% of students in Chile and more than 50% of students in all remaining Latin American countries perform at these levels, and are at best only able to perform routine tasks in well-defined situations, where the required action is almost always obvious.

Figure 1.5. Students' proficiency in science, reading and mathematics, PISA 2015



Note: Countries and economies are ranked in descending order of the percentage of students who perform at or above Level 2.
Source: OECD (2016[19]), *PISA 2015 Database*, Tables I.2.1a http://dx.doi.org/10.1787/888933433171, I.4.1a http://dx.doi.org/10.1787/888933433195 and I.5.1a, http://dx.doi.org/10.1787/888933433203.

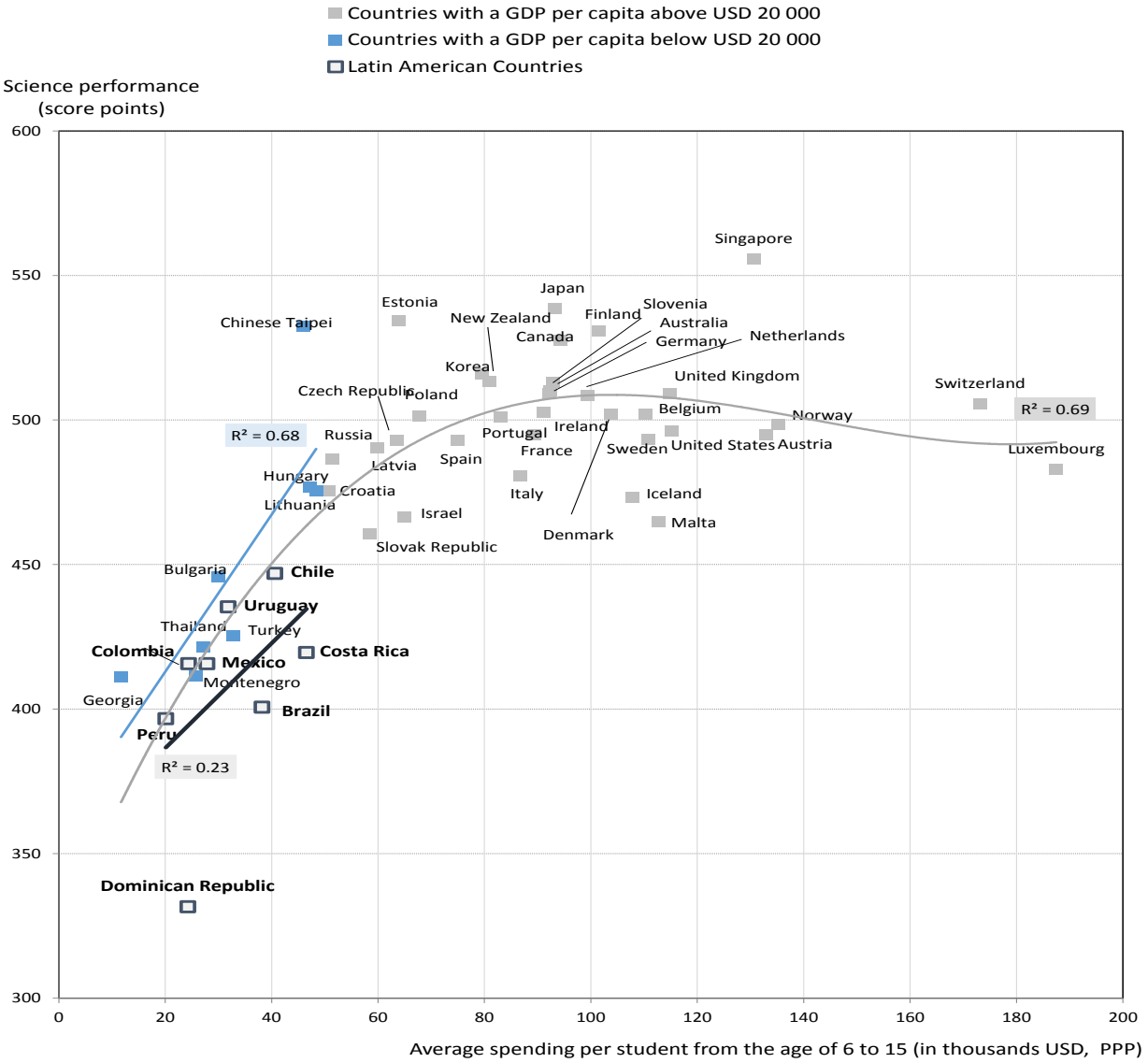
Education expenditure

Education systems need financial resources to pay teachers' salaries, build and maintain infrastructure, buy educational materials, and support other operational costs such as school trips or extracurricular activities. Even in the face of fiscal constraints and competing demands from other types of expenditure, countries need an adequate level of spending to provide students with good-quality education. Moreover, governments must not only ensure that they have devoted enough resources to education, but also work towards allocating these resources efficiently and equitably to support their desired learning outcomes (OECD, 2017[21]).

A country's education expenditure is not just determined by its economic development, but also by the economic resources it decides to put in. Ibero-American countries devote similar resources to education as other countries with a similar degree of economic development, but educational expenditure is still below that of most OECD countries. With the exception of Portugal and Spain, the cumulative expenditure by educational institutions per student between the ages of 6 and 15 is below USD 50 000 in PPP terms in all Ibero-American countries (Figure 1.6). The cumulative expenditure per student as a percentage of GDP per capita is also below the OECD average of 233% in all Ibero-American countries, except for Brazil (240%), Portugal (256%) and Costa Rica (322%) (Figure 1.6). In Mexico, Peru and Uruguay, cumulative expenditure per student is below 175% of GDP per capita, among the lowest percentages in PISA-participating countries and economies. One of the reasons behind these low ratios lies in the limited fiscal capacity of Latin American countries, which imposes significant constraints on the budgets allocated to education. In fact, all Ibero-American countries – except for Portugal – have lower tax-to-GDP ratios than the OECD average (OECD et al., 2017[22]).

Despite this general shortage of funds allocated to education, and the recent economic crisis that has deepened the fiscal constraints facing national governments, expenditure on education increased substantially in all Ibero-American countries except Spain between 2010 and 2013 (OECD, 2016[23]). In some countries, like Peru or Uruguay, cumulative expenditure per student has increased by as much as 60% in the last three years. The percentage of GDP invested in education has also increased significantly in all Ibero-American countries between 2010 and 2014, with the exception of Spain and Colombia, indicating countries in the region are according a higher priority to education (Figure 1.7).

Figure 1.6. Spending per student from the age of 6 to 15 and science performance, PISA 2015



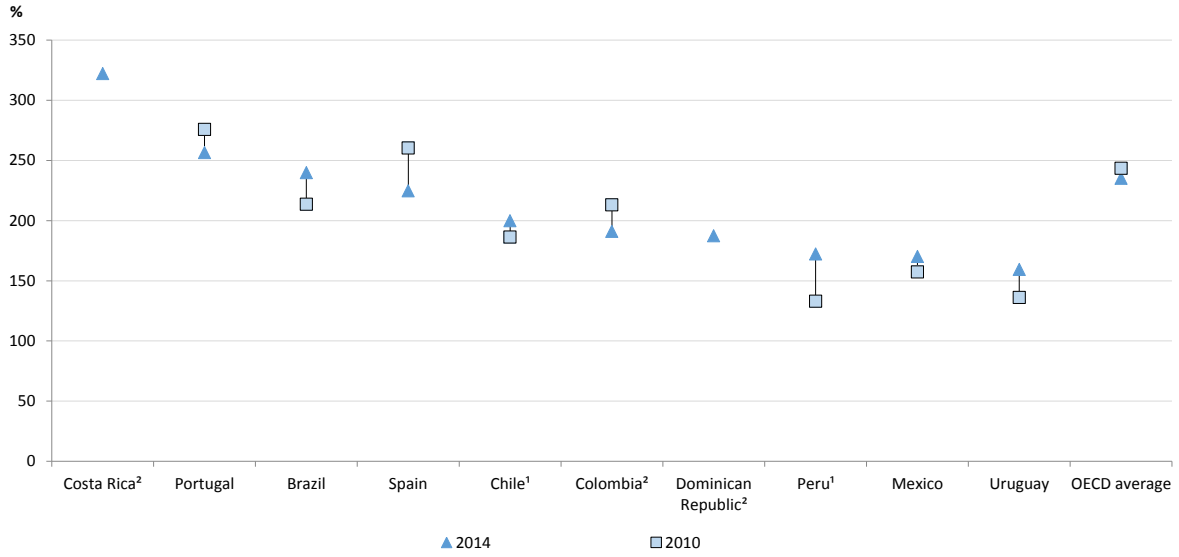
Note: Only countries and economies with available data are shown. GDP per capita is based on purchasing power parity.
Source: OECD (2016[19]), *PISA 2015 Database*, Figure II.6.2, http://dx.doi.org/10.1787/888933436215.

In countries with higher levels of educational expenditure, students tend to score higher in science, but this relationship is not the same across all levels of investment and it does not explain all the differences in performance between countries (Figure 1.6). Below a cumulative expenditure of approximately USD 80 000 per student – a threshold no Latin American country has reached – more investment in education is positively associated with student performance. Beyond that threshold, the association between education spending and science performance weakens considerably. For example, Portugal has science scores similar to countries that spend twice as much, such as Switzerland and Luxembourg, and lower scores than Korea and Estonia, even though they spend similar, or even lower amounts per student.

At the same time, students' science performance in Latin American countries, particularly in Brazil, Costa Rica and the Dominican Republic, is below that of countries with a similar level of educational spending. For instance, Brazil spends 15% more per student than Turkey and 40% more than Thailand, but Brazilian students averaged 401 in the PISA science assessment (Figure 1.7), significantly below the performance of Turkish (425) and Thai students (421). This performance gap suggests that there may be room to improve the efficiency of educational spending in Latin American countries.

Figure 1.7. Cumulative expenditure per student aged 6 to 15 in Ibero-America (2010, 2014)

Percentage of GDP per capita



Note: 1. Year of reference is 2011 instead of 2010. 2. Year of reference is 2013 instead of 2014. Countries are ranked in descending order of the cumulative expenditure per student in 2014.
Source: OECD (2016[1]), *Education at a Glance 2016: OECD Indicators*, http://dx.doi.org/10.1787/eag-2016-en; OECD (2016[23]), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, http://dx.doi.org/10.1787/9789264267510-en.

Teacher policies in Ibero-America

The current landscape of educational reforms shows unprecedented focus on the improvement of the teaching workforce. While teachers' characteristics, knowledge and skills have always been an important topic of educational policy, past trends have tended to emphasise the quality of school material resources or the school curriculum over teachers (Paine and Zeichner, 2012[24]; Schmidt, Blömeke and Teresa Tatto, 2011[25]). Teachers, it was conceived, would adjust to the organisational or curricular reforms brought forward by large-scale reforms.

However, research into school effectiveness (Creemers, 1997[26]) quickly showed that even if schools were receiving the same resources their outcomes could differ considerably. As Cohen et al. stated "The (school) difference depend on the use of resources; access creates opportunities for resource use, but resources are only used by those who work in instruction" (2003, p. 119[27]). If differences in outcomes are a product

of implementation and processes at the school level, then teachers certainly play a determining role in the development of quality education.

This conclusion has been supported by a battery of empirical studies that have shown that teachers are the school resource with the strongest association with student outcomes (Hanushek, 2010[28]; Rivkin, Hanushek and Kain, 2005[29]; Sanders and Rivers, 1996[30]). Furthermore, a series of international reviews examining the characteristics of high-performing systems has repeatedly shown that the quality of the teaching workforce is one of the main features of their success (Barber and Mourshed, 2007[31]; Darling-Hammond et al., 2017[32]; Mourshed, Chijioke and Barber, 2010[33]; OECD, 2005[34]). As a result, teacher policies are now at the forefront of the discussions about education policy and it has become unthinkable to embark on any large-scale educational reform without developing specific policies and initiatives dealing with the selection, training, working conditions and development of teachers (Akiba and LeTendre, 2017[35]).

This report understands teacher policies to be "the regulations and principles of action at the level of schools and of education systems that shape, in a particular time and place, the teaching force and what teachers do" (OECD, 2018[36]). An important aspect of this definition is that teacher policies are embedded in the political, social and institutional context (Akiba and LeTendre, 2017[35]). Teacher policies also tend to be a sub-component of larger reforms efforts such as the extension of compulsory education, the expansion of student enrolment or a curriculum reform. Although the national characteristics of the Ibero-American countries are myriad, there are still some common contextual elements that have shaped educational policies across the region (Elacqua et al., 2017[37]; OEI, 2013[38]):

- **Expansion of educational enrolment**: in the last 50 years Ibero-American countries have shown a rapid and expansive increase in student enrolment across all educational levels. Alongside this expansion have come new regulations increasing the period of compulsory education.
- **Schools in rural areas**: another characteristic of the region is the large proportion of the population living in rural areas. Having a significant proportion of schools in rural areas usually means that they are distributed across a wide geographical area which presents challenges for the allocation of teachers. Teaching in rural areas also often presents additional challenges such as working with multi-grade classrooms, a lack of resources and student bodies characterised by high levels of social vulnerability.
- **Excluded populations**: the expansion of student enrolment and the widening of compulsory education have dramatically changed the student composition in Ibero-American schools. Educational systems began to include more students from low socio-economic backgrounds whose parents often did not finish school or even attend school at all. The direct consequences of this linger to this day, since students' family background plays a decisive role in explaining their educational achievement – even more than in other OECD countries. Additionally, the inclusion of some demographic groups, particularly the indigenous population, represents a challenge for instruction since it meant teachers needed to adapt to different languages and instruction needs.
- **The value of the teaching profession**: rapid increases in student enrolment brought an increasing demand for teachers. In order to quickly supply enough teachers to meet the needs of the growing student population, the requirements to enter the teaching profession were lowered. Teaching began to be perceived as a

low-skill and low-requirement occupation. Low salaries (i.e. below the average GDP per capita) also helped to lower the prestige of the profession.

These four elements are just a few examples of the contextual or social elements characteristics of the Ibero-American region that affect the implementation of teacher policy. The rest of this report will showcase how these contextual elements are shaping education and policy across the region.

Components of teacher policies

As a set of regulations and principles, teacher policies encompass a series of concrete initiatives tackling different areas of development. Table 1.2 shows a schematic of the main policy areas as identified by specialised researchers.

Table 1.2. Main areas of teacher policy

OECD 2005	Darling-Hammond 2017	Akiba and LeTendre 2017
Preparation and development of teachers	Recruitment (including selection) processes and regulations	Recruitment into teacher education
Policies related to career structure and incentives	Teacher preparation	Teacher education and certification
Policies that influence the demand for teachers	Induction and mentoring	Hiring qualified teachers
Policies that govern and structure the labour market	Professional learning	Distributing qualified teachers
School processes and practices that influence the work of teachers	Teacher feedback and appraisal,	Attractive working conditions
	Career and leadership development	Professional learning opportunities
		Evaluation and career advancement

Source: Adapted from OECD, (2005[34]), *Teachers Matter: Attracting, Developing and Retaining Effective Teachers*, http://dx.doi.org/10.1787/9789264018044-en; Darling-Hammond et al. (2017[32]), *Empowered Educators: How High-Performing Systems Shape Teaching Quality Around the World*; Akiba and LeTendre (2017[35]), *International Handbook of Teacher Quality and Policy*.

In general terms all of these reviews consider more or less similar clusters of policies. An effective system needs to integrate these policies together in a holistic manner. To do so, adopting a lifelong learning approach to the development of teacher policies is recommended. This approach highlights the different stages of teachers' careers, giving teachers the opportunity to access relevant training and opening up chances to take on different responsibilities in the classroom and/or in the school. This process needs to be combined with an adequate system of appraisal that acknowledges the efforts made by teachers.

Based on this approach, the first step is to attract and select the best candidates to the profession (recruitment into teacher education). Then, high-quality training mechanisms offer the best possible education to pre-service teachers while providing the quality assurance that certifies their competences (preparation, development and certification of teachers). Hiring and properly distributing good-quality teachers is the next step in their development. Once teachers are operating in the schools, it is crucial that they have opportunities for further development, such as induction and mentoring. They then need a career structure with clear incentives and attractive promotion opportunities to retain effective teachers.

The chapters that follow have a similar structure, tackling policies on the recruitment, hiring and distribution or teachers, followed by teacher education and certification and teachers' career progression.

What are the teacher policies of successful education systems?

Several reviews have examined highly successful educational systems to identify common attributes to the elaboration of their teacher policy. For example Darling-Hammond et al. (2017[32]) review the teaching policies of Singapore, Finland, the states of New South Wales and Victoria in Australia, the provinces of Alberta and Ontario in Canada, and the province of Shanghai in China. They found ten characteristics explaining the success of these systems:

1. a high social regard for teachers
2. selectivity into the profession
3. financial support for preparation and professional learning
4. professional standards that outline teaching
5. preparation and induction grounded in well-defined curriculum content and well-supported clinical training
6. teaching as a research-informed and research-engaged profession
7. teaching as a collaborative, not isolated, occupation
8. teacher development as a continuum
9. opportunities for leadership
10. systems organised to support quality teaching and equity.

These characteristics are all ways of reinforcing and promoting the clusters of policies described in the previous section. Another example is the recent OECD report on teacher policies across PISA 2015 systems (OECD, 2018[36]). This report found three crucial themes shared by the teacher policies of highly successful PISA systems: 1) a mandatory teaching practicum as part of the pre-service training; 2) opportunities for professional development; and 3) the existence of teacher-appraisal mechanisms (Box 1.1).

Box 1.1. Common teacher policies among high-achieving systems in PISA 2015

1. Compulsory teaching practice as part of the pre-service training, to ensure that student teachers have some classroom experience before they formally become teachers. Teacher candidates in high-performing countries typically receive extended clinical training to help them bridge theory and practice at the beginning of their teaching career. Where the practicum included in initial teacher-preparation programmes is short, novice teachers benefit from intensive induction or mentoring programmes to support beginning teachers.
2. A variety of individualised opportunities for in-service professional development, such as workshops organised by the school. This is perhaps related to the widespread autonomy of schools to select teachers but, more than autonomy, it reflects strong capacity at the local level to lead and adapt to changing needs and conditions.
3. The existence (with the sole exception of Germany), of teacher evaluation mechanisms, either written into legislation or deeply rooted in school practice, with a strong developmental focus. While there is often a lack of detailed information about the specific features of some of these evaluation systems, the evidence available shows that appraisals tend to rely to a large extent on classroom observations and teacher interviews, and to be geared mostly towards teacher improvement; career progression and salary increases are at stake only in a few countries, and are sometimes handled through separate appraisal processes.

Source: OECD (2018[36]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en.

Conclusion

This chapter introduced the economic and educational environment in which Ibero-American teachers function and develop. It underlines the importance of designing a real strategy for education, skills and innovation to strengthen Ibero-America's human capital, of which teachers form an integral part. Ibero-American countries have made great efforts to increase school enrolment, which have yielded improvements of up to 24% in Brazil, Colombia and Mexico between 2003 and 2015. However, education systems in the region suffer from a high degree of grade repetition, low relative expenditure on education and low performance levels among secondary students, all suggesting the need for reform to meet the changing demands of the times. Ibero-American countries have to ensure their citizens acquire the skills they need to boost labour productivity, which in turn will enhance economic growth in the region. To that end, they need to make concerted efforts to improve educational expenditure and to make better use of their resources – financial,

material and human – to improve the academic and socio-emotional outcomes of their young students.

Designing, implementing and monitoring policies is an effective way to channel a country's educational effort. One key attribute of successful educational systems is that they address teacher policies from a systemic and holistic perspective. Educational systems must strive to lay out a policy design so that each cluster is clearly articulated and complements the others. For example, the training of teachers must be co-ordinated with systems to allocate teachers so that teachers assigned to vulnerable schools have the necessary tools to conduct their work. Another example is the need for clear articulation professional development opportunities with teachers' career progression leading towards school leadership positions. These types of progressions are what in the end will define the success of systems.

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Chapter 2. Ibero-America's teachers: A profile of the teachers in the region

Teachers play a crucial role in education systems – they are the front-line workers responsible for engaging students and promoting their learning. It has been widely documented that, within schools, teachers and teaching-related factors are the most important influences on student learning. As such, countries are especially interested in learning more about their own teaching workforces and comparing them with other countries in order to develop more effective policies to improve teaching and learning.

This chapter provides a general overview of the teaching workforce in the Ibero-American region. It starts with a profile of Ibero-American teachers: their age and gender distribution; the schools they work in; and their qualifications, experience, pay scales and working hours. It then considers how far teaching in the region meets the criteria for teacher professionalism.

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.

Towards a profile of teachers in Ibero-America

Gender and age distribution of Ibero-American teachers

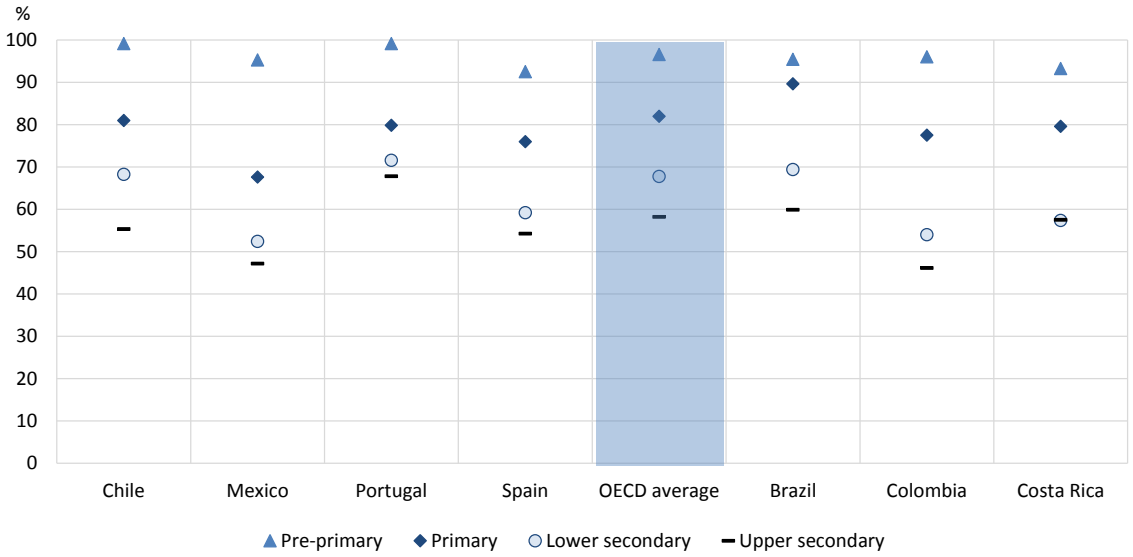
The demographic characteristics of teachers are of great interest to policy makers and researchers. A number of countries are concerned about the potential impact of the gender imbalance in the teaching profession on issues such as student achievement, student motivation and teacher retention (Drudy, 2008[1]; OECD, 2005[2]; OECD, 2009[3]). This gender imbalance seems to be common in many regions of the world and it is most prominent in pre-primary and primary education, although the differences persist well into secondary education in many countries (OECD, 2013[4]; UNESCO Institute for Statistics, 2006[5]; UNESCO Institute for Statistics, 2009[6]).

Student outcomes are not known to be affected by the gender of their teachers (Antecol, Eren and Ozbeklik, 2012[7]; Holmlund and Sund, 2008[8]), although there is some evidence that female teachers' attitudes towards subjects such as mathematics can have an impact on their female students' performance (Beilock et al., 2010[9]). Some evidence suggests that male teachers stay in the profession longer (Ingersoll, 2001[10]), although research conducted in Finland suggests otherwise (Blomqvist et al., 2008[11]).

The teaching profession has been characterised as a largely "feminised" profession and Ibero-America does not escape this trend (OEI, 2013[12]). Even though the expansion of higher education has given women greater options for their tertiary education, the proportion of female teachers in the region is still quite high (Elacqua et al., 2017[13]). More than half of the teaching workforce is made up of women with 69% of teachers being female on average across all levels of education in the OECD countries (OECD, 2016[14]). At the pre-primary and primary level, most of the data on teachers in Ibero-American countries show them to be either at the OECD average of 82% female teachers, or not that far off that number (Figure 2.1). In Brazil, Chile, Costa Rica and Portugal more than 8 in 10 teachers are female, whereas Mexico (68%), Spain (76%) and Colombia (77%) have a lower proportion of female teachers than the OECD average at the pre-primary and primary level. This trend is repeated at the lower secondary level, with the same countries – Mexico (52%), Spain (59%) and Colombia (54%), but also Costa Rica (57%) – having a lower percentage of female teachers than the OECD average of 68%. Brazil and Chile have a similar share of female teachers as the OECD average at this level, but Portugal has more, with 72% of female teachers. At the upper secondary level, the share of female teachers in Brazil, Chile, Costa Rica, Portugal and Spain is around the OECD average of 58%, but in Colombia and Mexico the figures are 10 percentage points below the OECD average.

Figure 2.1. Gender distribution of teachers

Percentage of women among teaching staff in public and private institutions by level of education, based on head counts



Note: The data for "All levels of education" do not include early childhood educational development (ISCED 01).
Source: OECD (2016[14]), *Education at a Glance 2016: OECD Indicators*, Table D5.3, http://dx.doi.org/10.1787/888933399179; Colombia, Costa Rica: UNESCO Institute for Statistics. See Annex 3 of the publication for sources and notes (www.oecd.org/education/education-at-a-glance-19991487.htm).

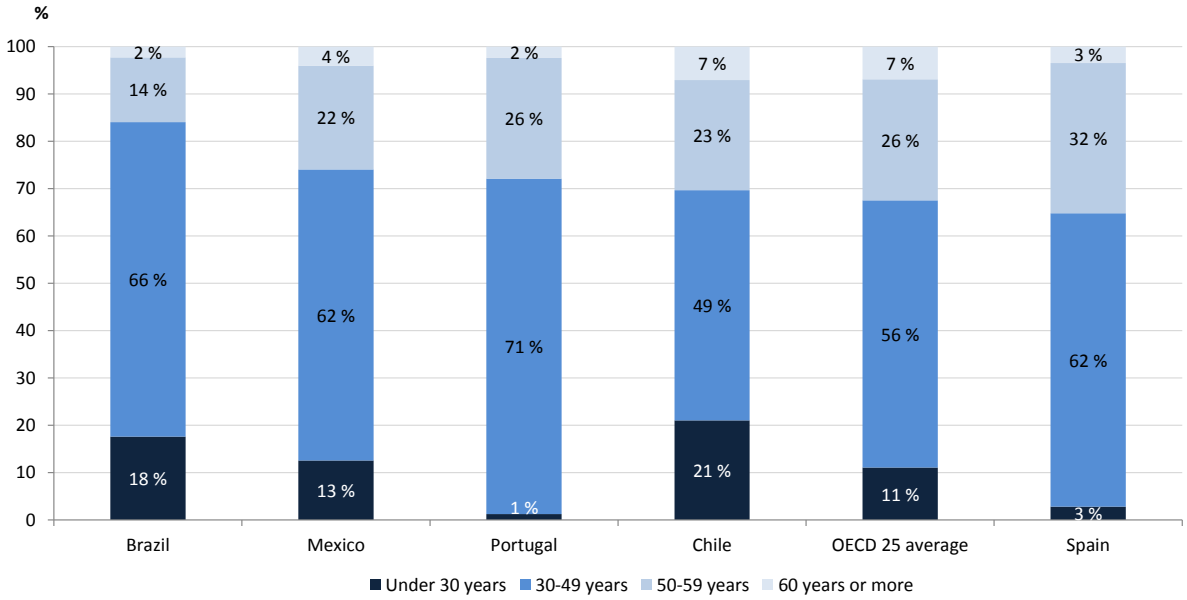
Information about the age distribution of the teaching workforce is also valuable to policy makers. Some countries face an ageing teacher workforce, with a high proportion of teachers nearing retirement age (OECD, 2009[3]; OECD, 2013[4]). Getting information about teachers' ages is crucial to providing the right professional development for the teaching workforce; a system with an ageing population of teachers will face less pressure to provide professional development opportunities (as teachers approach retirement age) but at the same time it signals the need to provide strong formative opportunities for new teachers (OEI, 2013[12]).

The age of teachers has also been found to be related to teacher attrition in schools: attrition rates tend to be higher in the first few years of teaching and decline the longer teachers are in the profession (Ingersoll, 2001[10]; OECD, 2005[2]).

Given concerns about an ageing teacher population, it is significant that, on average, only 11% of secondary teachers are under 30 years old in the countries and economies participating in the OECD's Teaching and Learning Survey (TALIS) (Figure 2.2). The average age of lower secondary teachers is 42 years in the OECD countries and economies which participated in TALIS 2013. The survey found that 56% of teachers in participating countries were aged 30-49 years old. Most of the Ibero-American countries surveyed – Brazil (66%), Mexico (62%), Spain (62%) and Portugal (71%) – have a higher proportion of teachers in this age category; only in Chile is the share of teachers between 30-49 years of age almost 7 percentage points lower than the TALIS average.

Figure 2.2. Age distribution of teachers

Percentage of teachers in different age ranges



Note: Countries are ranked in descending order, based on the percentage of teachers aged 49 or younger.
Source: OECD (2013[15]), *Teaching and Learning International Survey (TALIS): 2013 Complete Database*, http://stats.oecd.org/index.aspx?datasetcode=talis_2013.

Qualifications and experience among Ibero-American teachers

The research literature presents inconsistent findings about the impact of teacher education and experience on student achievement. Some studies have shown a limited or no relationship between teachers' educational attainment and qualifications and students' outcomes (Buddin, 2009[16]; Croninger, 2007[17]; Harris, 2011[18]). Other studies and reviews have shown positive relationships between teachers' initial education (either in terms of its level or its content) and teaching effectiveness. For example, Ronfeldt and Reininger (2012[19]) found that the quality of the practical component of teacher education programmes, rather than its duration, can have a positive effect on some outcomes among pre-service teachers, such as their perception of preparedness, their efficacy and their career plans.

TALIS 2013 records the highest level of formal education completed by secondary teachers as defined by the International Standard Classification of Education (ISCED-97), which identifies comparable levels of education across countries.[1] In most countries, the great majority of lower secondary teachers report having obtained formal education at the level of ISCED 5A. Across Ibero-American countries participating in TALIS, more than 8 in 10 teachers have attained this level of education (Table 2.1). On average, very few teachers – just 2% – have not completed tertiary education, although teachers without a tertiary education were more common in Mexico (9%).

TALIS (OECD, 2014[20]) data also show that a majority of the teachers in the Ibero-American participating countries report having completed a teacher education or training programme although the numbers range widely: from 62% in Mexico to 98% in Spain. On average across the countries and economies participating in TALIS, 72% of lower

secondary teachers report having received formal education that included content for all the subjects they currently teach. While Brazil (62%), Chile (61%), Mexico (67%) and Spain (65%), all have a lower share of teachers whose formal education included content for all the subjects they teach, Portugal stands out among the Ibero-American countries with a share of 76%, higher than the TALIS average.

Table 2.1. Teachers' education levels

Percentage of lower secondary education teachers by highest level of formal education completed[1]

	Highest level of formal education completed			
	Below ISCED level 5 (%)	ISCED level 5B[2] (%)	ISCED level 5A (%)	ISCED level 6 (%)
Brazil	4.5	1.8	93.5	0.3
Chile	0.5	17.9	81.1	0.5
Mexico	8.7	1.5	89.1	0.7
Portugal[3]	0.3	2.4	84.8	12.4
Spain	3.4	1.0	91.4	4.2
OECD 25 Average[4]	2.3	6.7	89.3	1.6

1. Education categories are based on the International Standard Classification of Education (ISCED-97). ISCED level 5A programmes are generally longer and more theory-based, while 5B programmes are typically shorter and more practical and skills oriented. No distinction was made between bachelor's and master's programmes, which are both 5A.
2. Includes bachelor's degrees in some countries.
3. In Portugal, teachers with a "pre-Bologna" master's degree are counted as ISCED level 6. The way the question was presented did not make it possible to distinguish between "pre-Bologna" master's degrees and doctorates.
4. The averages do not add up to 100 across categories because of the presence of cells that are not applicable in some countries.
Source: OECD (2013[15]), *Teaching and Learning International Survey (TALIS): 2013 Complete Database*, http://stats.oecd.org/index.aspx?datasetcode=talis_2013.

On average, 65% of secondary teachers from the OECD countries participating in TALIS reported that their formal education included pedagogy for all the subjects they teach and nearly one-quarter (23%) for some of the subjects they teach (OECD, 2014[20]). The proportions are similar for practical components: 63% of teachers on average from OECD countries reported that their formal education included classroom practice in all of the subjects they teach, while 23% reported it included practice in some of the subjects they teach. The trend among the participating Ibero-American countries for both the pedagogic and practical components is similar to the pattern shown for teacher qualifications. Portugal again outperforms the other countries in the region in both respects, at 8 percentage points higher than the TALIS averages. At the other end of the spectrum, only 44% of the teachers in Spain reported having formal education in pedagogy and classroom practice for all the subjects they teach. Highly successful systems, such as in Finland (described in Box 2.1) are able to offer a balance between the necessary content knowledge and practical experience.

Box 2.1. Teacher education in Finland

Teacher education in Finland has at least four unique qualities:

Research based. Teaching candidates are not only expected to become familiar with the knowledge base in education and human development, but they are required to write a research-based dissertation as the final requirement for their master's degree. Upper-grade teachers typically pick a topic in their subject area; primary grade teachers typically study some aspect of pedagogy. The rationale for requiring a research-based dissertation is that teachers are expected to engage in disciplined inquiry in the classroom throughout their teaching career.

Strong focus on developing pedagogical content knowledge. Traditional teacher preparation programmes too often treat good pedagogy as generic, assuming that good questioning skills, for example, are equally applicable to all subjects. Because teacher education in Finland is a shared responsibility between the teacher education faculty and the academic subject faculty, substantial attention is paid to subject-specific pedagogy for prospective primary as well as upper-grade teachers.

Good training in diagnosing students with learning difficulties and in adapting their instruction to the varying learning needs and styles of their students for all teachers.

A very strong practical component. Teachers' preparation includes both extensive course work on how to teach – with a strong emphasis on using research based on state-of-the-art practice – and at least a full year of practical experience in a school associated with the university. These model schools are intended to develop and model innovative practices, as well as to foster research on learning and teaching.

Source: OECD (2011[21]), *Lessons from PISA for the United States*, http://dx.doi.org/10.1787/9789264096660-en.

Country-level logistic regression analyses (OECD, 2014[20]) have been used to examine the relationship between specific elements included in teachers' formal education or training and how prepared teachers feel when encountering those elements in their teaching. In all of the TALIS countries, the components of teachers' education and training seem to matter. Teachers are more likely to report feeling prepared for the content, pedagogy or classroom practice element of their teaching if this element was included in their formal training for some or all of the subjects they teach. As one would expect, the trend is even stronger if teachers received this formal training for all of the subjects they teach. In general, teachers find that their formal education prepared them well for their work as teachers. On average across OECD TALIS countries, 88% of teachers reported being well or very well prepared to teach the content of the subjects they teach, and 83% feel well or very well prepared in terms of the pedagogy and the practical components of the subjects they teach (OECD, 2014[20]). However, it is striking that around one-quarter or more of teachers in Mexico do not feel prepared or feel only

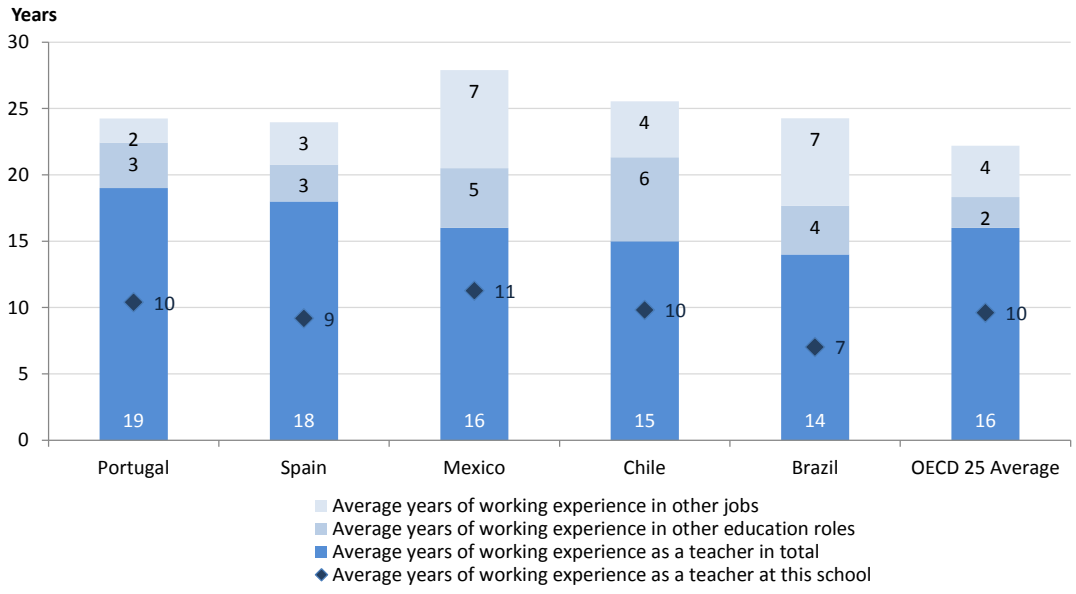
somewhat prepared to teach the content, pedagogy and practical components of the subjects they teach.

These data show that it is not just teachers' formal education (including initial teacher education) which makes them feel better prepared for their work as a teacher, but that specific elements included in that training, such as content and pedagogical training, and classroom practice, can make a significant difference as well.

Along with teachers' educational attainment, their work experience helps shape their skills and competencies. Empirical studies have repeatedly examined the relationship between teachers' experience and student achievement. In a review by (Hanushek, 2004[22]), 41% of methodologically sound studies showed positive relationships between teacher experience and student achievement, while in 56% the results were positive but non-significant. Some evidence shows that each additional year of experience is related to higher student achievement, especially during a teacher's first five years in the profession (Rockoff, 2004[23]; Rivkin, Hanushek and Kain, 2005[24]). Across OECD countries participating in TALIS, teachers have on average 16 years of teaching experience, 2 years of experience in other educational roles and 4 years of experience in other types of jobs (Figure 2.3). Only 3 OECD countries in TALIS reported having teachers with more than 20 years of experience on average, Estonia, Italy and Latvia. In Ibero-American countries, teachers in Portugal (19 years), Spain (18 years) and Mexico (16 years) on average have experience equivalent or greater than the TALIS average, while Chile and Brazil come close, with an average of around 15 years of experience.

Figure 2.3. Teachers' work experience

Lower secondary education teachers' average years of work experience



Note: Countries are ranked in descending order, based on the average total years of experience working as a teacher.
Source: OECD (2013[15]), *Teaching and Learning International Survey (TALIS): 2013 Complete Database*, http://stats.oecd.org/index.aspx?datasetcode=talis_2013.

The schools Ibero-American teachers work in

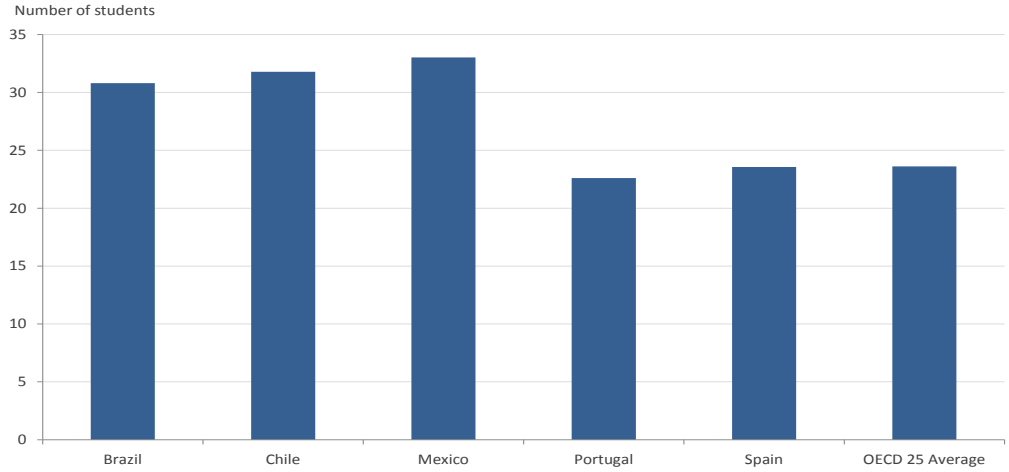
Schools can vary greatly in terms of their location (rural or urban environment), their size and the characteristics of their student population. All of these factors are important aspects of teachers' work environment and can interact with other aspects of their work. The ideal school and class size has been a topic of debate for over a century. Studies have shown that in larger schools, teacher-student relations can be more difficult to develop and socio-economically disadvantaged students or students with learning difficulties tend to be overlooked (Leithwood, 2009[25]; Ready, 2004[26])However, some evidence suggests that it costs more to educate a student in a small school than in a large one (Barnett, 2002[27]; Bowles, 2002[28]).

While school size does not present a consistent trend, class size seems to be associated with the level of economic development in the country. Smaller classes are often seen as beneficial, because they allow teachers to focus more on the needs of individual students and reduce the amount of class time needed to deal with disruptions. While reducing class size is a costly measure, there is some evidence that smaller classes benefit students, particularly in the primary grades (Chetty et al., 2011[29]; Piketty and Valdenaire, 2006[30]; Fredriksson, Öckert and Oosterbeek, 2013[31]), while the evidence is more scant and less certain for lower and upper secondary students (Bouguen, Grenet and Gurgand, 2017[32]; Wößmann and West, 2006[33]).

The average school size in which lower secondary teachers teach across OECD countries participating in TALIS is 503 students (OECD, 2014[20]). Among the Ibero-American countries, Brazil (586 students on average) and Spain (546) have school sizes close to the average, while others have much smaller schools, like Chile (484) and Mexico (417), or much larger ones, as in the case of Portugal (1 153). As for the class size, the average class across OECD countries participating in TALIS has 24 students (Figure 2.4). Among Ibero-American countries, Brazil, Chile and Mexico have larger class sizes, each averaging more than 30 students, while Spain and Portugal, the more developed countries in the region, have lower average class sizes. The same disparity is seen when looking at the student-teacher ratio across the Ibero-American countries. While Spain and Portugal have fewer students per teacher than the OECD average at all levels from primary to secondary, other Ibero-American countries have over twice the average ratio. For example, in Colombia the ratio is twice that of the OECD average (13 students per teacher on average in the OECD) and in Mexico, the ratio is almost three times as much (OECD, 2016[34]).

Figure 2.4. Class sizes

Average class size in lower secondary education



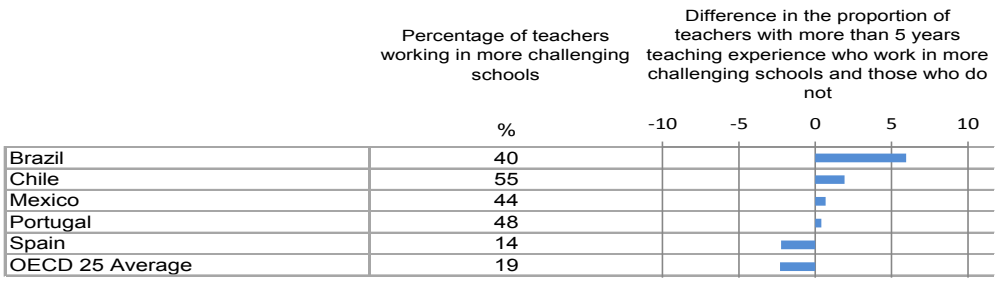
Note: These data are reported by lower secondary teachers and refer to a randomly chosen class they currently teach from their weekly timetable.
Source: OECD (2013[15]), *Teaching and Learning International Survey (TALIS): 2013 Complete Database*, http://stats.oecd.org/index.aspx?datasetcode=talis_2013.

Another important issue to consider, other than class size, is the distribution of teachers across educational systems. Teacher distribution becomes relevant when considering equity across an education system. A number of studies have found that teachers with weaker qualifications are more likely to teach in disadvantaged schools, which could lead to potential lower educational opportunities for students in these schools (Bonesronning, 2005[35]; Boyd, 2008[36]; Jackson, 2009[37]).

The data collected by TALIS 2013 help illuminate some of these trends. Figure 2.5 shows that in Brazil, Mexico, Portugal and Chile (for schools with high proportions of students from socio-economically disadvantaged homes), a larger proportion of more experienced teachers teach in more challenging schools, as compared to Spain where a larger number of teachers teach in less challenging schools.

Figure 2.5. Distribution of experienced teachers in more and less socio-economically challenging schools

Proportion of lower secondary education teachers working in more socio-economically challenging schools and the difference in the proportion of more experienced teachers working in more socio-economically challenging school and those who do not



Note: A challenging school is defined here as a school with more than 30% of students from socio-economically disadvantaged homes.
Source: OECD (2013[15]), *Teaching and Learning International Survey (TALIS): 2013 Complete Database*, http://stats.oecd.org/index.aspx?datasetcode=talis_2013.

These descriptive distributions of teachers are informative, but it would be a great deal more informative to know if a teacher's level of educational qualification and work experience are significant predictors of teaching in more or less challenging schools, when controlling for key variables such as gender and subjects taught. Country-specific binary regressions were performed to that extent as part of TALIS (OECD, 2014[20]). Most TALIS countries do not show a strong association between teachers' highest level of education or years of teaching experience and the distribution of teachers across schools with potentially more challenging student populations. In other words, in most countries the distribution of more experienced teachers is no different between the more and less challenging schools. Nonetheless, in some countries, some significant and substantial associations are apparent for education level and for years of teaching experience. Teachers from Chile who have more education are more than 50% less likely to work in schools with more socio-economically disadvantaged students but in Brazil, more experienced teachers are 50% more likely to work in schools with higher proportions of students from socio-economically disadvantaged homes.

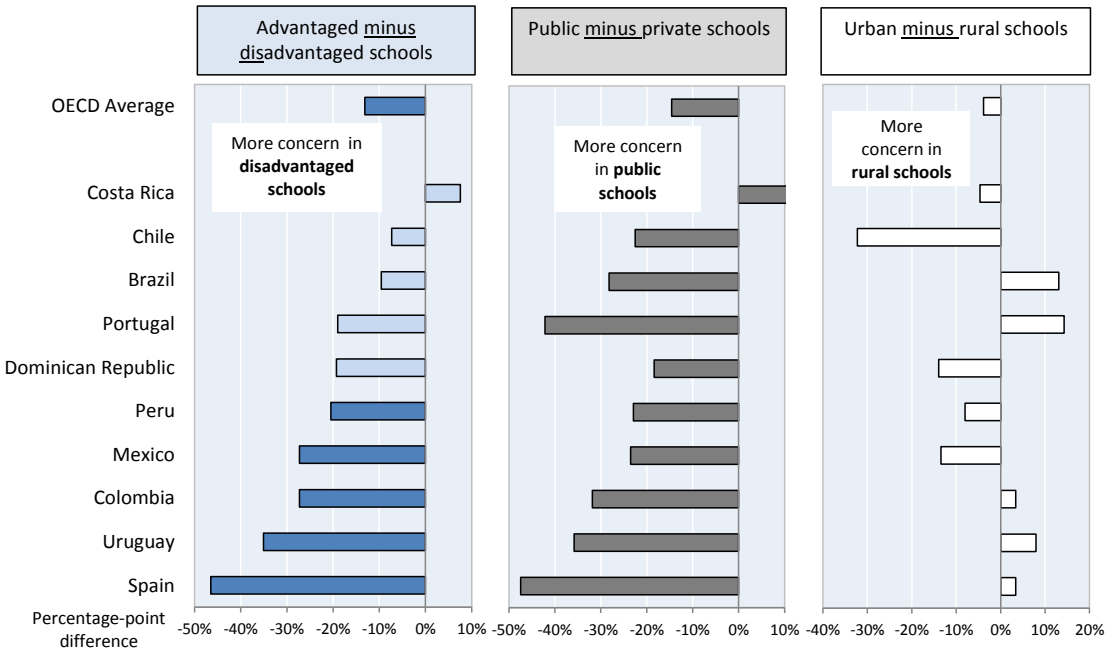
While these results suggest that less-experienced teachers are not necessarily being placed in more challenging circumstances, they do not negate the fact that socio-economically disadvantaged schools tend to have great difficulty in attracting qualified and/or high-quality teachers (see Chapter 4 for more information). The equitable distribution of teachers is also significant with respect to whether a school is in a rural or urban environment. Following the same procedure as described above, country-specific regressions were performed to see whether teachers with lower levels of education or less experience are more or less likely to work in schools in bigger cities than in small towns (OECD, 2014[20]). In most Ibero-American countries, teachers with lower levels of education and fewer years of teaching experience are less likely to work in more urban areas than those with more experience and education. For example, in Brazil, teachers with lower educational qualifications are roughly 60% less likely to work in large cities than in small towns. Similarly, in Spain, teachers with fewer years of teaching experience are 40-70% less likely to teach in small or large cities than in towns.

The Programme for International Student Assessment (PISA) in 2015 asked school principals to report the extent to which a shortage or inadequacy of teaching or assistance staff is hindering their capacity to provide instruction in their schools. Based on their responses, principals in a majority of Ibero-American countries are more concerned about the quantity and quality human resources in their schools than the average principal across OECD countries (OECD, 2016[38]). A case in point is Costa Rica, where as many as 23% of students were enrolled in schools where the principal reported that a lack of teaching staff was hindering instruction to a great extent.

PISA also found that advantaged schools are better staffed than disadvantaged schools in Ibero-American countries according to principals' reports about the lack of teaching staff (Figure 2.6). The difference between advantaged and disadvantaged schools is particularly large in Colombia, Mexico, Spain and Uruguay. Shortages in teaching staff are also more common in public than in private schools in all Ibero-American countries except Costa Rica. The difference between public and private schools is particularly large in Spain and Portugal, which were among the countries with the most acute gaps across PISA-participating countries and economies. However, none of the Ibero-American countries displayed a significant rural-urban difference with respect to teaching staff shortages (OECD, 2018[39]).

Figure 2.6. Perceived shortage of education staff by school socio-economic profile, type of school and school location

Differences in the proportion of principals perceiving shortage of main education staff between advantaged and disadvantaged schools, urban and rural and public and private schools, Ibero-American countries and OECD average



Note: Significant differences are marked in darker tone. Countries are ranked in ascending order of the difference in perception of principals of shortage of main education staff between disadvantaged and advantaged schools.
Source: OECD (2018[39]), *Skills in Ibero-America: Insights from PISA 2015*, www.oecd.org/skills/piaac/Skills-in-Ibero-America-Insights-from-PISA-2015.pdf, Figure 3.9.

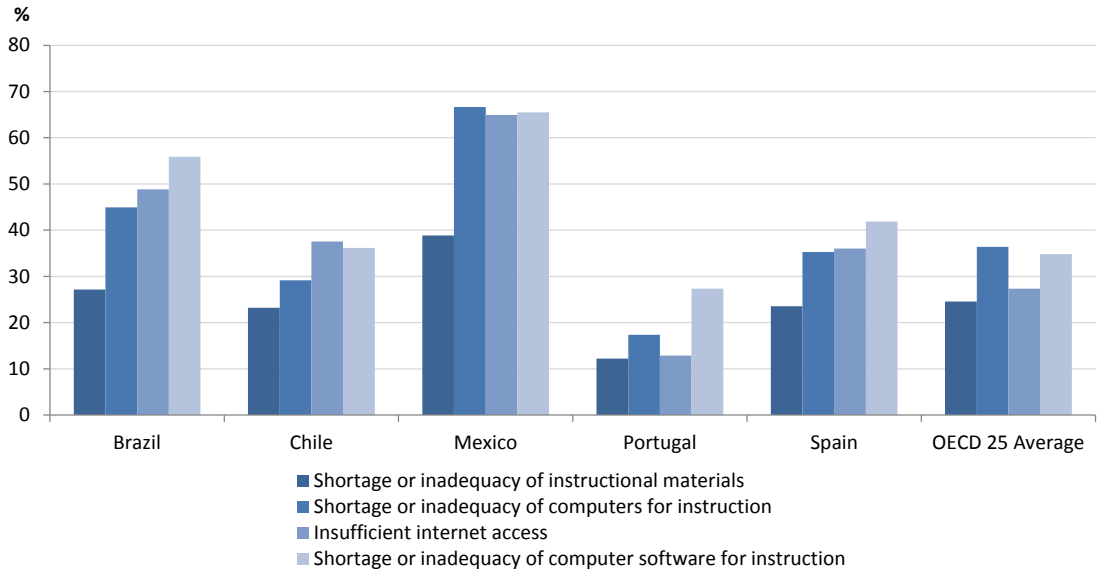
Policy makers in Ibero-American countries will want to explore the underlying reasons why less-experienced or less-educated teachers are more likely to teach in more rural areas. It might be that it is more difficult to attract teachers to these jobs or locations. Governments will also want to ensure that teachers in more rural areas have access to the same level of support, including development and resources, that they would have if they worked in more urban locations.

In order to attract and retain teachers, policy makers and governments need to ensure an equitable distribution of resources, be it human resources or material resources such as instructional materials or computers. Across Ibero-American countries participating in the 2013 TALIS survey, around half of lower secondary teachers in the relatively less well-off economies of Brazil, Chile and Mexico were working in schools whose principals reported a significant shortage of qualified and/or well-performing teachers (Figure 2.7). On the other hand, Spain and Portugal performed better than OECD countries on average, with only one-third of the teachers working in schools whose principals reported a similar shortage. As for shortages of materials, 25-36% of teachers across OECD countries work in schools whose principals reported a shortage of or inadequate instructional materials, computers or computer software for instruction, Internet access and library materials. Mexico has particularly large proportions of teachers facing concerns about the availability and quality of computers, computer software and internet access (64-76%).

More than half of the teachers in Mexico worked in schools where shortages of library materials were a concern for principals (OECD, 2014[20]).

Figure 2.7. School resource shortages

Percentage of lower secondary education teachers whose school principal reports that the following resources issues hinder the school's capacity to provide quality instruction



Note: Includes principals reporting that the resources issue hindered quality instruction "a lot" or "to some extent".
Source: OECD (2013[15]), *Teaching and Learning International Survey (TALIS): 2013 Complete Database*, http://stats.oecd.org/index.aspx?datasetcode=talis_2013.

Finally, while class sizes and distribution of resources are important, school climate is also a matter of concern with many elements affecting both students and teachers in a school. School climate has been shown to be related to student academic achievement at all levels of schooling (MacNeil, 2009[40]; Stewart, 2008[41]). The constructive teacher-student relationships associated with a positive school climate not only affect teaching and learning but have also been shown to influence other student-related factors, such as the prevention of bullying or violence in a school (Eliot, 2010[42]) and students' motivation to learn (Eccles, 1993[43]). A healthy school climate has also been shown to be related to teachers' confidence which in turn influences student learning (Hoy, 1993[44]) and to improve teacher retention (Fulton, 2005[45]).

Of all the factors included under school climate, problems with student absenteeism and lateness were by far the most common in the countries participating in TALIS. As Figure 2.8 shows, 55% of teachers work in schools whose principals reported that students arrived late on a weekly basis, and 41% of teachers work in schools where absenteeism of students occurs every week. While the figures in Portugal and Brazil are very close to these high OECD averages, the situation in more severe in Chile, with 70% or more of teachers working in schools where students arrive late on a weekly basis.

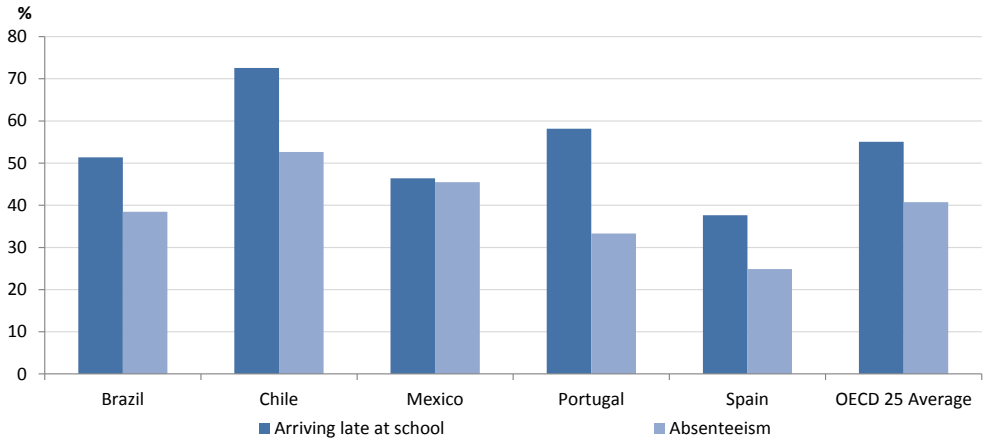
The occurrence of the more serious infractions of cheating, vandalism and theft, and intimidation or verbal abuse among students varies widely across TALIS countries. Brazil and Mexico stand out among these countries, with more than 10% of teachers working in

schools where principals report incidents of vandalism or theft on a weekly basis (OECD, 2014[20]). Furthermore, almost one-third of teachers in Brazil and Mexico work in schools with reported intimidation or verbal abuse occurring among their students on a weekly basis. School climate can also be negatively affected by some teacher behaviour. The degree to which teachers work in schools where teachers arrive late varies widely across countries. On average across TALIS countries, 11% of teachers work in schools where principals reported that teachers arrive late at least weekly. This type of climate is more widespread in Brazil, Chile, Mexico and Flanders (Belgium), where one-quarter or more teachers work in such schools.

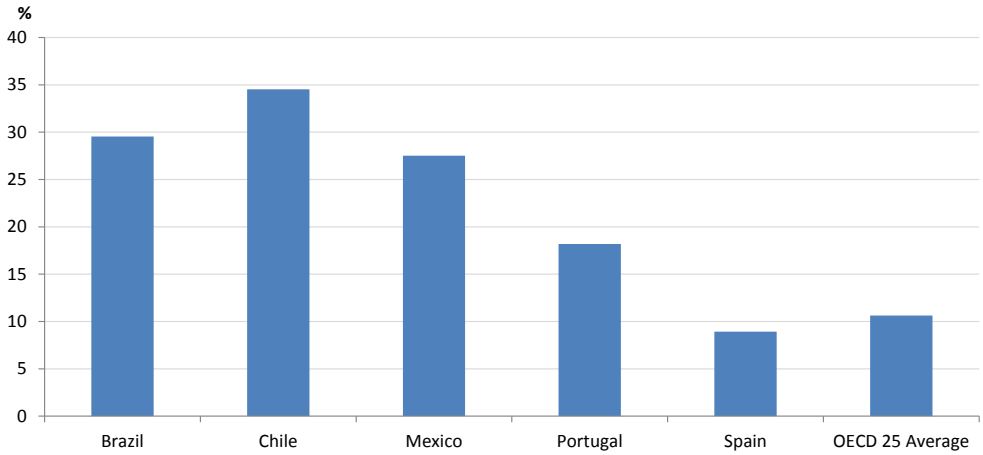
Figure 2.8. School climate

Percentage of lower secondary education teachers whose school principal considers the following student and teacher behaviour to occur at least weekly in their school

Student-related factors



Teacher-related factors (arriving late at school)



Source: OECD (2013[15]), *Teaching and Learning International Survey (TALIS): 2013 Complete Database*, http://stats.oecd.org/index.aspx?datasetcode=talis_2013.

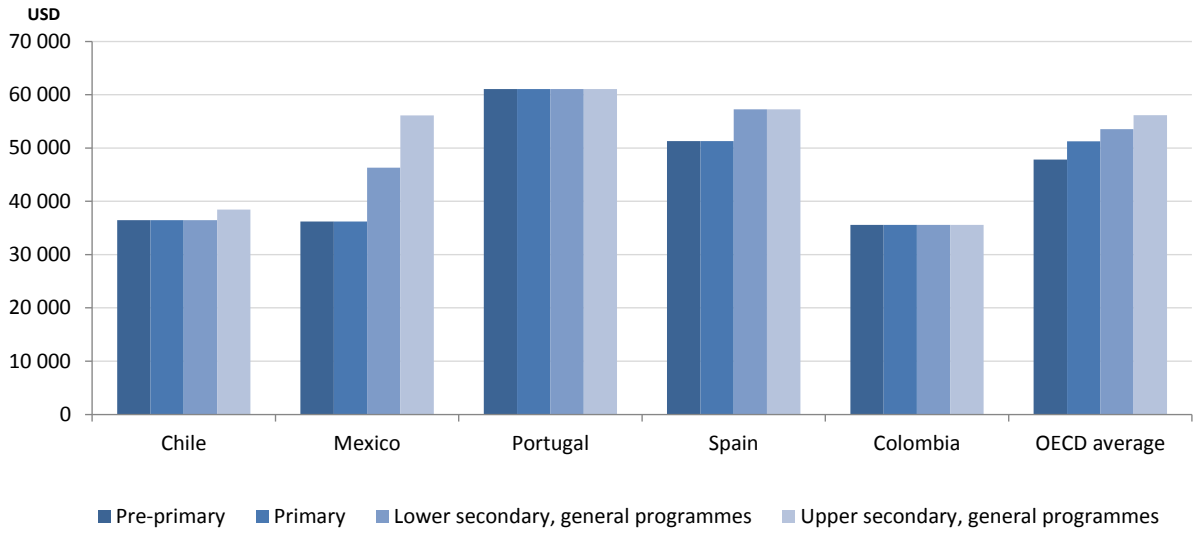
Pay and working hours for Ibero-American teachers

To deliver high-quality education, schools must attract, develop and retain effective teachers. Working conditions play an important role in their ability to do so. Schools that are able to offer their teachers a safe, pleasant and supportive working environment and adequate compensation are better able to attract and retain good teachers and motivate them to do their best. Teachers' pay has taken on major policy importance in OECD countries in the past decade. Teachers are generally viewed as the key to improved education; although pay levels do not directly determine teacher performance, the rewards and teaching conditions can influence recruitment, retention and teacher morale. Research suggests that increasing teacher salaries (and the speed at which they can reach higher pay levels within a particular pay structure) will help schools to recruit and retain the higher-ability teachers that they need to offer all pupils a high-quality education (Dolton, 2011[46]). But there is also research which argues that overall salary increases for teachers would be both expensive and ineffective (Hanushek and Rivkin, 2007[47]). The study by Hanushek and Rivkin suggests that the best way to improve the quality of instruction would be to lower barriers to becoming a teacher, such as certification, and to link compensation and career advancement more closely with teachers' ability to improve student performance. Thus, salary changes could be accompanied by improvements or deteriorations in average teacher quality. Some countries may wish to increase teachers' statutory salaries in order to attract better candidates to the teaching profession but it might take several years before the effects of such a policy are reflected in student outcomes. Other countries might be tempted to raise teachers' salaries in reaction to increased competition from other sectors. That might help retain teachers in the profession, but it cannot fully prevent a reduction in the average quality of the teacher workforce.

Analysing the data from Ibero-American countries, most of them, except Spain and Portugal, pay their teachers less than the OECD average (Figure 2.9). On average, a primary teacher in Mexico and Chile is paid 1.5 times less than what teachers in the OECD are paid on average. However, Spain and Portugal seem to outperform the OECD in terms of teacher salaries, with higher pay levels than the OECD average from pre-primary through to upper secondary except at the primary level where pay is just below the average.

Figure 2.9. Statutory salaries, based on typical qualifications, at the top of the scale (2014)

Teachers' annual salaries in public institutions, in equivalent USD converted using PPPs for private consumption (2014)

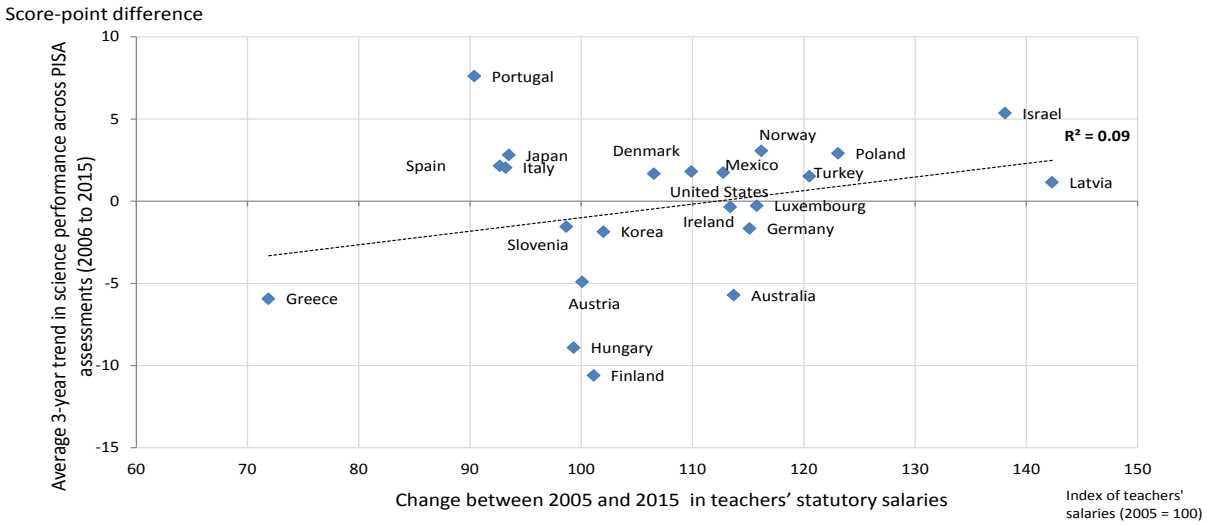


Source: OECD (2016[14]), *Education at a Glance 2016: OECD Indicators*, http://dx.doi.org/10.1787/eag-2016-en.

As Figure 2.10 shows, among the OECD countries with available data, teachers' statutory salaries between 2005 and 2015 are weakly related to learning trends in science between PISA 2006 and PISA 2015 (r=0.26). Teachers' salaries increased by 20% or more in Israel, Latvia, Poland and Turkey between 2005 and 2015; only Israel's science performance improved significantly between 2006 and 2015. Meanwhile, teachers' salaries decreased by more than 20% in Greece – where performance in science also declined – and by about 10% in Portugal – where performance in science improved significantly.

Figure 2.10. Trends in teachers' salaries and science performance

Ratio of teachers' salaries in 2015 to salaries in 2005; statutory salaries after 15 years of experience, in public, general lower secondary institutions, based on typical qualification levels, converted to constant prices using deflators for private consumption; average three-year trend between PISA 2006 and PISA 2015

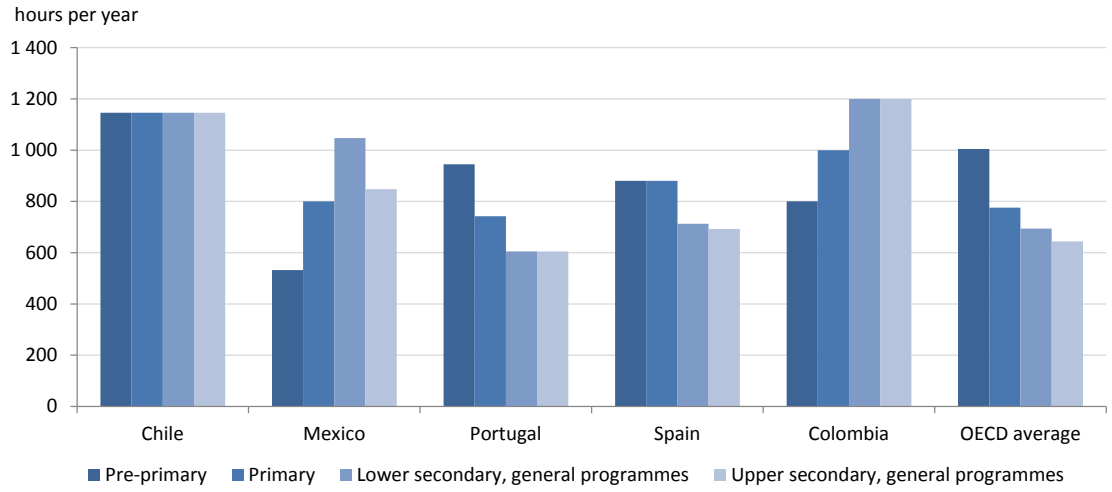


Note: Statutory salaries after 15 years of experience, in public, general, lower secondary institutions, based on typical qualification levels, converted to constant prices using deflators for private consumption.
Source: OECD (2018[48]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en, Figure 2.12; OECD (2018[49]), *PISA 2015 Database*, http://dx.doi.org/10.1787/888933433171, Table I.2.4a.

Normalising teachers' workloads is also critical to building a supportive teaching and learning environment. Working hours in the less developed Ibero-American countries highlight teachers' extremely difficult working conditions (Figure 2.11). Teachers in Spain and Portugal have working hours similar to the OECD average of 1 001 hours per year at the pre-primary level, 782 hours at the primary level, 694 hours at the lower secondary level and 655 hours at the upper secondary level of education. In contrast, Mexico has much longer working hours at all levels except the pre-primary level where the trend reverses, while Colombia and Chile's teachers work almost twice as much as the average teacher in the OECD at the lower and upper secondary levels (OECD, 2016[14]).

Figure 2.11. Organisation of teachers' working time (2014)

Net teaching time in public institutions over the school year, in hours (2014)



Source: OECD (2013[15]), *Teaching and Learning International Survey (TALIS): 2013 Complete Database*, http://stats.oecd.org/index.aspx?datasetcode=talis_2013.

Teacher professionalism in Ibero-America

Policy reviews and the speeches of policy makers frequently reference the need to "professionalise" the teaching workforce (Asia Society, 2017[50]). Usually, by referring to "professionalism", these pronouncements underline the importance of improving teacher quality by making the access, training and development of teachers sufficiently rigorous and specialised (Ingersoll and Merrill, 2011[51]; Price and Weatherby, 2017[52]).

There are many components defining the teaching profession, and they intersect with several stages of teachers' development. Exploring how far the teaching workforce is professionalised in Ibero-America, involves the examination of a group of different teacher quality indicators across the region. After providing a general framework of what is understood by the professionalisation of the teachers, this section explores three dimensions of professionalisation – knowledge, autonomy and peer networks – in the Ibero-American countries participating in TALIS 2013.

What is teaching professionalisation?

Teaching professionalisation is a dynamic concept that has varied considerably over time and in different places (OECD, 2016[34]; Price and Weatherby, 2017[52]). The modern understanding of professionalisation refers to the regulation of an occupation based on clear standards and rules about who has access to this occupation, what are the training mechanisms and the core knowledge to be mastered, along with the certification of the knowledge and skills necessary to practise the profession (Guerriero, 2017[53]).

Usually the professionalisation of an occupation entails the development of a specialised body of knowledge that becomes institutionalised and awards practitioners with the autonomy they need to make judgements about their practices (Guerriero, 2017[53]). To further clarify the components of a profession, it may be useful to contrast it with the characteristics of a semi-profession (Table 2.2).

Table 2.2. Differences between a semi-profession and a profession

Semi-profession	Profession
Lower in occupational status.	There is a high level of public trust and confidence in the profession and in individual practitioners, based on the profession's demonstrated capacity to provide service markedly beyond that which would otherwise be available.
Shorter training periods.	Preparation for and induction into the profession is provided through a protracted preparation programme, usually in a professional school on a college or university campus.
A less specialised and less highly developed body of knowledge and skills.	Collectively and individually, the profession possesses a body of knowledge and a repertoire of behaviours and skills (professional culture) needed in the practice of the profession, and such knowledge, behaviour and skills normally are not possessed by the non-professional.
More subject to administrative and supervisory surveillance and control.	There is relative freedom from direct on-the-job supervision and from direct public evaluation of the individual practitioner. Professionals accept responsibility in the name of their profession and are accountable to society through their profession.

Source: Adapted from (OECD, 2017[54]), *Empowering and Enabling Teachers to Improve Equity and Outcomes for All*, http://dx.doi.org/10.1787/9789264273238-en.

By comparing the characteristics of a profession and a semi-profession it can observed that a profession "is strong in a body of knowledge which is both individually and collectively developed, has the legitimacy and authority of decision making and, at the same time, is not exempt from the necessary accountability procedures" (OECD, 2017[54]).

Meeting these standards for the teaching profession has been a long-standing challenge in Ibero-America. The difficulty of professionalising the teaching profession in the region may be explained by the development of mass public education which translated to an unprecedented enrolment of students across Ibero-America and particularly in Latin America (Elacqua et al., 2017[13]). In order to respond to these demands, educational systems had to provide a large workforce of teachers in a relatively short time. To boost the amount of teachers, the response of the educational system was two-fold: lower the requirements to enter the teaching profession and expand the provision of initial teacher education (very often conducted in a unregulated manner).

The unverified quality of educational institutions combined with flexible or low requirements to become a teacher made it hard to develop teaching as an occupation characterised by a specialised body of knowledge delivered by selective high-quality institutions, which are both indicators of a professionalised workforce. Furthermore, given the low standards of preparation, teaching has not enjoyed a great degree of social prestige or been rewarded by high salaries (Elacqua et al., 2017[13]).

Measuring teacher professionalism in Ibero-America

To further explore the issues around teacher professionalisation, the OECD developed an index measuring three domains of teacher professionalism considered crucial for establishing quality educational systems: professional knowledge bases, autonomous decision making and peer networks (OECD, 2016[34]) (Box 2.2). The three domains are scaled from 0 to 5, with 5 representing the theoretical maximum value that teachers can obtain, as illustrated in Figure 2.12 and Figure 2.13. These figures also show how these values differ across schools with low and high concentration of socio-economically disadvantaged students. Although successful educational systems show high levels of

support for these three dimensions of teacher professionalism, the balance between these components may vary considerably. For example, Figure 2.12 contrasts two countries with high levels of performance in the last PISA 2015 evaluation, Singapore and Estonia.

Box 2.2. Dimensions of teacher professionalism

The OECD study, *Supporting Teacher Professionalism*, developed three dimensions of teacher professionalism based on the indicators provided by the TALIS.

1. **Professional knowledge** bases are defined as the set of knowledge the professional uses in teaching and learning that is acknowledged through qualifications and memberships. Teachers' professional knowledge bases require advanced or graduate-level education and specialised knowledge of subject matter, pedagogy and classroom management, typically acquired through participation in initial teacher education programmes and continuous in-service professional development.

2. **Autonomous decision making** is defined as autonomy over curricular choices, instructional planning and classroom standards of conduct. Autonomy is closely related to both decision making and empowerment, because it recognises teachers' capacity for sound professional judgement. Autonomy on classroom issues leads to a sense of empowerment and ownership, where teachers are able to grow professionally and take responsibility for their actions.

3. **Peer networks** provide regulation and support from peer professionals. Peer regulation is a core component of classic professionalism: peers are responsible for setting high standards and ensuring that members are accountable for meeting those standards. Networks of teachers can also provide support, collaboration and instruction in the development of practices at all stages of teachers' professional careers. The most recurrent forms of peer networks include:

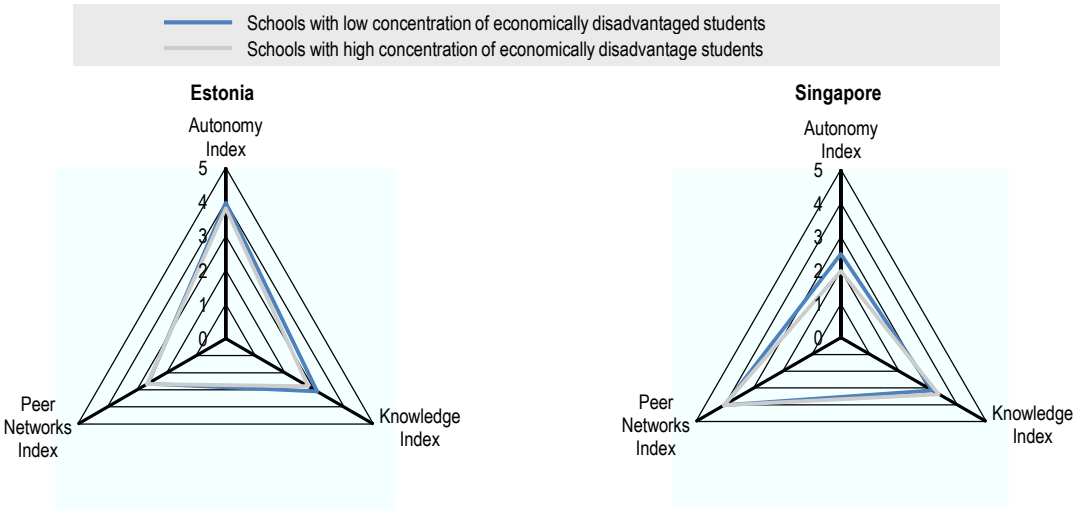
- induction
- mentoring
- professional development plans
- peer feedback
- professional learning communities.

Source: OECD (2016[34]), *Supporting Teacher Professionalism: Insights from TALIS 2013*, http://dx.doi.org/10.1787/9789264248601-en.

As Figure 2.12 shows, the systems in Singapore and Estonia both have index scores close to the maximum values across the three dimensions. However, it is clear that Singapore scores higher for the Peer Network index than the other two dimensions, and lower on the Autonomy index, probably due to the strong centralised curriculum tradition that characterises Southeast Asian countries. Indeed, an average to low level of autonomy is a common factor in other Asian systems participating in TALIS like Japan, Korean and Shanghai (China) (OECD, 2016[34]). Looking at scores for teaching professionalism across schools with students from different socio-economic backgrounds, in Singapore the levels for each dimensions do not differ considerably except for Autonomy; teachers

in schools with a low concentration of students from disadvantaged backgrounds seem to conduct these practices more often than teachers in schools with a high concentration.

Figure 2.12. Teacher professionalism in Singapore and Estonia



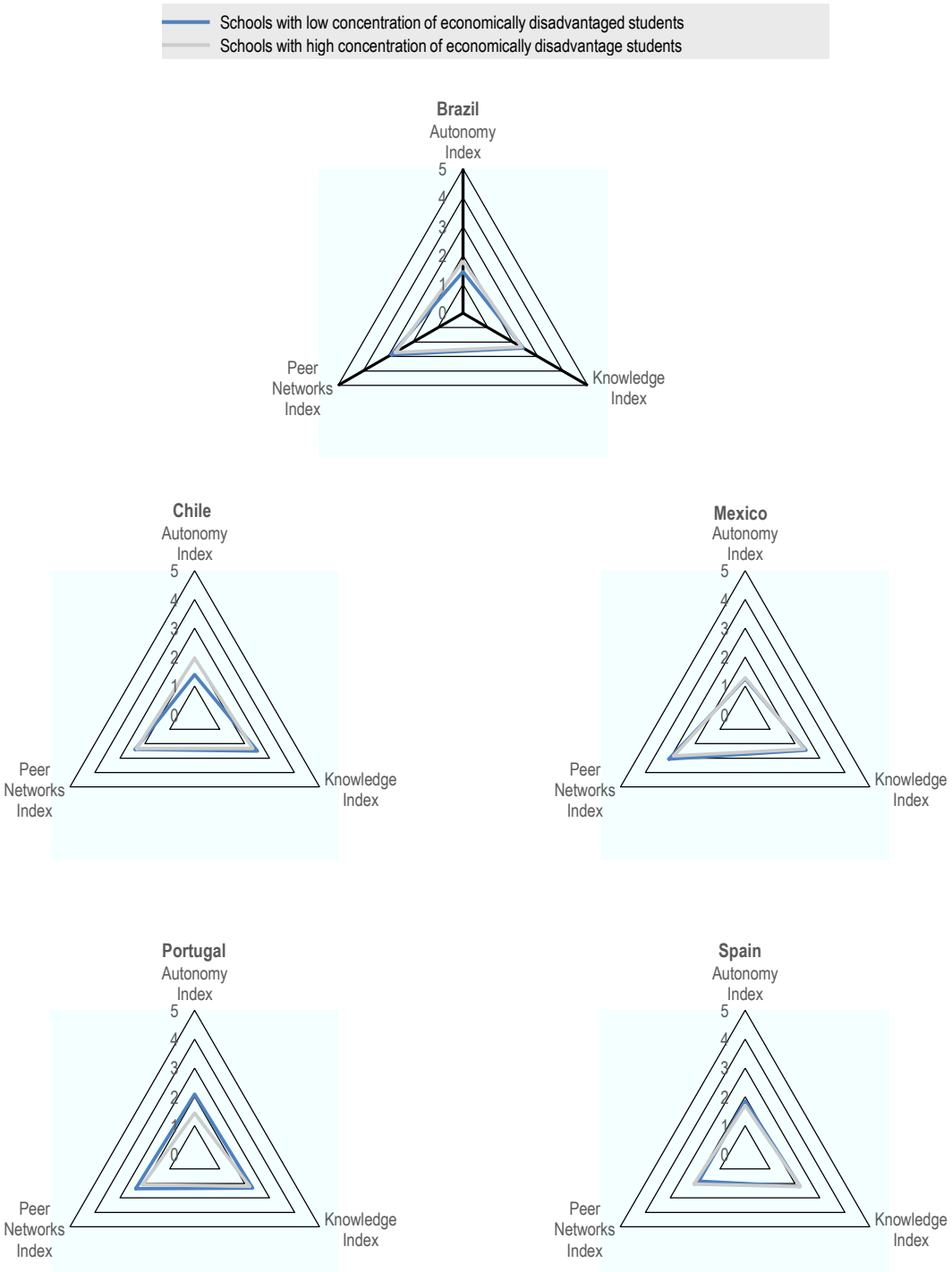
Note: Schools with less than 11% of economically disadvantaged students were classified as "low concentration" while schools with more than 30% of economically disadvantaged students were classified as "high concentration".
Source: OECD (2013[15]), *Teaching and Learning International Survey (TALIS): 2013 Complete Database*, http://stats.oecd.org/index.aspx?datasetcode=talis_2013.

Estonia scores considerable higher on the Autonomy index than the other two which is a common characteristic among other European high performers such as Denmark, Finland and Iceland (OECD, 2016[34]). Estonia also has practically no difference in the levels of professionalism between teachers in schools with low and high concentrations of economically disadvantaged students.

From these examples it can be concluded that each system has one particularly strong dimension but has nevertheless managed to maintain high levels in all three areas of professionalism. Furthermore, the level of professionalism does not seem to vary significantly across schools with different socio-economic compositions.

However the levels of teacher professionalism in the five Ibero-American countries participating in TALIS are different from these high-performing countries (Figure 2.13). Overall their scores are considerably lower in the three professionalism dimensions. For example, in Portugal the Autonomy index is considerably low, particularly in schools with high concentrations of economically disadvantaged students. Across all five countries, scores for Knowledge are lower than the OECD average, which might reflect teachers' limited opportunities to access specialised training and receive support for further development. However, the graphs also show that levels of teacher professionalism do not change much across schools with different concentrations of disadvantaged students.

Figure 2.13. Teacher professionalism in Ibero-American countries



Note: 1. Schools with less than 11% of economically disadvantage students were classified as "low concentration" while schools with more than 30% of economically disadvantaged students were classified as "high concentration".

Source: OECD (2013[15]), *Teaching and Learning International Survey (TALIS): 2013 Complete Database*, http://stats.oecd.org/index.aspx?datasetcode=talis_2013.

Nevertheless some areas of teacher professionalism show important potential. The scores for Peer Networks in both Brazil and Mexico are considerably higher (a value of 3 on a 5-point scale). These results might reflect concrete initiatives which were taken in these educational systems that have fostered collaboration. Box 2.3 describes examples of these initiatives in Brazil and Mexico.

Box 2.3. Fostering peer networks in Brazil and Mexico

The Secretary of Education in Sao Paulo Brazil implemented a programme to develop "pedagogical teams" with teachers from different disciplines to promote and support the professional development of their colleagues and facilitate the pedagogical tasks of the school.

In Mexico, the Integral Strategy for the Improvement of Educational Achievement in Mexico (EIMLE, also known as Learning Community Project or *Redes de Tutoría*), was put in place in 9 000 schools to develop learning communities. When EIMLE was in operation, the achievement of public middle school students in the most marginalised communities overtook the achievement of their most privileged counterparts. In mathematics, EIMLE students practically reached the performance of students in private schools.

Source: Vaillant (2007[55]), "Mejorando la formación y el desarrollo profesional docente en Latinoamérica", *Pensamiento Educativo: Revista de Investigación Educacional Latinoamericana*, Vol. 41/2, http://pensamientoeducativo.uc.cl/index.php/pel/article/view/424.

Despite these promising areas for further development it is clear from the data presented that much more support will be needed to develop teacher professionalism in the region. Through the rest of this report, the main components of teacher professionalism such as teacher education, professional development and accountability will be reviewed and discussed in detail.

Conclusion

This chapter provides an overview of the teaching profession in the region through a descriptive analysis of the teachers working in Ibero-American countries. It took a brief look at teachers' age and gender distributions, their levels of education and experience, and their working conditions. Teaching continues to be a female-dominated profession at most levels of education and continues to attract and retain a significant share of the population of middle-aged working women. Most teachers in Ibero-America have attained tertiary or equivalent qualifications and specific elements included in that training, such as content and pedagogical training and classroom practice, could make a significant difference to making them feel better prepared for their classes.

Schools in the region continue to face equity issues with larger class sizes and student-teacher ratios in the relatively poorer Ibero-American countries compared to their counterparts in the better developed countries like Spain and Portugal. Overall levels of teacher professionalism in the region are low, particularly compared with high-achieving countries like Estonia and Singapore. Governments will need to devise effective mechanisms to improve the working conditions, increase the pay scales and reduce the workloads of teachers in order to enhance student learning outcomes.

Note

[1] ISCED 5 represents the first stages of tertiary education and is split between levels 5A and 5B. ISCED level 5B programmes are generally more practically oriented and shorter than programmes at ISCED level 5A. ISCED level 5A typically includes bachelor's and master's degrees from universities or equivalent institutions. ISCED level 6 represents further education at the tertiary level that leads to an advanced research qualification such as a doctoral degree.

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Chapter 3. Attracting and selecting the best talent into the teaching profession

A key component of the establishment of a high-quality teaching workforce is attracting and selecting the best candidates into the profession. This chapter reviews how these processes take shape across the Ibero-American region by first looking at the data on the candidates wishing to enter the profession. It provides an overview of the entrance requirements for initial teacher education programmes and the proportion of certified teachers in the region and their association with students' learning. It concludes with a review of the influence of career structures on building attractive professional positions that allow teachers further career advancement and development while maintaining equity in the education system.

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.

The demands on schools and teachers are becoming more complex. Society now expects schools to deal effectively with different languages and student backgrounds, be sensitive to culture and gender issues, promote tolerance and social cohesion, respond effectively to disadvantaged students and students with learning or behavioural problems, use new technologies, and keep pace with rapidly developing fields of knowledge and approaches to student assessment. Teachers need to be capable of preparing students for a society and an economy in which they will be expected to be self-directed learners, able and motivated to keep learning over a lifetime. The type and quality of the training teachers receive, and the requirements to enter and progress through the teaching profession, shape the quality of the teaching force. Attracting, developing and retaining effective teachers are priorities for public policy (Barber and Mourshed, 2007[1]). Education systems also need to have in place cohesive career structures that offer teachers attractive opportunities. This chapter gives an insight into the how Ibero-American countries select teachers, and the common elements in terms of career structures and the advancement and development of the teaching workforce in the region. It also attempts to examine the importance of existing teacher policies in terms of their effect on student performance in the Programme for International Student Assessment (PISA) 2015 round.

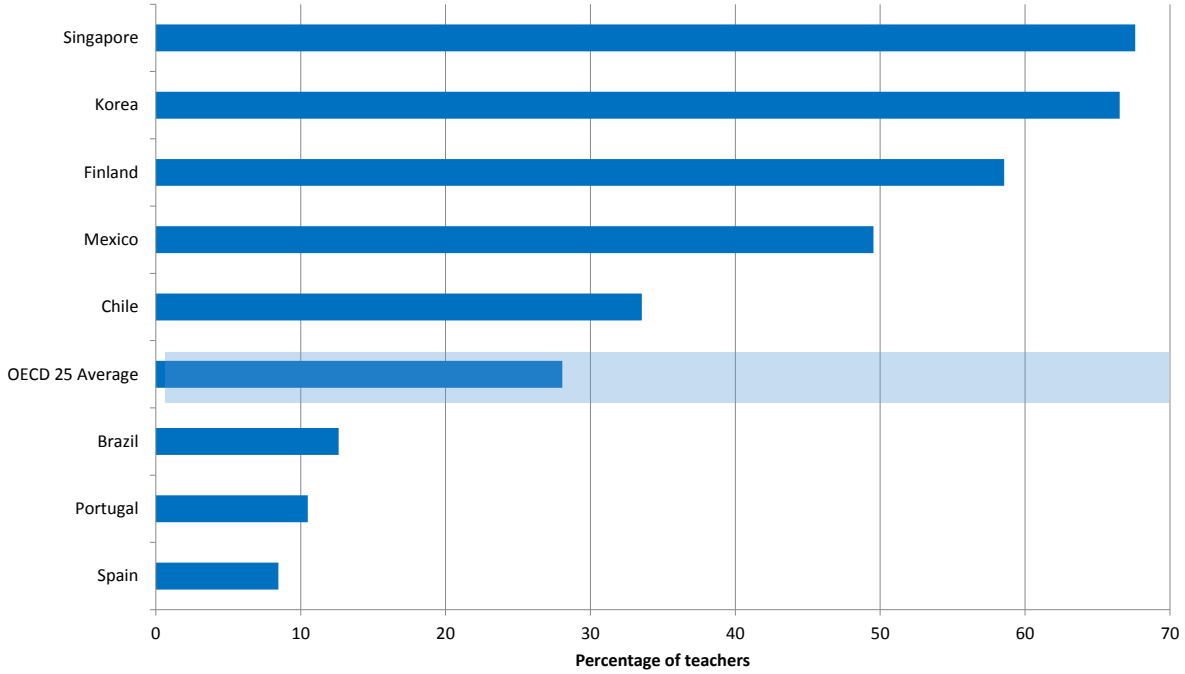
Recruitment into teacher education

Selecting and recruiting high-level candidates to the teaching profession has become a paramount policy goal for all educational systems seeking to improve their teaching workforce. International reviews on the policy attributes of high-performing countries have identified that the selective screening of candidates to the teaching profession is a common characteristic of most of these systems (OECD, 2005[2]; Darling-Hammond, 2017[3]). Indeed, educational systems such as Singapore, Finland and South Korea tend to recruit teachers from the top third of school graduates (Barber and Mourshed, 2007[1]).

Having said this, it seems that in most countries the teaching profession has a lower status than other professions such as medicine and law (Guerriero, 2017[4]). Results from the 2013 Teaching and Learning International Survey (TALIS), using nationally representative samples of lower secondary teachers, found that only 28% of teachers from the 25 OECD countries or economies taking part agreed or strongly agreed that the teaching profession was valued in society (Figure 3.1).

Figure 3.1. Teachers' view of how society values the teaching profession, TALIS 2013

Percentage of lower secondary education teachers who "agree" or "strongly agree" with the following statement: I think that the teaching profession is valued in society

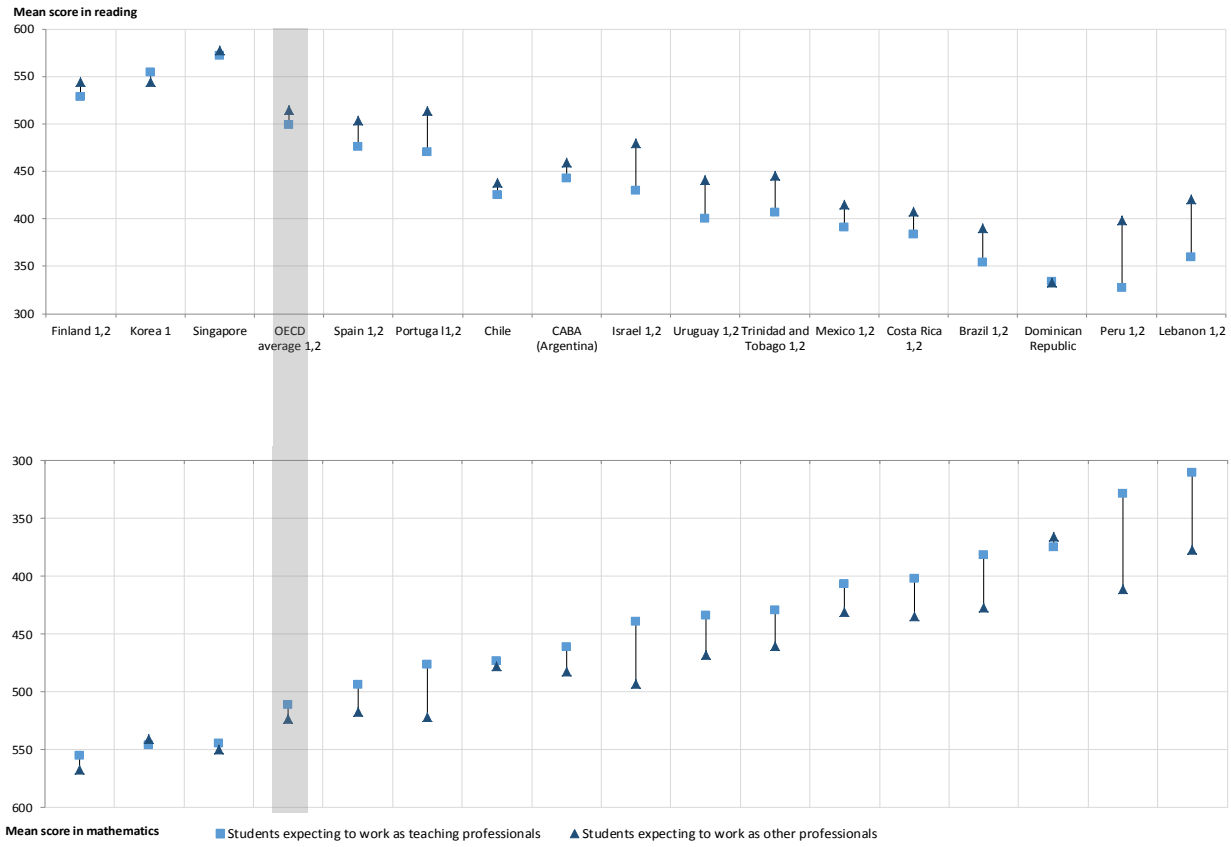


Note: Countries are ranked in descending order, based on the percentage of teachers who "agree" or "strongly agree" that they think that the teaching profession is valued in society.
Source: OECD (2013[5]), *Teaching and Learning International Survey (TALIS): 2013 Complete Database*, http://stats.oecd.org/index.aspx?datasetcode=talis_2013.

Looking at the five Ibero-American countries that took part in this study, Brazil, Portugal and Spain are considerably below the OECD 25 average with around 1 in 10 teachers agreeing teachers were valued. Of the Ibero-American countries, only Chile and Mexico showed results above the OECD average. However in countries with highly selective entry to the profession, such as Singapore, Finland and Korea, around two-thirds of teachers felt that their profession was valued by society. It might be that in these countries, the selectiveness of the career is reflected in the overall prestige of the profession.

The value afforded a profession can affect the quality of the candidates who choose to enter. Indeed, evidence collected from PISA 2015 seems to suggest that teaching candidates are commonly low performers. Figure 3.2 shows that the PISA 2015 maths and languages scores of those 15-year-olds who expect to work as teachers are lower than those of students who expect to work as other type of professionals.

Figure 3.2. Reading and mathematics scores among students who expect to work as teachers, PISA 2015



Note: Professionals include scientists; engineers; medical professionals; teachers; business, legal, and social science professionals; and related professions.
1. The difference in mathematics scores between students expecting to become teachers and students expecting to become other professionals is statistically significant.
2. The difference in reading scores between students expecting to become teachers and students expecting to become other professionals is statistically significant.
Countries are ranked in descending order of the mean score in mathematic among students expecting to work as teachers at the age of 30.
Source: OECD (2018[6]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en.

The Ciudad Autonoma de Buenos Aires (CABA) in Argentina, Chile and the Dominican Republic are the only Ibero-American entities where the difference is not significant. Brazil, Peru and Uruguay show the biggest gap in performance between students who aspire to become teachers and those who do not. In contrast, systems which are very selective about teaching candidates, such as Korea and Singapore, do not show a significant difference between these two populations, while maintaining high scores for both tests.

In the last decade, educational systems have acknowledged the importance of recruiting high-quality candidates to the profession and have put in place a series of policy initiatives. For example, Norway has introduced the GNIST ("spark" in Norwegian)

initiative (2009-14), a teacher recruitment campaign using short films and a website, which evidence suggests helped increase recruitment by almost 60% between 2008 and 2013. At the same time, Israel introduced several programmes to attract high-achieving individuals into the teaching profession, including Academics for Teaching (2008), which targets individuals with a minimum of five years' work experience. It provides them with free teacher training and the possibility of free enrolment into a master's programme after three years of teaching (OECD, 2015, p. 80[7]). In the Ibero-American region, Chile and Peru have implemented interesting initiatives offering scholarships to high achievers who decided to enter the profession (Box 3.1).

Box 3.1. Teacher vocation scholarships in Chile and Peru

Attracting the best to the teaching profession in Chile and Peru.

Chile

The Teacher Vocation Scholarship (*Beca Vocación de Profesor*) provides academically talented secondary education graduates with a scholarship and other benefits if they choose a teacher education degree. The extent of the benefit depends on the score they obtain in the university selection test. Depending on their scores, candidates could benefit from having their enrolment funded to the financing of a semester studying abroad.

Once they have obtained their professional teaching certification, the beneficiaries of the scholarship must work for at least 3 years in a government-funded school, completing a minimum of 30 teaching hours per week. In 2015, the scheme awarded 9 413 scholarships.

Source: OECD (2017[8]), *Education in Chile*, http://dx.doi.org/10.1787/9789264284425-en.

Peru

The Peruvian Ministry of Education has promoted their own teacher vocation scholarship (*Beca Vocación de Maestros*) within their national scholarship programme. The scholarship selects students who graduate from high school with the highest grades and offers them places to study pedagogy in the six most prestigious universities in Peru.

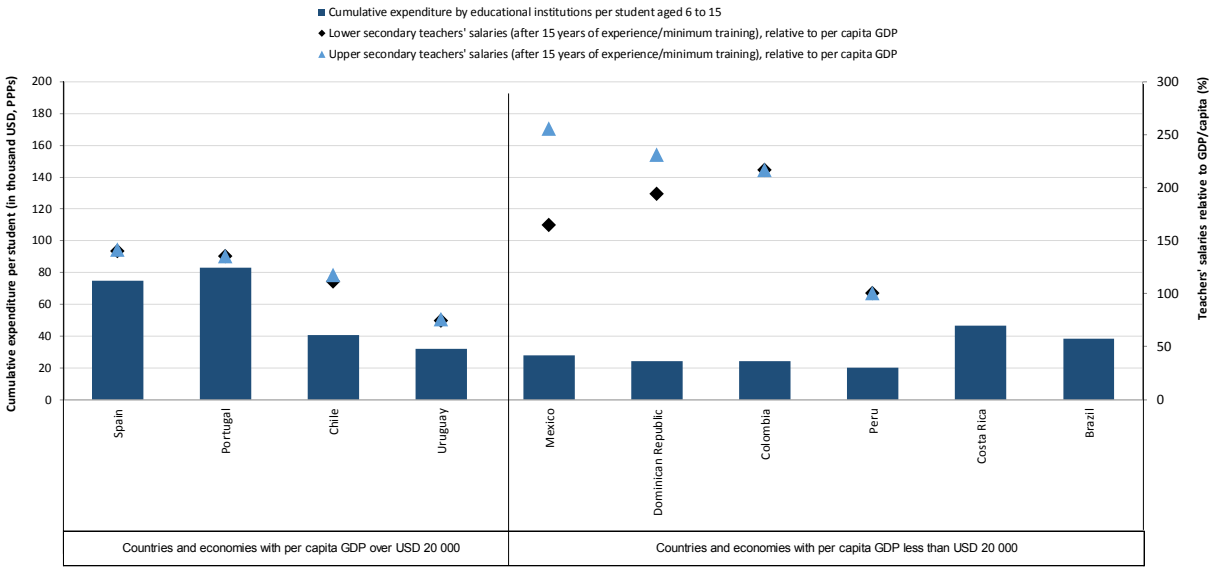
Source: UNESCO (2015[9]), *Las carreras docentes en América Latina. La acción meritocrática para el desarrollo profesional*, http://unesdoc.unesco.org/images/0024/002440/244074s.pdf.

Attracting and selecting the best teachers

Higher salaries might be expected to help school systems attract the best candidates to the teaching profession, and signal that teachers are regarded and treated as professionals. Teachers' salaries represent the largest single share of expenditure on education (OECD, 2016[10]). School systems differ not only in how much they pay teachers, but in the structure of their pay scales. On average, the salaries of teachers with minimum training and 15 years of experience in OECD countries exceed the per capita GDP of their country by 10% for lower secondary teachers and by 16% for upper secondary teachers. Compared to the rest of the OECD, lower and upper secondary teachers in Colombia, the Dominican Republic and Mexico are among the highest relative earners in their

profession (Figure 3.2). Except in Uruguay, where lower secondary teachers with minimum training and 15 years experience earn only around 70% of per capita GDP, the Ibero-American countries that participated in PISA 2015 generally pay their teachers well: salaries for lower secondary teachers range from 100% of per capita GDP (Peru) to as high as 217% of per capita GDP (Colombia) while for upper secondary teachers, salaries range from 100% (Peru) to 256% (Mexico) of per capita GDP.

Figure 3.3. Teachers' salaries in Ibero-American countries, PISA 2015



Source: OECD (2016[11]), *PISA 2015 Results (Volume II) - Policies and Practices for Successful Schools*, http://dx.doi.org/10.1787/9789264267510-en.

But paying teachers well is only part of the equation. Raising teachers' salaries is a common policy response, intended to increase both the attractiveness and the prestige of the teaching profession. Indeed, the evidence from PISA 2015 shows that where teachers' salaries increased more rapidly than GDP per capita between 2006 and 2015, the proportion of students aspiring to become teachers also increased. However, it was also noticeable that the performance of these students also decreased. In other words, it seems that an increase in teachers' salaries attracted a greater pool of lower performers than high achievers (OECD, 2018[6]).

Reducing the number of students per teacher did increase the proportion of high achievers who aspired to become teachers, however. Thus, high achievers seem to be more responsive to working conditions (i.e. smaller class sizes) than salaries. This resonates with the main reasons why young people decided to become teachers in Finland: since Finnish teachers' salaries are very close to the national average, other factors linked with working conditions, such as professional autonomy and learning opportunities, played a crucial role in motivating applicants to join the profession (Sahlberg, 2010[12]).

Most professions emphasise the need for pre-service education to provide a solid platform for ongoing learning and career development. Although this view has always been present to some extent in teacher education, it has not often been made explicit through structures and programmes. Teaching careers are increasingly seen in lifelong learning terms, with initial teacher education providing the foundations. Therefore, countries are also seeking

ways to provide better support for beginning teachers, and opportunities and incentives for ongoing professional development throughout the career (OECD, 2005[2]).

Across PISA-participating countries and economies, competitive examinations are required to enter pre-service teacher training in 20 out of 41 education systems for primary education and 19 out of 39 systems for secondary education (Table 3.1). The Ibero-American region shows a similar pattern: while Portugal and Brazil require applicants for pre-service teacher training to take a competitive exam, countries like the Dominican Republic and Spain do not. Countries may require competitive examinations for a variety of reasons. For example, they may be required only for certain fields of education or when the number of candidates exceeds the capacity of a programme to ascertain the best candidates for the training programme. As for the duration of the pre-service training programmes, with the exception of Portugal, which only requires pre-primary teachers to train for 3 years, most Ibero-American countries have training programmes which last around 4-5.5 years at all levels of education. This is similar to what is observed across the OECD (Table 3.1).

Table 3.1. Requirements for competitive examination and duration of pre-service training, PISA 2015

	Source	Competitive examination required to enter pre-service teacher training				Duration of teacher training programme, in years			
		Pre-primary education	Primary education	Lower secondary education	Upper secondary education	Pre-primary education	Primary education	Lower secondary education	Upper secondary education
Chile	a	a	a	a	a	5	5	5	5.5
Mexico	a	a	a	a	a	4	4	4	4
Portugal	a	Yes	Yes	Yes	Yes	3	3	5	5
Spain	a	No	No	No	No	4	4	5	5
Argentina	b	No	No	No	No	4	4	4	4
Brazil	a	Yes	Yes	Yes	Yes	4	4	4	4
Dominican Republic	b	No	No	No	No	4	4	4	4
Peru	b	Yes	Yes	Yes	Yes	5	5	5	5
Uruguay[1]	b	No	No	No	No	4	4	4	4

Note: 1. Reference year 2015. Federal states or countries with highly decentralised school systems may have different regulations in states, provinces or regions.
Source: a) OECD (2014[13]), *Education at a Glance 2014: OECD Indicators*, http://dx.doi.org/10.1787/eag-2014-en; b) OECD (2016[14]), "Annex A6. System-level data collection for PISA 2015: Sources, comments and technical notes", in *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, www.oecd.org/pisa/data/PISA-2015-Vol2-Annex-A6-System-level-data-collection-for%20PISA-2015.pdf.

Teacher education and student outcomes

Selecting those entering teaching is meant to choose the best candidates for educating the youth; in other words, this is a means to an end. However, the research literature presents inconsistent findings about the impact of teachers' education and experience on student achievement. Some studies have shown little or no relationship between teachers' educational attainment and qualifications and student outcomes (Buddin and Zamarro,

2009[15]; Croninger et al., 2007[16]; Harris and Sass, 2011[17]). Other studies and reviews have found positive relationships between initial education (either in terms of its level or its content) and teaching effectiveness. For example, Ronfeldt and Reininger (2012[18]) found that the quality – rather than the duration – of the practical component of teacher education programmes can have a positive impact on some outcomes for pre-service teachers, such as their perception of preparedness, their efficacy and their career plans.

PISA 2015 asked school principals to report on the composition and qualifications of the teachers in their schools; more specifically, they were asked how many teachers work full time or part time and how many are fully certified by an appropriate authority. In most OECD countries, teachers are required to have been certified by an authority; however, many teachers who have earned a university degree do not always need a specific or additional licence to teach. According to school principals, most teachers in their schools are full-time teachers and have some form of certification. Across OECD countries, the average student attends a school where 79% of teachers work full time and 84% have been fully certified (Table 3.2). However, there is a lot of variation between Ibero-American countries on this measure. Chile (79% of teachers working full time) and the Dominican Republic (77% of teachers working full time) are close to the OECD average, while Colombia (96%) and Portugal (93%) have a much higher percentage of teachers working full time – but there are also countries like Mexico (49%) and Uruguay (16%) which are at the other end of the spectrum. This also holds true for the proportion of fully certified teachers in these countries: while in Chile only 21% of teachers received certification from a known authority, the fully certified teaching workforce in Colombia, Costa Rica, Peru, Portugal and Spain ranges from 86% to 92% (Table 3.2).

Table 3.2. Fully certified teaching workforce and teachers who work full time in Ibero-American countries, PISA 2015

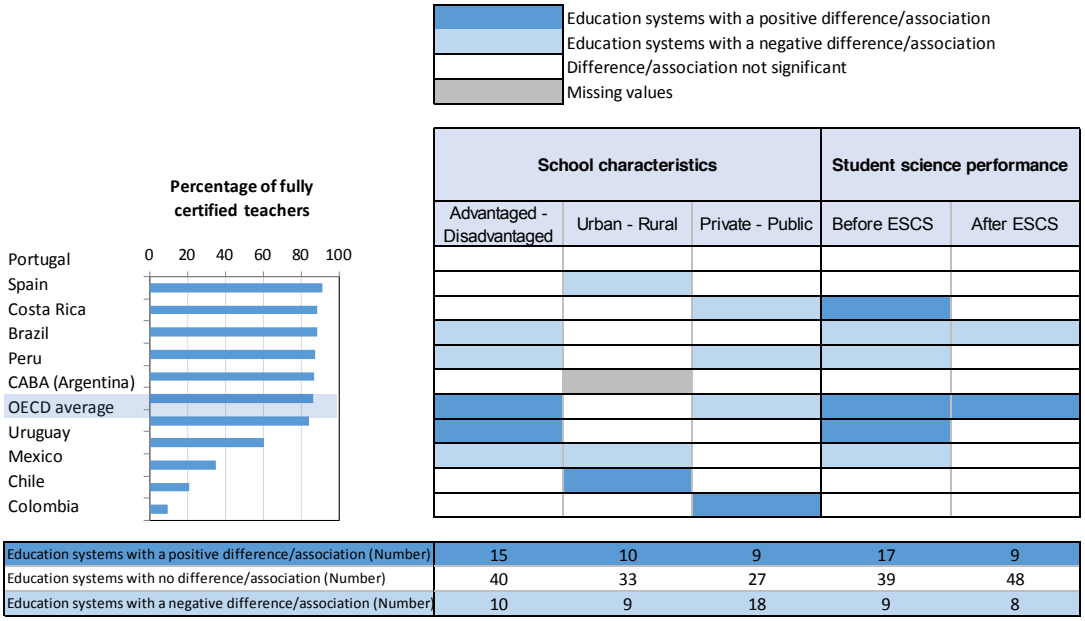
	All students- Certified teachers				All students- Full-time teachers			
	Average		Variability		Average		Variability	
	%	S.E.	S.D.	S.E.	%	S.E.	S.D.	S.E.
Chile	21.0	(2.5)	34.1	(2.3)	78.7	(2.0)	22.9	(1.9)
Mexico	35.3	(2.7)	40.2	(1.2)	49.0	(2.3)	36.8	(0.7)
Portugal	91.5	(1.9)	25.0	(3.1)	93.4	(0.6)	10.9	(1.5)
Spain	88.5	(2.1)	28.3	(2.7)	88.9	(0.5)	11.3	(0.7)
OECD average	84.3	(0.3)	23.0	(0.4)	79.5	(0.2)	14.8	(0.2)
Brazil	87.4	(1.1)	24.9	(1.5)	51.0	(2.3)	42.3	(0.7)
CABA (Argentina)	86.6	(4.6)	27.7	(5.2)	28.3	(5.1)	35.9	(3.4)
Colombia	9.8	(1.4)	19.2	(2.5)	96.1	(0.8)	13.2	(2.2)
Costa Rica	88.4	(1.2)	17.7	(1.5)	63.4	(1.3)	22.6	(1.0)
Dominican Republic	m	m	m	m	77.2	(2.6)	34.1	(2.0)
Peru	86.7	(1.4)	23.2	(1.8)	77.0	(1.9)	29.9	(1.4)
Uruguay	60.4	(1.3)	22.0	(0.9)	16.1	(1.4)	24.3	(1.6)

Source: OECD (2016[11]), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, http://dx.doi.org/10.1787/9789264267510-en.

On average across OECD countries, the proportion of teachers who have been certified to teach is positively, albeit modestly, associated with student performance, both before and

after accounting for the socio-economic profile of students and schools. Across OECD countries, for every 10 percentage-point increase in the share of fully certified teachers, students' scores in science rose by about one point after accounting for socio-economic profiles. In Ibero-America, only Brazil, Chile and Mexico have negative associations between the proportion of fully certified teachers and science performance but the relationship is not significant in Chile and Mexico after accounting for students' socio-economic status. However, the positive association between the proportion of fully certified teachers and science performance for the other countries in the region is also not significant after accounting for students' socio-economic status and therefore, these associations can be understood as correlations at best.

Figure 3.4. Relationship between percentage of fully certified teachers in Ibero-American countries and student science performance, PISA 2015



	School characteristics			Student science performance	
	Advantaged - Disadvantaged	Urban - Rural	Private - Public	Before ESCS	After ESCS
Education systems with a positive difference/association (Number)	15	10	9	17	9
Education systems with no difference/association (Number)	40	33	27	39	48
Education systems with a negative difference/association (Number)	10	9	18	9	8

Note: 1. ESCS refers to the PISA index of economic, social and cultural status. Countries and economies are ranked in descending order of the percentage of fully certified teachers. In Chile the question about the certification of teachers was adapted as "authorised or enabled by the Ministry of Education".
Source: OECD (2018[19]), *PISA 2015 Database*, Table II.6.12, www.oecd.org/pisa/data/2015database/.

Teachers' career structures in Ibero-America

To attract the best candidates to the teaching profession, it is important to have cohesive career structures in place that offer teachers opportunities for mobility and continuous learning. A career structure is the "legal regime that establishes the profession's practice within a particular area, regulating, among other things, the system of admissions, practice, mobility, development, promotion and retirement of people who work in the profession" (UNESCO, 2012[20]). It is a crucial part of attracting, developing and retaining effective teachers. Good career structures should also be able to acknowledge and reward effective teachers who are on a path of continuous learning, while strong career paths with clear development opportunities are a powerful tool for providing guidance to teachers, keeping them motivated and encouraging them to develop new skills. The development of such career structures thus also meets the policy need to

provide teachers with the knowledge and skills required to face changing demands in schools and the classroom.

The purpose of this section is to give an overview of teachers' career structures across the Ibero-American region. These differ widely, in terms of the elements considered for teachers to advance in the profession (e.g. certification, experience and evaluation) and the recompense for this advancement (e.g. an increase in salary, a new position at the school, or professional development opportunities).

To facilitate the classification of these different career structures, this section relies on the OECD typology for teachers' employment pathways in the public sector: career-based and position-based (OECD, 2005[2]).

Career-based systems

Under career-based systems, teachers are generally expected to stay in public service throughout their working life. This type of structure is anchored in a notion of teachers as public servants whose labour rights are protected by the state (UNESCO, 2015[9]).

Entry to the profession occurs at very young age, based on academic credentials (an education certification is usually required) and/or civil service entry examinations, and new recruits enter at the lower levels of the career hierarchy (OECD, 2005[2]). Starting salaries are often therefore relatively low, but there is a clear pathway to higher earnings, and pension schemes are usually relatively generous. Teachers are allocated to schools based on the criteria of a local or national education agency (OECD, 2005[2]).

Career advancement usually relies heavily on the teacher's years of experience and accumulation of qualifications (from professional development courses and graduate studies). Career-based systems tends to promote "vertical" promotion, which means teachers can only obtain a significant improvement on income if they become school principals or leave the school to work as public servants in education (e.g. as school supervisors or policy developers) (UNESCO, 2015[9]). Teachers therefore have to leave the classroom if they wish improve their working conditions (Elacqua et al., 2017[21]).

The rationale behind such vertical promotion is that it attracts the best teachers to leadership roles in schools or the educational systems. In fact, in almost all countries in Latin America, school principals are required to have had previous experience as teachers. However, the unintended consequence of these systems may be that they pull the best teachers out of the classroom, thereby affecting the quality of instruction that students experience.

"Horizontal" promotion, in contrast, refers to the improvement of teachers' working conditions or salaries without them needing to leave the classroom. In Ibero-American countries, this type of promotion takes the form of scales with consecutive hierarchical steps. In career-based systems, teachers advance from one step to the next more or less automatically, based on their years of working experience (Elacqua et al., 2017[21]).

Position-based systems

Position-based systems tend to focus on selecting the best-suited candidate for each position based on a series of indicators that emphasise teachers' performance over seniority and credentials. This means position-based systems are characterised by a reliance on evaluation mechanisms with high-stake consequences (Elacqua et al., 2017[21]). Since teachers' tenure or advancement depend upon their evaluation results,

position-based systems also introduce a degree of instability and uncertainty compared with the security and stability offered by career-based systems (OECD, 2005[2]).

Under position-based systems, teaching is usually open to people of a wide range of ages. Entry from other careers is relatively common, as is movement from teaching to other jobs, and later returns to teaching. Although initial salaries are often attractive, they generally plateau relatively early on. Career advancement depends on successfully competing for vacancies, and the number of positions teachers can advance into is usually restricted (OECD, 2005[2]).

The most common type of promotion in position-based systems is horizontal promotion, which means teachers can access new responsibilities and new positions without leaving the classroom. For example, in Ecuador teachers can work as mentors to other teachers while in Mexico qualified teachers can access positions of pedagogical leadership and support (UNESCO, 2015[9]). Position-based systems can therefore be understood as offering what the European Commission has called "multi-level" career structures where different levels are structured around different degrees of complexity, required competencies and responsibilities (Eurydice, 2018[22]).

Different development tracks can be provided for teachers who would like to keep teaching and those who want to take on administrative tasks. Box 3.2 shows how the educational system in Singapore establishes different career pathways for teachers.

Box 3.2. Career development in Singapore

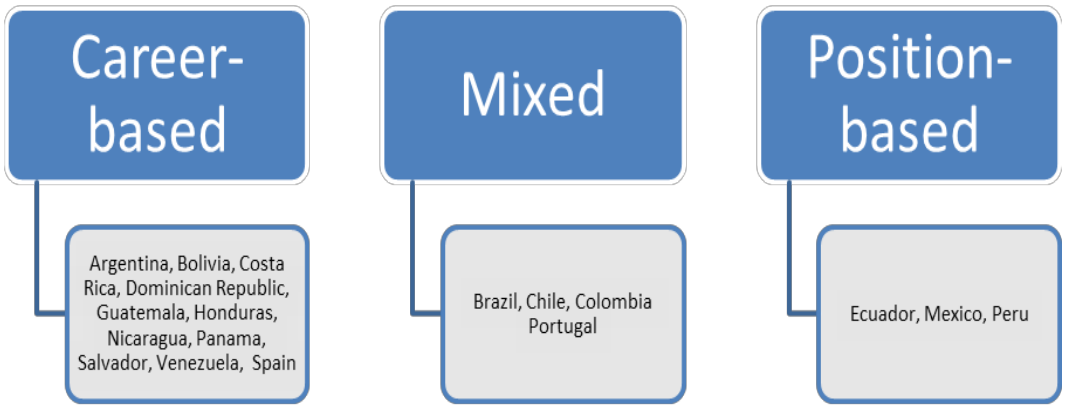
Throughout Singapore, talent is identified and nurtured rather than being left to chance. After three years of teaching, teachers are assessed annually to see which of three career paths would best suit them – master teacher, curriculum or research specialist, or school leader. Each path offers salary increments. Teachers with potential to become school leaders are moved to middle management teams and receive training for their new roles. Middle managers are assessed for their potential to become vice principals, and later, principals. Each stage involves a range of experience and training to prepare candidates for school leadership and innovation.

Source: OECD (2011[23]), *Lessons from PISA for the United States*, http://dx.doi.org/10.1787/9789264096660-en.

Career-based and position-based systems in Ibero-America

Figure 3.5 classifies some of the Ibero-American education systems based on the two systems described above. It is important to keep in mind that no systems use entirely one approach or the other, so this classification is based on the main emphasis of each system.

Figure 3.5. Teachers' career structures in Ibero-America



Source: UNESCO (2015[9]), *Las carreras docentes en América Latina. La acción meritocrática para el desarrollo profesional*, http://unesdoc.unesco.org/images/0024/002440/244074s.pdf; Eurydice (2018[22]), *Teaching Careers in Europe: Access, Progression and Support*, http://dx.doi.org/10.2797/708723.

As the figure shows, most systems in the region (where information was available) can be classified as career-based. However, one recent development has been the transition to an approach combining elements of both types of structure, as seen in Brazil, Chile, Colombia and Portugal (Box 3.3). This "mixed" formulation usually reflects the introduction of performance evaluation and training, on top of seniority, as the criteria for career advancement.

Challenges facing career-based and position-based systems

It is important to acknowledge high-quality teachers and both systems can provide good-quality instruction. Indeed, a recent OECD review found that both career-based and position-based approaches can be found among the countries and economies with high-performing systems (OECD, 2018[6]). Thus, the success of an education system does not rely solely on which system is used, but adequately responding to the challenges each of these configurations offer.

The challenges facing career-based systems are usually qualitative, as they lack the flexibility needed to match schools' needs with teachers' competencies and skills (OECD, 2005[2]; Elacqua et al., 2017[21]). The same structure that allows teachers to have a secure and prolonged career often means employers not having enough flexibility to hire or dismiss teachers, which affects schools' capacity to build a staff profile that meets their local needs.

Furthermore, these systems tend to lack incentives for teachers to continue their professional development once they reach tenure. As mentioned above, the usual mechanisms for promotions involves teachers taking on administrative responsibilities and becoming part of the school management.

These shortcomings of career-based systems could be tackled by introducing flexible employment positions; forging stronger links between initial teacher education, selection processes and professional development; and giving school leaders more freedom to set performance objectives (OECD, 2005[2]).

In position-based systems, career pathways tend to follow a market-like structure, where teachers compete for attractive positions in terms of additional responsibilities (e.g. becoming a mentor), type of school (e.g. schools with a high proportion of high achievers) or school location (e.g. schools in central areas instead of remote or unpopulated ones).

Position-based systems tend to be less regulated than career-based ones and often show greater levels of inequality regarding the allocation of higher-quality teachers across schools. Indeed, a recent PISA study showed that countries with a more position-based system could end up with fewer qualified teachers in the most disadvantaged schools (OECD, 2018[6]).

In Ibero-America, it is a common practice to assign the better-qualified candidates to the schools of their preference. Usually these schools are close to their homes, similar to their place of origin and with students with high socio-economic background (Elacqua et al., 2017, p. 41[21]). In contrast, the less well-qualified teachers are usually assigned to the remaining positions – in schools in remote places and with a considerable proportion of students coming from a low socio-economic background. Thus, the schools that need the best-qualified teachers the most are receiving the less qualified ones, which perpetuates the inequalities of the system (Elacqua et al., 2017[21]). To counteract this tendency, countries like Chile, Colombia, Mexico, Peru and some of the Brazilian districts have chosen to offer monetary incentives to attract the best-qualified teachers to the most remote rural areas (Elacqua et al., 2017[21]).

Position-based systems also tend to show high turnover rates as teachers' salaries usually plateau early in their careers. The greater mobility that these systems usually exhibit make it hard for schools to retain a core group of experienced teachers.

Policy responses to these issues consist of emphasising system-wide criteria for staff selection, performance evaluation and career pathways. Having common criteria which clearly define the profile required for each position provides guidance in a system that must accommodate teachers' own preferences for posts.

Because schools and local authorities play such a critical role in personnel management, and tailoring school programmes and staff profiles to meet local needs, countries with position-based systems also need to place comparatively greater emphasis on the selection and training of principals and other school leaders. Because the processes of teacher selection and management tend to be more market-like, schools in disadvantaged or unpopular locations need to be provided with significantly more resources to enable them to compete for high-quality teachers, and there needs to be much more differentiation in salaries and working conditions in order to attract the types of teachers that are in short supply. Uniform salaries and conditions are likely to result in an oversupply of some types of teachers, and shortages of others.

Box 3.3. Reforming teachers' career structures in Ibero-America

- Chile has recently developed the New System of Teacher Education Professional Development (*Sistema de Desarrollo Professional Docente*). This framework provides a 10-year plan (for 2016-26), which seeks to raise the quality of initial teacher preparation, coursework and practice teaching. It commits to developing and supporting teachers from entry into the profession and throughout their careers. It also develops a new career and pay structure for teachers, and aims to enhance the role of teachers and the teaching profession in the community. The system also applies to early childhood education teachers who were not previously part of the broader teaching system and therefore did not have opportunities for professional development or support (OECD, 2017[8]). Chile had already put its Teacher's Code in place, requiring school principals in municipal schools to be hired through a public competition, and have teaching qualifications and at least five years of teaching experience, as well as some training in school administration (Santiago et al., 2013[24]).
- Mexico implemented legislation in 2013 to create a Professional Teacher Service (*Servicio Profesional Docente*), aimed at professionalising teachers, school leaders and supervisors throughout their careers in terms of selection, recruitment, evaluation, training, career progression and incentives (OECD, 2015[7]).
- Portugal also introduced a lifelong training framework for teachers in 2014 that links continuing professional development to career progression to improve the quality of teaching (OECD, 2014[25]).
- In Colombia, the Let's All Learn programme (*Programa para la Transformación Educativa "Todos a Aprender"*), is the leading initiative to improve pre-school and primary school teachers' skills in Colombia's most disadvantaged schools. It builds upon the experience of the Programme of Rural Education which aimed to raise teaching skills through school-based coaching methods, strong pedagogical content strategies and well-sequenced instruction. It uses a cascading teacher training model (where a group of teachers receive training or education in a particular topic and, once they are proficient, train the next group of teachers) and 100 trainers have provided pedagogical and didactic strategies to 3 000 mentor teachers who in turn provide on-site support for language and mathematics teachers to transform their classroom practices to improve student performance in Colombia's national test SABER 5. Between 2010 and 2014, the programme has benefited over 2 million primary education students, over 90 000 teachers and has supported 4 303 schools located in 833 municipalities (OECD, 2016[26]).

Source: OECD (2018[27]) *Skills in Ibero-America: Insights from PISA 2015*, www.oecd.org/pisa/sitedocument/Skills-in-Ibero-America-Insights-from-PISA-2015.pdf, p. 139.

Conclusions

The purpose of this chapter was to provide an overview of the situation regarding the attraction and selection of teachers in Ibero-America. In many Ibero-American countries, the 15-year-olds who plan to become teachers have lower levels of academic proficiency than those planning to join other professions, whereas in high-performing countries the

differences between these groups are not significant. Ibero-American teachers do not perceive teaching to be valued by society compared to teachers in high-performing systems like Finland and Singapore, suggesting the profession lacks prestige.

The region shows a great deal of variety over the criteria for selection into initial teacher education programmes. Some systems require a competitive exam to enter the profession, and the length of programmes also varies.

An important component for attracting teachers is building comprehensive career structures. Career pathways can be divided into career-based systems and position-based ones. Both types of models can be found in the region. Studies of high-performing education systems have found that success does not depend on one particular system, but rather on recognising and countering either system's individual weaknesses. Countries with career-based systems, which offer generally stable career structures, should provide teachers with more flexibility and opportunities for horizontal promotions and recognition of teachers' performance. Similarly, those with position-based career structures should use clear frameworks outlining what is required at each level in the profession.

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Chapter 4. Can teacher sorting compensate for student disadvantage?

This chapter assesses the extent of teacher sorting across schools and its relation to equity in education. It starts by describing how teachers are distributed between more- or less-advantaged schools. It then examines the relationships between indicators of inequity in teacher sorting and inequality in student performance. The chapter concludes with the implications for policies that might lead to more equitable education systems.

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.

The sorting of students from different socio-economic backgrounds across schools and by study programme, school composition, sector or location has been extensively analysed, including from a comparative perspective (OECD, 2016, pp. 155-181[1]; Van de Werfhorst and Mijs, 2010[2]). In comparison, little attention has been paid to the way teachers vary, in number and in quality, across schools with different student profiles, and to the influence of this variation on equity in student performance.

Box 4.1. What the data tell us

In Chile, Colombia, Mexico, Peru, Portugal, Spain and Uruguay, disadvantaged public schools tend to have smaller classes and/or smaller student-teacher ratios than advantaged public schools, but none of these countries clearly allocate the most-qualified and experienced teachers to the most-challenging schools. In Brazil, Costa Rica and the Dominican Republic, disadvantaged public schools have about the same number of teachers as the more-advantaged public schools and these teachers tend to have similar qualifications, irrespective of the school's socio-economic profile.

In all ten Ibero-American countries analysed in this chapter, either principals or teachers working in the most-disadvantaged schools are more likely to report that teacher shortages hinder learning than those working in the most advantaged schools.

Cross-country correlations show that gaps in student performance related to socio-economic status are wider when fewer qualified and experienced teachers operate in socio-economically disadvantaged schools than in advantaged schools but gaps in student performance are similar across countries, regardless of how class size in disadvantaged schools compares to class size in advantaged schools.

Source: OECD (2018[3]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en.

Existing national or local studies often show that, compared to more-advantaged schools, disadvantaged schools in many places tend to have teachers with weaker academic credentials, and who are less qualified or not fully certified (Darling-Hammond, 2004[4]; Rivkin, Hanushek and Kain, 2005[5]; Clotfelter, Ladd and Vigdor, 2005[6]; Murnane and Steele, 2007[7]; Donitsa-Schmidt and Zuzovsky, 2016[8]; Goldhaber, Lavery and Theobald, 2015[9]). Disadvantaged schools are also found to suffer from higher staff turnover rates on average (Allen, Burgess and Mayo, 2017[10]).

Educators and policy makers in many countries seem acutely aware of the fact that inequities in access to good-quality teachers may jeopardise the chances of disadvantaged students succeeding at school. In an effort to level the field for disadvantaged students, several countries, including Chile and Portugal (OECD, 2012[11]), invest more teaching resources in disadvantaged schools or areas, to reduce class sizes and/or increase teaching hours. Some countries and economies, including Australia, England (United Kingdom), France, Germany, Sweden and the United States have also introduced policies that award financial bonuses to teachers in high-poverty or remote schools or reduce the weight given to length of service when assessing teachers' requests to move schools (OECD, 2005, p. 50[12]; Clotfelter et al., 2008[13]; Karsten, 2006[14]). However, recent research continues to find differences in teacher resources and quality related to student disadvantage (Knight, 2016[15]; Steele et al., 2015[16]). More generally, policy makers in several countries, including Uruguay, have expressed concern about the difficulty of retaining high-quality teachers in their most difficult schools, in the context of recent national School Resources Reviews (OECD, 2017[17]).

This chapter, based on analyses originally published in the *Effective Teacher Policies* report (OECD, 2018[3]), aims to contribute a first-of-its-kind comparative assessment of teacher sorting across schools and its relationship to equity in education. It first compares the ten Ibero-American countries covered by this chapter – Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Mexico, Peru, Portugal, Spain and Uruguay – in terms of how teachers and their characteristics are distributed across schools. It then examines the relationships for all participating countries and economies, between indicators of inequity in teacher sorting and inequality in student performance as measured by the OECD Programme for International Student Assessment (PISA).[1]

In accordance with existing research (Murnane and Steele, 2007[7]; Goldhaber, Lavery and Theobald, 2015[9]), this chapter mainly compares the teaching resources in schools of varying socio-economic profiles. The analysis divides all the schools in each PISA-participating education system into four groups with approximately equal number of students (quarters), based on the average PISA index of economic, social and cultural status (ESCS) of their 15-year-old students. Schools in the bottom quarter are referred to as "disadvantaged schools" and schools in the top quarter are referred to as "advantaged schools". In the following sections, a statistically significant difference between advantaged and disadvantaged schools in a given resource parameter is interpreted as an unequal distribution of that resource; if there is more of a given resource in socio-economically advantaged schools, the observed disparity is considered inequitable.

Several studies have also highlighted teacher resource gaps between rural and urban areas, for instance in the United States (Lankford, Loeb and Wyckoff, 2002[18]); urban-rural disparities in educational opportunities are also a frequent concern in low- and middle-income countries (UNESCO, 2015[19]). This chapter compares the teachers of schools attended by 15-year-old students in three types of school location: 1) rural areas or villages of fewer than 3 000 people; 2) towns of 3 000 to 100 000 people; and 3) cities of over 100 000 people. The main results for differences between urban and rural schools are highlighted in Box 4.2 and Box 4.4 at the relevant points in the chapter.

The study constructed the indicators of teaching resources using teachers' responses to the optional teacher questionnaire distributed in 19 countries and economies, including Brazil, Chile, Colombia, the Dominican Republic, Peru, Portugal and Spain. It also used principals' responses to the PISA school questionnaire, distributed in all PISA-participating countries and economies, which includes Argentina,[2] Costa Rica, Mexico and Uruguay as well as the seven countries listed above.

The surveyed teachers received slightly different questionnaires, depending on the main school subject they teach. Teachers who were listed by school administrators as teaching science subjects (e.g. physics, biology or chemistry), whether separately or within a single "integrated science" course, answered a questionnaire that included more science-focused questions (as science was the main domain of assessment of PISA 2015). These teachers are referred to as "science teachers" in the following sections. The remaining teachers, who were listed and sampled separately, are referred to as "non-science teachers".

All the analyses presented in this chapter are restricted to principals and teachers working in schools that include the modal ISCED level for 15-year-old students.[3] This ensures the characteristics of students sampled for PISA, which inform the indicators of school advantage, represent the typical profile of students attending the school. This allows for fairer cross-country comparisons of the way typical teachers of 15-year-olds are sorted across schools.

The findings reported in the chapter cover both public and private schools. However, as teacher sorting is fundamentally shaped by policies determined by national or local authorities (OECD, 2005[12]), the chapter also includes analyses carried out on the smaller sample of public and government-dependent private schools only.

How does teacher quantity differ across schools?

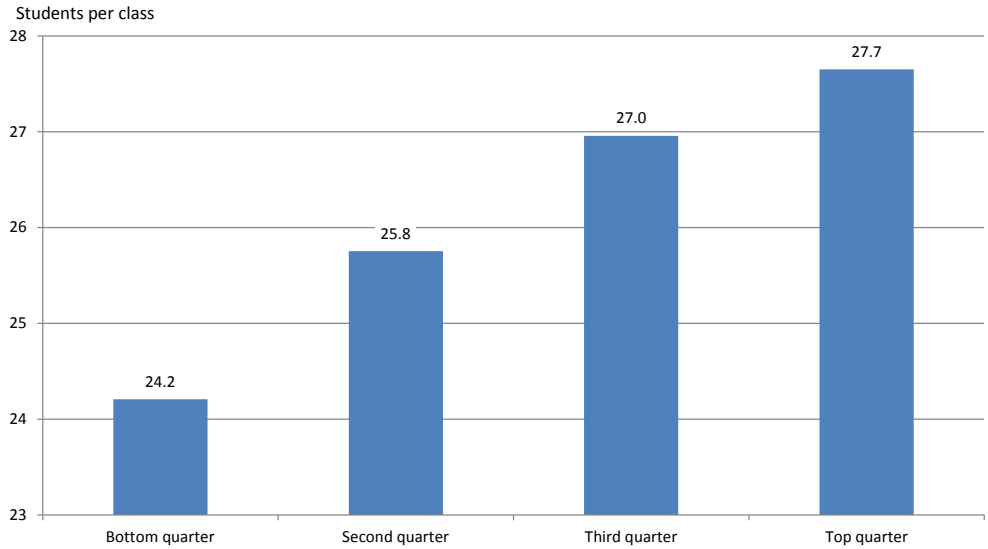
Class size and student-teacher ratio

Class size and student-teacher ratios are objective indicators of the quantity of teacher resources allocated to schools. In fact, they are often a policy response to school disadvantage. PISA results indicate that many education systems may be reducing the size of classes, or the student-teacher ratio, in an effort to support socio-economically disadvantaged schools.

PISA asked school principals to report the average size of language-of-instruction[4] classes in the national modal grade for 15-year-old students (Figure 4.1 and Table 4.1). According to principals, on average across OECD countries, there were 24.2 students per class in schools in the bottom quarter of school socio-economic profile, while there were 27.7 students per class in the schools of the top quarter. This makes for a significant difference of more than three students per class between socio-economically advantaged and disadvantaged schools, confirming that more teacher resources are allocated to disadvantaged schools, on average. A similar positive and significant difference was also found in four education systems in Ibero-America: Colombia, Mexico, Peru and Portugal. No significant difference in average class size between advantaged and disadvantaged schools was found, in contrast, in Brazil, Chile, Costa Rica, the Dominican Republic, Spain and Uruguay (Table 4.1).

Figure 4.1. Average class size, by school socio-economic profile

OECD average



Source: OECD (2018[20]), *PISA 2015 Database*, www.oecd.org/pisa/data/2015database/; OECD (2018[3]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en, Table 3.1.

Table 4.1. Comparing teacher resources in disadvantaged and advantaged schools

Ibero-American countries

Disadvantaged schools are better off compared to advantaged schools
Disadvantaged schools are worse off compared to advantaged schools
Difference not significant
Missing values

	Objective indicators		Subjective indicators			
	Principals' reports		Principals' reports		Science teachers' reports	Non-science teachers' reports
	Class size (number of students)	Number of students per teacher	Teacher shortages hindering learning	Teacher absenteeism hindering learning	Teacher shortages hindering learning	Teacher shortages hindering learning
	dis. | *adv.*	*dis.* | *adv.*	*dis.* | *adv.*	*dis.* | *adv.*	*dis.* | *adv.*	*dis.* | *adv.*
Brazil	37 | 34	22 | 21	31% | 16%	32% | 16%	36% | 13%	34% | 15%
Chile	32 | 33	16 | 18	17% | 8%	43% | 23%	23% | 10%	17% | 11%
Colombia	30 | 35	24 | 20	51% | 26%	17% | 10%	47% | 22%	42% | 21%
Costa Rica	30 | 28	17 | 17	44% | 50%	28% | 42%		
Dominican Republic	37 | 35	22 | 17	44% | 8%	7% | 3%	33% | 4%	41% | 13%
Mexico	34 | 40	17 | 15	42% | 14%	2% | 15%		
Peru	25 | 28	13 | 15	32% | 11%	15% | 11%	31% | 12%	29% | 11%
Portugal	24 | 27	10 | 12	47% | 28%	12% | 8%	28% | 22%	38% | 29%
Spain	29 | 28	11 | 15	71% | 24%	2% | 0%	66% | 32%	64% | 26%
Uruguay	25 | 26	11 | 11	61% | 27%	67% | 43%		
Education systems where disadvantaged schools are better off	4	2	0	1	0	0
Education systems with no difference	6	7	3	7	2	1
Education systems where advantaged schools are worse off	0	1	7	2	5	6

Note: Countries are listed in alphabetical order.
Source: OECD (2018[20]), *PISA 2015 Database*, www.oecd.org/pisa/data/2015database/; OECD (2018[3]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en.

However, many of the most advantaged schools in Ibero-American countries are private schools, which receive the majority of their funding from student fees and other private sources. When considering only public and private but government-dependent schools (those receiving the majority of their funding from the government), the difference in average class size between advantaged and disadvantaged schools is often larger, and, in addition to the four countries mentioned before, Uruguay also shows a significant difference in favour of disadvantaged schools (Table 4.2).

Table 4.2. Comparing teacher resources in disadvantaged and advantaged public schools

Ibero-American countries; public and government-dependent private schools

Disadvantaged schools are better off compared to advantaged schools
Disadvantaged schools are worse off compared to advantaged schools
Difference not significant
Missing values

	Objective indicators		Subjective indicators	
	Principals' reports		Principals' reports	
	Class size (number of students)	Number of students per teacher	Teacher shortages hindering learning	Teacher absenteeism hindering learning
	dis. | *adv.*	*dis.* | *adv.*	*dis.* | *adv.*	*dis.* | *adv.*
Brazil	36 | 38	22 | 21	26% | 31%	29% | 44%
Chile	32 | 35	16 | 21	18% | 16%	36% | 22%
Colombia	30 | 40	25 | 31	55% | 54%	13% | 20%
Costa Rica	30 | 28	18 | 18	42% | 49%	31% | 43%
Dominican Republic	35 | 40	24 | 20	40% | 27%	9% | 0%
Mexico	33 | 44	17 | 27	42% | 23%	3% | 25%
Peru	24 | 31	13 | 22	33% | 32%	18% | 15%
Portugal	24 | 28	10 | 11	50% | 38%	12% | 9%
Spain	29 | 28	11 | 15	71% | 32%	3% | 0%
Uruguay	24 | 30	11 | 14	62% | 47%	64% | 71%
Education systems where disadvantaged schools are better off	5	5	0	1
Education systems with no difference	5	5	8	9
Education systems where advantaged schools are worse off	0	0	2	0

Note: Countries are listed in alphabetical order.
Source: OECD (2018[20]), *PISA 2015 Database*, www.oecd.org/pisa/data/2015database/; OECD (2018[3]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en.

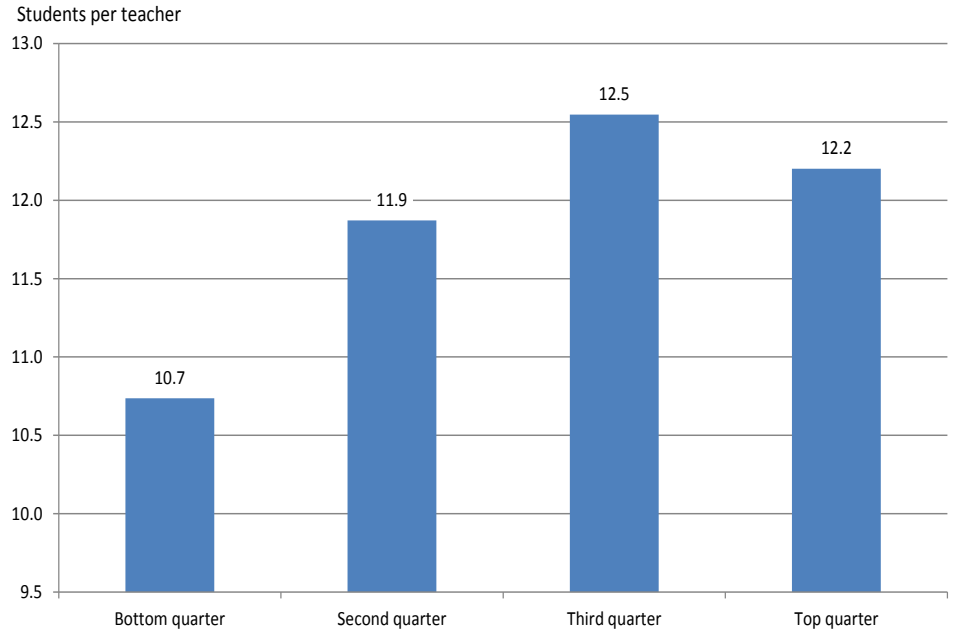
Principals were also asked to report the number of teachers working part time and full time in their schools, and the total number of students. From this, a student-teacher ratio, accounting for part-time teaching, was computed. Unlike the size of language-of-instruction classes, the student-teacher ratio pertains to all school subjects. Class size and student-teacher ratios are strongly related to each other (OECD, 2016, p. 205[21]), but student-teacher ratios can provide a better proxy of per-pupil expenditure.

As expected, on average across OECD countries, the difference in student-teacher ratios between advantaged and disadvantaged schools also shows a difference in favour of disadvantaged schools (10.7 students per teacher in disadvantaged schools, compared to

12.2 students per teacher in advantaged schools; Figure 4.2). A similar difference is also found in Portugal and Spain, but not in any of the Latin American countries participating in PISA; in fact, Colombia even shows an inverse pattern, with a lower student-teacher ratio in advantaged schools than in disadvantaged ones (Table 4.1). After excluding private independent schools, however, Chile, Mexico and Peru, as well as Portugal and Spain, show a pattern of compensation for student disadvantage and the difference in Colombia is no longer significant (Table 4.2).

Figure 4.2. Average student-teacher ratio, by school socio-economic profile

OECD average



Source: OECD (2018[20]), *PISA 2015 Database*, www.oecd.org/pisa/data/2015database/; OECD (2018[3]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en, Table 3.3.

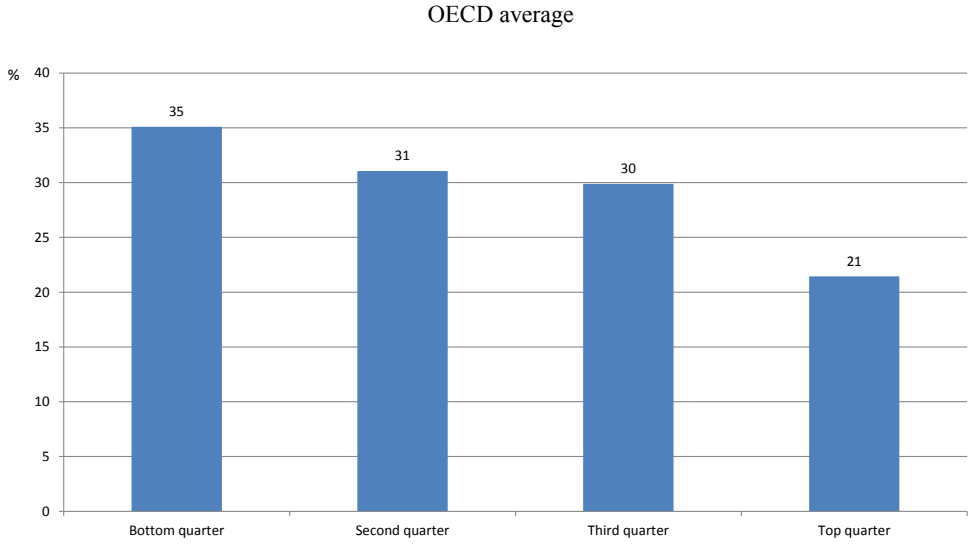
Principals' and teachers' views of teaching staff shortages

Objective measures of the quantity of teacher resources, such as class size and student-teacher ratios, show that many education systems allocate more teacher resources to socio-economically disadvantaged schools than to advantaged schools. However, principals and teachers in disadvantaged schools are more likely to report that a lack of teaching staff hinders student learning in their schools. Comparing objective and subjective measures of the quantity of teacher resources available within schools gives a clearer picture of the issue of teacher shortages.

The quantity of teacher resources available and the impact on student learning can also be measured by the extent to which school principals and teachers feel a lack of teaching staff hinders their school's capacity to provide instruction ("not at all", "very little", "to some extent" or "a lot"; Figure 4.3 and Table 4.1. Across OECD countries, 29% of 15-year-old students were enrolled in schools whose principal considered that a lack of teaching staff was hindering learning at least to some extent. In the disadvantaged schools, this rose to 35% of students, compared to only 21% in the advantaged schools, a

significant difference of 14 percentage points at the expense of disadvantaged schools. A similarly significant difference was also observed in seven of the ten Ibero-American education systems, with large differences in the Dominican Republic, Spain and Uruguay. Only Chile, Costa Rica and Uruguay show no significant difference in principals' perceptions between advantaged and disadvantaged schools (Table 4.1). These differences appear to be driven, to a large extent, by private, independent schools, whose students are among the wealthiest in their country. After excluding these schools, the difference in perceptions of teacher shortages between advantaged and disadvantaged schools is only significant in Mexico and Spain (Table 4.2).

Figure 4.3. Principals' perceptions of teacher shortages, by school socio-economic profile



Source: OECD (2018[20]), *PISA 2015 Database*, www.oecd.org/pisa/data/2015database/; OECD (2018[3]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en, Table 3.5.

Teachers in countries and economies that participated in the PISA 2015 teacher questionnaire were also asked about teacher shortages. Their answers, on aggregate, are very similar to those of principals in their schools, and show that in most countries in Ibero-America, teacher shortages that hinder student learning are perceived to be more prevalent in disadvantaged schools than in advantaged schools – at least when considering both public and private schools (Table 4.1).[5]

Teacher absenteeism can be seen as a temporary form of teacher shortage, and is often perceived as such. PISA asked principals the extent ("not at all", "very little", "to some extent" or "a lot") to which student learning is hindered by teacher absenteeism. Across countries in Ibero-America, concerns about teacher absenteeism appear to be more balanced between advantaged and disadvantaged schools than concerns about teacher shortages. In Brazil and Uruguay, principals of disadvantaged schools are more likely to express such concerns than principals of advantaged schools, but the difference is no longer significant when considering only public and government-dependent private schools (Table 4.1 and Table 4.2).

Box 4.2. Teacher resources in rural and urban schools

Indicators of teacher resources can also be compared across rural and urban schools. Rural schools are schools located in rural areas or villages with fewer than 3 000 people, while urban schools are schools located in cities with over 100 000 people.

In Brazil and Colombia, rural schools had smaller classes on average than urban schools, by at least 10 students per class. A significant difference was also observed in Mexico, Peru, Portugal, Spain and Uruguay. Urban schools also tend to have higher student-teacher ratios. These differences might result from deliberate policies to allocate more teacher resources to rural than urban schools; but they more likely reflect the population distribution across rural and urban areas and responses to local education demands. When countries choose to maintain schools in sparsely populated areas, they must often reduce class sizes and the student/teacher ratio below the national average in order to do so.

Source: OECD (2018[3]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en.

How does teacher quality differ across schools?

Many education systems compensate for schools' socio-economic disadvantage by increasing the number of teachers. However, studies conducted on national or local data have shown that investing in more teachers often comes at the cost of quality. Several states in the United States that have implemented policies to reduce class sizes have shown a decline in the quality of teacher recruitment (Jepsen and Rivkin, 2009[22]; Dieterle, 2015[23]). In France, a policy allocating more resources to priority education zones has probably also inadvertently cast these zones in a negative light, to the extent that families might choose to avoid these areas if they can, thereby aggravating socio-economic segregation (Davezies and Garrouste, 2014[24]); prospective teachers might perceive schools in these zones to be low-quality work environments (Prost, 2013[25]). The policy also triggered adverse effects on local teacher teams, such as greater uncertainty in teacher assignments to schools (assignments were only completed closer to the start of a new school year), the recruitment of less-experienced teachers and higher turnover rates (Bénabou, Kramarz and Prost, 2009[26]).

While such national studies reveal the possible unintended consequences of teacher-allocation mechanisms that aim to compensate for student disadvantage with more teacher resources, many countries do not have evidence about what they mean for teacher quality. This section describes, from an internationally comparative perspective, how teacher quality is distributed across schools with different socio-economic profiles. It relies on both objective and subjective measures of teacher quality through a series of PISA indicators for teachers' initial education, qualifications, experience and behaviour.

Teacher education and qualification

Teachers' pre-service education and training aims to equip them with the skills they need to help students learn. Because the content and the quality of teachers' education can affect student learning (Clotfelter, Ladd and Vigdor, 2007[27]; Clotfelter, Ladd and Vigdor, 2010[28]; Darling-Hammond, 2004[4]; Monk, 1994[29]; Ronfeldt and Reininger, 2012[30]), the distribution of high-quality teachers across schools can influence equity in student performance.[6] Specifically, some studies have found that students taught by

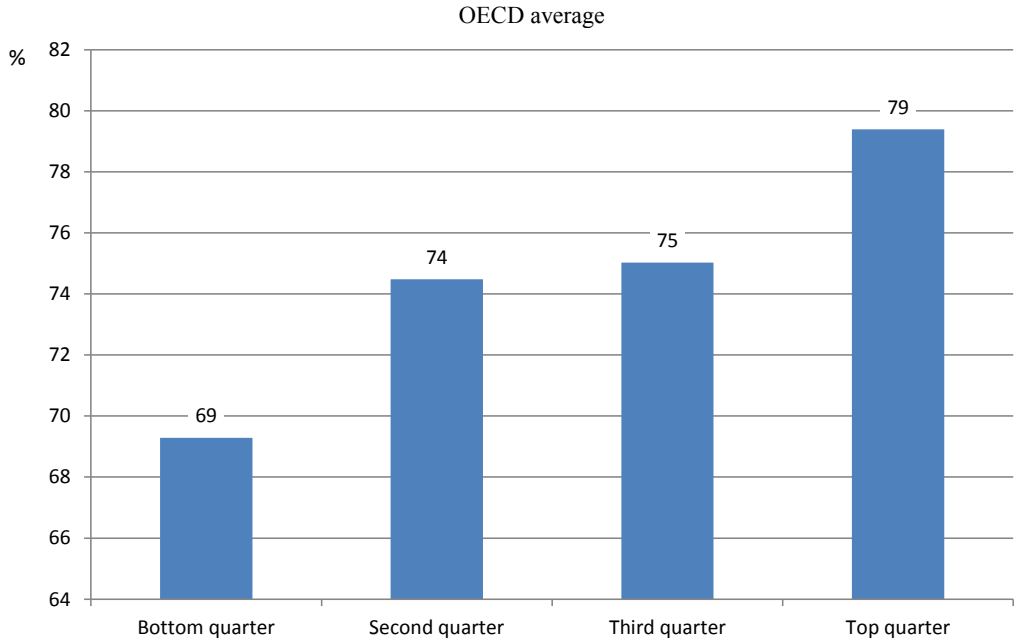
teachers who hold a subject-specific certification do better in that subject; see Akiba, LeTendre and Scribner (2007[31]) for a review.

At the same time, teachers' credentials and certification can influence their employment conditions, such as their salaries, volume of teaching duties or school assignment. Teachers with more education and/or more specialised training might work in different schools, either because teachers with higher credentials are given more choice in school assignment or because education authorities allocate teachers to different school tracks based on their qualifications.

PISA asked school principals to report the proportion of science teachers with a university degree and a major in science (Figure 4.4), and to report the proportions of fully certified teachers and fully certified science teachers in their school. On average across OECD countries, 74% of science teachers had a university degree with a major in science, but only 69% of science teachers in disadvantaged schools fit this profile, compared to 79% in advantaged schools. This makes for a significant difference of 10 percentage points between the top and bottom quarters of school socio-economic profile, on average across OECD countries.

Similar differences were observed in three education systems in Ibero-America: Brazil, Costa Rica and Mexico (Table 4.3). In Brazil and Costa Rica, the gaps are slightly smaller, and no longer significant, when the sample is restricted to public and government-dependent private schools.

Figure 4.4. Science teachers with a university major in science, by school socio-economic profile



Source: OECD (2018[20]), *PISA 2015 Database*, www.oecd.org/pisa/data/2015database/; OECD (2018[3]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en.

Table 4.3. Comparing teacher qualification levels between advantaged and disadvantaged schools

Ibero-American countries; results based on principals' reports

Disadvantaged schools have better resources compared to advantaged schools
Disadvantaged schools have worse resources compared to advantaged schools
Difference not significant
Missing values

	All schools		Public and private, government-dependent schools only	
	Proportion of science teachers with a major in science	Proportion of fully certified teachers	Proportion of science teachers with a major in science	Proportion of fully certified teachers
	dis. | *adv.*	*dis.* | *adv.*	*dis. vs adv.*	*dis. vs adv.*
Brazil	21% | 39%	84% | 83%	22% | 35%	84% | 88%
Chile	83% | 80%	32% | 27%	83% | 80%	33% | 23%
Colombia	82% | 79%	10% | 13%	82% | 91%	10% | 9%
Costa Rica	93% | 100%	88% | 94%	95% | 100%	95% | 94%
Dominican Republic	67% | 57%		66% | 73%	
Mexico	53% | 78%	57% | 33%	53% | 79%	58% | 23%
Peru	18% | 24%	92% | 76%	18% | 54%	91% | 90%
Portugal	83% | 84%	92% | 98%	83% | 80%	92% | 98%
Spain	86% | 86%	91% | 92%	86% | 85%	91% | 95%
Uruguay	6% | 10%	54% | 63%	6% | 6%	54% | 68%
Education systems where disadvantaged schools have more qualified science teachers	0	2	0	1
Education systems with no difference	7	5	9	8
Education systems where advantaged schools have more qualified science teachers	3	2	1	0

Note: Countries are listed in alphabetical order. In Chile, the question about the certification of teachers was adapted as "authorised or enabled by the Ministry of Education". In countries/economies where the standard error for the difference between advantaged and disadvantaged schools could not be estimated, percentage-point differences in excess of five points are reported as significant.
Source: OECD (2018[20]), *PISA 2015 Database*, www.oecd.org/pisa/data/2015database/; OECD (2018[3]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en.

When it comes to the proportions of fully certified teachers, on average across OECD countries the most socio-economically advantaged schools employed more fully certified science teachers than the least advantaged schools, by 6 percentage points. However, among Ibero-American countries, only Portugal and Uruguay showed a similar pattern (in both countries, the gap is similar, but no longer statistically significant, when considering only public and government-dependent private schools). In contrast, Mexico and Peru had larger proportions of fully certified teachers in disadvantaged schools (although the difference is no longer significant in Peru when only public and government-dependent private schools are considered (Table 4.3).

Teacher experience

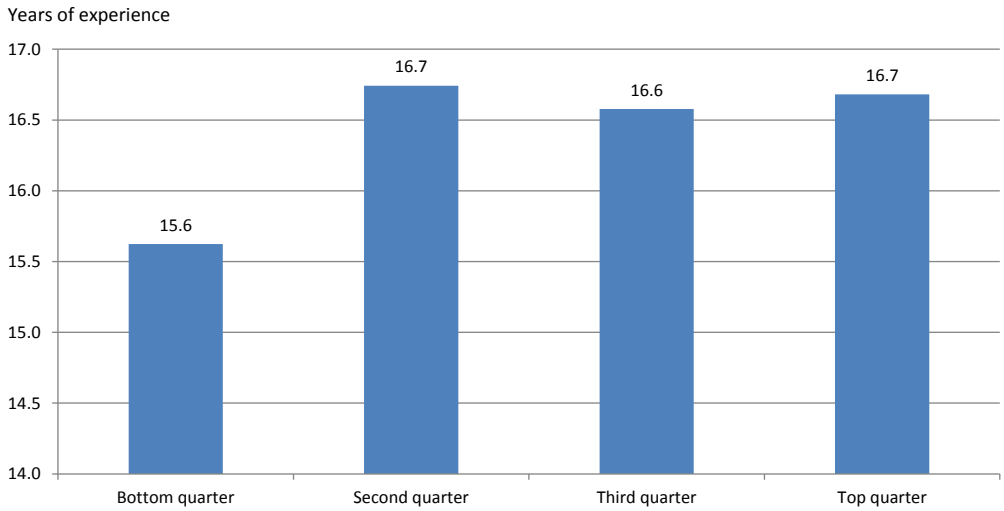
Along with initial education and certification, teachers' work experience helps shape their skills and competencies. Their number of years of experience may be particularly important early in teachers' careers. Some evidence shows that each additional year of experience is related to greater student achievement, especially during a teacher's first five years in the profession (Rockoff, 2004[32]; Rivkin, Hanushek and Kain, 2005[5]; Harris and Sass, 2011[33]). At the same time, teachers' willingness to implement innovative practices or reforms might also decline with age and experience (Goodson, Moore and Hargreaves, 2006[34]).

The relationship between teacher experience and student learning has been repeatedly analysed in empirical studies (Hanushek and Rivkin, 2006[35]; Croninger et al., 2007[36]; Leigh, 2010[37]; Jackson, Rockoff and Staiger, 2014[38]). Most studies find that teacher experience and student achievement are positively related. Assigning more experienced teachers to disadvantaged schools could therefore be a way to compensate for student disadvantage.

In the countries and economies that distributed the PISA 2015 teacher questionnaire, teachers were asked to report how many years of teaching experience they have in total (Figure 4.5 and Table 4.4). On average across 18 education systems,[7] both science and non-science teachers reported having about 16.4 years of teaching experience. However, teachers in schools in the top quarter by socio-economic profile had about one more year of experience, on average, than teachers in bottom-quarter schools. Among Ibero-American countries, advantaged schools in the Dominican Republic and Portugal employed significantly more experienced teachers than disadvantaged schools did, both in science and in subjects other than science. This might reflect different teacher retention rates across schools or mobility schemes which give teachers with more years of service priority in choosing schools.

Figure 4.5. Average teacher experience, by school socio-economic profile

Average across countries and economies that distributed the PISA 2015 teacher questionnaire; non-science teachers



Note: The average includes all countries that distributed the PISA teacher questionnaire, except Malaysia.
Source: OECD (2018[20]), *PISA 2015 Database*, www.oecd.org/pisa/data/2015database/; OECD (2018[3]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en.

Table 4.4. Comparing teacher characteristics between advantaged and disadvantaged schools

Ibero-American countries; results based on teachers' reports

Disadvantaged schools have better resources compared to advantaged schools
Disadvantaged schools have worse resources compared to advantaged schools
Difference not significant

	Non-science teachers' reports			
	Average years of experience as teachers	Average years of seniority in school	Proportion of non-science teachers who are trained or certified in all subjects they teach	Proportion of science teachers with a fixed-term contract (one school year or less)
	dis. | *adv.*	*dis.* | *adv.*	*dis.* | *adv.*	*dis.* | *adv.*
Brazil	15 | 15	8 | 7	80% | 86%	20% | 4%
Chile	15 | 14	10 | 8	88% | 92%	26% | 17%
Colombia	16 | 18	9 | 9	87% | 89%	2% | 48%
Dominican Republic	11 | 16	6 | 9	80% | 87%	3% | 11%
Peru	12 | 14	6 | 7	88% | 88%	52% | 59%
Portugal	21 | 25	10 | 13	92% | 92%	15% | 9%
Spain	17 | 18	8 | 13	88% | 83%	24% | 8%
Education systems where disadvantaged schools have better resources	0	0	0	1
Education systems with no difference	5	4	6	2
Education systems where advantaged schools have better resources	2	3	1	4

Note: Countries are listed in alphabetical order.
Source OECD (2018[20]), *PISA 2015 Database*, www.oecd.org/pisa/data/2015database/; OECD (2018[3]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en.

Advantaged schools may provide more satisfactory working conditions for teachers, and are thus able to retain teachers longer. Teachers in these schools might, for example, be more familiar with their students' backgrounds and the issues they might face. They might spend more time on instruction and less time on managing students' behavioural problems (and prefer doing so), because they can count on students' families to provide complementary efforts in education and discipline. Teachers in advantaged schools might also benefit from a stronger collaborative culture and instructional leadership in the school, or from the formal or informal feedback they receive about their effectiveness, through their students' performance and success in life. In some countries, advantaged schools might offer higher wages than disadvantaged schools; but often non-monetary perks, such as better professional equipment, or shorter or more pleasant commutes might justify a preference for working in more-advantaged schools. Recent analysis carried out on PISA 2015 data indeed indicate that teachers tend to be more satisfied with their jobs

when they work in socio-economically advantaged schools, even after accounting for school performance (Mostafa and Pál, 2018[39]).

If most teachers share a similar preference for working in advantaged schools, teacher mobility between schools can reinforce the sorting of teachers by experience. Advantaged schools become associated with higher status, and are more attractive to teachers who would like to move up a ladder of prestige and perhaps enjoy working with colleagues at a similar career stage to their own.

Teacher mobility between schools (rather than out of the profession entirely) might play a significant role in the sorting of experienced teachers in countries where teachers are employed as civil servants and, once recruited, allocated to positions according to rules that operate at the system level rather than at the school level. This so-called career-based employment (OECD, 2005[12]) is the system used in most countries in Ibero-America (see Chapter 3). In such education systems, internal mobility is often voluntary and priority is typically given to the more experienced teachers, who have greater choice of where they teach. The mandatory mobility schemes found in Japan and Korea (OECD, 2005, p. 159[12]), whereby teachers are assigned to a new school periodically, might uniformly increase turnover rates across all schools, and result in greater balance of experienced and beginning teachers across schools (Box 4.3).

Box 4.3. How Japan and Korea attract excellent teachers to disadvantaged schools

In Japan and Korea, high-quality teachers are at least as likely to teach in schools with high levels of student disadvantage as in advantaged schools, as shown by comparisons based on teachers' years of experience, being certified for all the subjects taught, and, for science teachers, having a university degree with a major in science.

In Japan, teachers are expected to periodically change schools throughout their career. This is intended to ensure that all schools have access to effective teachers and a balance of experienced and beginning teachers. The allocation of teachers to schools is decided by the local education authority, and the exact rules followed may differ.

In Korea, all teachers are held to high standards, which contributes to the country's high levels of performance and equitable distribution of teachers. Other elements contributing to the high calibre of the teaching force are the high status of teachers, job stability, high pay and positive working conditions, including high levels of teacher collaboration. Korea has a mandatory rotation scheme for teachers which means that teachers are required to move to a different school every five years. This scheme also offers multiple incentives to attract teachers to high-need schools, including additional salary, smaller classes, less instructional time, additional credit towards future promotion to administrative positions and the ability to choose their next school. The latter two incentives are seen as particularly attractive.

Source: OECD (2005[12]), *Teachers Matter: Attracting, Developing and Retaining Effective Teachers*, http://dx.doi.org/10.1787/19901496; OECD (2012[11]), *Equity and Quality in Education: Supporting Disadvantaged Students and Schools*, http://dx.doi.org/10.1787/9789264130852-en; Kang and Hong (2008[40]),"Achieving excellence in teacher workforce and equity in learning opportunities in South Korea", http://dx.doi.org/10.3102/0013189X08319571.

Teachers' length of service within a given school (seniority) might also positively influence their teaching. Evidence from the United States shows that teachers new to an assignment, whether new to a school, a subject or a grade, are not as effective as the more senior teachers within a school. Furthermore, disadvantaged students are slightly more likely to be assigned to such teachers (Atteberry, Loeb and Wyckoff, 2016[41]). Turnover, which is inversely related to average teacher seniority within a school, has also proven to be detrimental to student learning and to be more prevalent in disadvantaged schools (Hanushek, Rivkin and Schiman, 2016[42]; Ronfeldt, Loeb and Wyckoff, 2013[43]; Jackson, Rockoff and Staiger, 2014[38]; Boyd et al., 2008[44]).

Evidence from the United States has shown that teacher turnover has negative effects even though the teachers who leave their school are often the least-effective ones, particularly in schools that enrol predominantly low-income students (Hanushek and Rivkin, 2010[45]). Meanwhile, evidence of a positive association between the level of school disadvantage and the teacher turnover rate is also emerging for other countries including England (United Kingdom) (Allen, Burgess and Mayo, 2017[10]) and Italy (Barbieri, Rossetti and Sestito, 2013[46]).

In its teacher questionnaire, PISA asked teachers about the number of years they have worked as teachers in their current schools (Table 4.4). In the Dominican Republic, Portugal and Spain, teachers in advantaged schools have on average more seniority than teachers in disadvantaged schools. In these countries, socio-economically disadvantaged schools were subject to greater teacher turnover and therefore to team instability.

Other indicators derived from the teacher questionnaire also point towards disadvantaged schools having greater difficulties in filling staff vacancies. In four of the eight education systems in Ibero-America for which data are available (Brazil, Chile, Portugal and Spain), disadvantaged schools had a larger share of non-science teachers who are employed on a fixed-term contract for a period of one school year or less, compared to advantaged schools (Table 4.4); in Colombia, in contrast, disadvantaged schools had a smaller share of such teachers, compared to advantaged schools. In Brazil, non-science teachers in disadvantaged schools taught subjects that were not included in their teacher education, training or qualification programme more often than non-science teachers in advantaged schools did.

Principals' and teachers' views of teacher quality

Based on objective measures of teachers' initial education, qualification and work experience, PISA shows that very few countries compensate for student disadvantage by allocating their most-qualified and experienced teachers to high-needs schools, either through centralised or decentralised mechanisms. More subjective measures of teacher quality, based on school principals' and teachers' reports, tend to confirm and reinforce the findings of the objective indicators reported above.

PISA asked school principals and teachers to report the extent ("not at all", "very little", 'to some extent" or "a lot") to which they believe that learning in their school is hindered by "inadequate or poorly qualified teaching staff". According to both principals and teachers, schools in the bottom quarter of school socio-economic profile suffered more than schools in the top quarter from inadequate or poorly qualified teachers. When focusing on principals' views, the difference between advantaged and disadvantaged schools was significant in Mexico, Peru, Spain and Uruguay. In Peru, 40% of students attending disadvantaged schools have principals who reported learning being hindered by

poorly qualified teachers, but the share was only 13% of students attending advantaged schools (Table 4.5).

Table 4.5. Comparing perceptions of teacher quality in advantaged and disadvantaged schools

Ibero-American countries; results based on principals' and teachers' reports

Disadvantaged schools have better resources compared to advantaged schools
Disadvantaged schools have worse resources compared to advantaged schools
Difference not significant
Missing values

	Subjective perceptions: Student learning is hindered by…			
	Principals' reports		Science teachers' reports	Non-science teachers' reports
	Inadequate or poorly qualified teachers	Teachers not being prepared for classes	Inadequate or poorly qualified teachers	Inadequate or poorly qualified teachers
	dis. | *adv.*	*dis.* | *adv.*	*dis.* | *adv.*	*dis.* | *adv.*
Brazil	21% | 14%	32% | 13%	20% | 11%	23% | 9%
Chile	20% | 11%	30% | 24%	13% | 6%	11% | 4%
Colombia	33% | 22%	11% | 5%	20% | 12%	17% | 10%
Costa Rica	45% | 56%	22% | 22%		
Dominican Republic	22% | 2%	12% | 7%	17% | 7%	14% | 5%
Mexico	19% | 4%	5% | 5%		
Peru	40% | 13%	26% | 14%	28% | 14%	23% | 12%
Portugal	31% | 18%	10% | 0%	12% | 16%	16% | 15%
Spain	30% | 11%	13% | 2%	17% | 14%	17% | 13%
Uruguay	34% | 18%	44% | 13%		
Education systems where disadvantaged schools have better resources	0	0	0	0
Education systems with no difference	6	7	4	2
Education systems where advantaged schools have better resources	4	3	3	5

Note: Countries are listed in alphabetical order. In Chile, the question about the certification of teachers was adapted as "authorised or enabled by the Ministry of Education". In countries/economies where the standard error for the difference between advantaged and disadvantaged schools could not be estimated, percentage-point differences in excess of five points are reported as significant.
Source: OECD (2018[20]), *PISA 2015 Database*, www.oecd.org/pisa/data/2015database/; OECD (2018[3]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en.

Teachers' views were often similar to those of principals in those countries that distributed the PISA 2015 teacher questionnaire (Table 4.5). Significant differences between the reports of non-science teachers in advantaged schools and teachers in disadvantaged schools were observed in Brazil, Chile, Colombia, the Dominican

Republic and Peru; in Brazil, Chile and Peru, the difference was also significant among science teachers.

PISA also asked school principals from all participating countries and economies to report the extent ("not at all", "very little", 'to some extent" or "a lot") to which they believe that learning in their school is hindered by teachers not being well prepared for classes and teachers not meeting individual students' needs.

In Uruguay, 29% of students were enrolled in schools whose principals reported that the school's capacity to provide instruction is hindered at least to some extent by teachers not being well-prepared for class. This fell to 13% for students attending advantaged schools, only about one-third the share of students (43%) in the disadvantaged schools. Similarly, in Brazil and Portugal, principals in disadvantaged schools were more likely than their counterparts in advantaged schools to report that teachers are not well prepared for class.

Overall, this section has shown that, regardless of the indicator considered, few education systems appear to compensate for student disadvantage by allocating better-qualified or more effective teachers to schools serving disadvantaged students. In all countries in Ibero-America, except Costa Rica (which did not survey teachers), either principals or teachers (or sometimes both) in disadvantaged schools were more likely to report that student learning is hindered by teachers not being adequately qualified or prepared for teaching than their peers in advantaged schools.

Box 4.4. Teacher quality in rural and urban schools

In Chile, in 2015 urban schools (as defined in Box 4.2) employed larger shares of teachers authorised or enabled by the Ministry of Education (97%) compared to rural schools (12%); in Mexico, in contrast, rural schools employed larger shares of fully certified teachers (74%) compared to urban schools (57%).

But when considering the qualifications of science teachers, rural schools in both Chile and Mexico (as well as Portugal) do worse than urban ones: in all three countries, urban schools employed larger shares of science teachers with a major in science than rural schools. This might suggest that rural schools have greater difficulty in attracting the most-skilled teachers in certain school subjects, such as science, where the supply of qualified teachers is perhaps more scarce and more sensitive to differences in salaries and working conditions, given the many other careers that science graduates can pursue.

Source: OECD (2018[3]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en.

Do public education systems in Ibero-America compensate for student disadvantage?

Countries can compensate for student disadvantage by investing more teacher resources and/or allocating better-qualified teachers to high-need schools. Overall, when considering only public schools and government-dependent private schools, two groups of countries can be distinguished within Ibero-America.

In Chile, Colombia, Mexico, Peru, Portugal, Spain and Uruguay, disadvantaged public schools tend to have smaller classes and/or smaller student-teacher ratios compared to

advantaged public schools but none of these countries clearly allocate the most-qualified and experienced teachers to the most-challenging schools (Table 4.2 and Table 4.3).

In Brazil, Costa Rica and the Dominican Republic, disadvantaged public schools have about the same number of teachers as more-advantaged public schools and these teachers tend to have similar qualifications, irrespective of the school's socio-economic profile (Table 4.2 and Table 4.3).

How is teacher sorting related to socio-economic inequality in student performance?

The relationships between socio-economic inequality in student performance and stratification of the education systems into grade levels, study programmes or school types have been repeatedly analysed (OECD, 2016, pp. 201-240[21]; Van de Werfhorst and Mijs, 2010[2]). Much less attention has been paid to the relationship between teacher sorting across schools and socio-economic inequality in student performance. PISA offers a unique opportunity to compare this relationship across countries. Data from PISA can also be used to identify how teacher characteristics vary across advantaged and disadvantaged schools in countries with more equitable education systems.

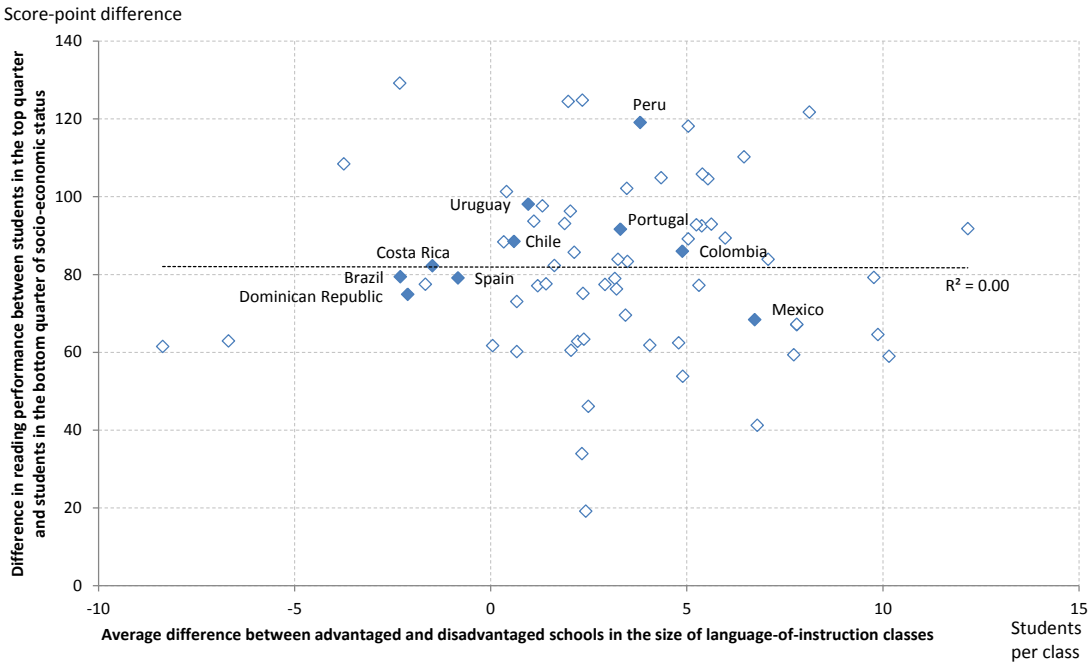
This section correlates the difference between advantaged and disadvantaged schools in the characteristics of their teacher workforce with the average performance gap between advantaged and disadvantaged students,[8] a system-level indicator of socio-economic inequality in learning. The following sections relate teacher-sorting indicators for all teachers or specifically non-science teachers to the performance gap in reading, and relate teacher-sorting indicators for science teachers only to the performance gap in science.

Teacher shortage and equity in student performance

The previous sections highlighted a tendency in many countries in Ibero-America to compensate for student disadvantage by allocating more teachers to high-need schools, through smaller classes or lower student-teacher ratios. However, no system-level association is observed between such compensation policies and equity in student performance. For example, the linear correlation coefficient – a measure of the strength and direction of the association between two variables – is close to 0 ($r = 0.00$) between differences in class size and performance gaps in reading.[9] This means that countries that compensate for student disadvantage by reducing class sizes are not on average seeing either smaller or larger gaps in performance than countries where class size is not related to students' socio-economic status, or where classes are larger in disadvantaged schools (Figure 4.6).

Figure 4.6. Relationship between socio-economic differences in reading performance and in class size

Socio-economic disparities in reading performance and differences in class sizes between advantaged and disadvantaged schools



Note: Each diamond represents a PISA-participating country/economy. Ibero-American countries are shown in a darker colour and with labels. The dotted line indicates a non-significant relationship across all countries/economies.
Source: OECD (2018[20]), *PISA 2015 Database*, www.oecd.org/pisa/data/2015database/; OECD (2018[3]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en.

This does not imply that allocating additional teaching resources cannot reduce inequalities in student performance related to socio-economic status. However it might indicate that, in practice, current efforts are not sufficient to compensate for student disadvantage, or that any positive effects might be undermined if the policies also result in differences in the average quality of teachers between advantaged and disadvantaged schools. Indeed, recent reviews of the impact of class size on achievement show positive effects of smaller classes in several countries (France, Israel, Norway, Sweden and the United States), particularly in primary grades, and after controlling for all confounding factors (Bouguen, Grenet and Gurgand, 2017[47]). However, several countries that compensate disadvantaged schools with smaller classes or lower student-teacher ratios have ended up, as an unintended consequence, with less qualified teachers in disadvantaged schools. The combined effect might explain why policies that focus on the quantity of teachers alone, without considering quality, have been ineffective in closing performance gaps between advantaged and disadvantaged students.

Teacher sorting and equity in student performance

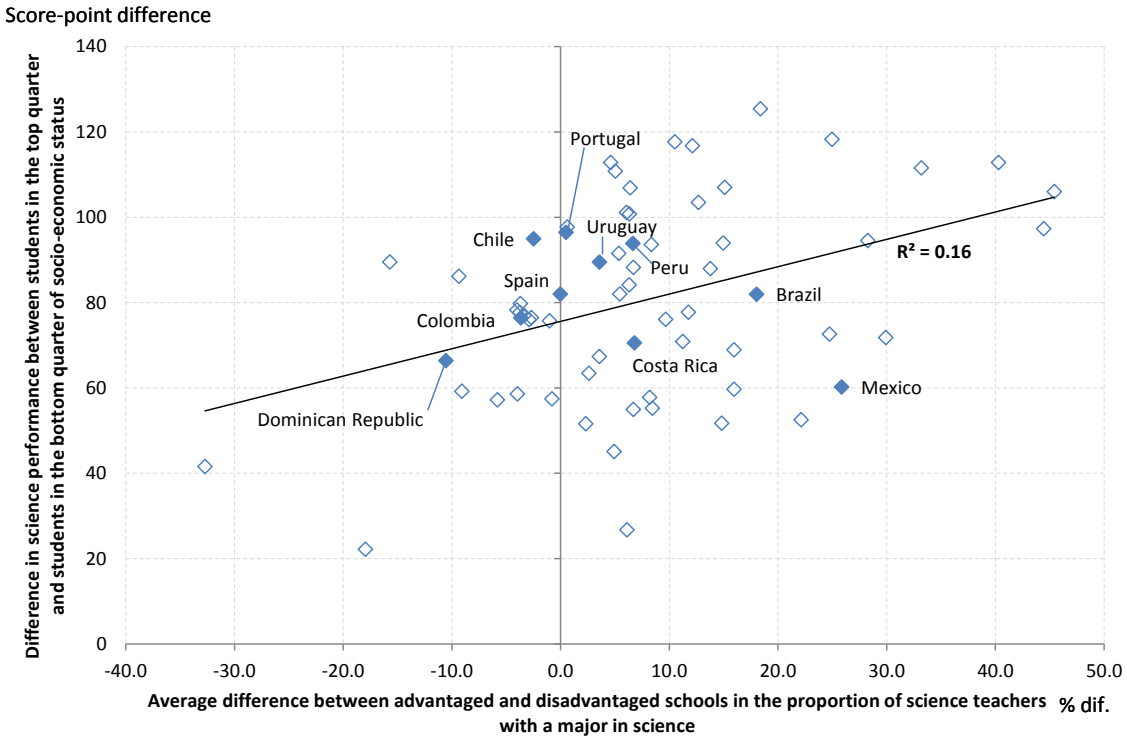
Although it is not common in the Ibero-American countries, among other PISA-participating countries, teachers working in disadvantaged schools often have lower

qualifications and experience than teachers in advantaged schools. This section examines whether teacher sorting based on quality indicators is related to equity in performance.

Differences in teachers' initial education and certification are related to gaps in student performance by socio-economic status. On average across all PISA-participating countries and economies, the wider the gap in science teachers' qualifications (as measured by having a university degree with a major in science) between advantaged and disadvantaged schools, the wider the difference in science performance between students in the top and bottom quarters by socio-economic status (r = 0.40) (Figure 4.7).[10]

Figure 4.7. Relationship between socio-economic differences in science performance and in teacher qualifications

Socio-economic disparities in science performance and differences between advantaged and disadvantaged schools in teacher qualifications



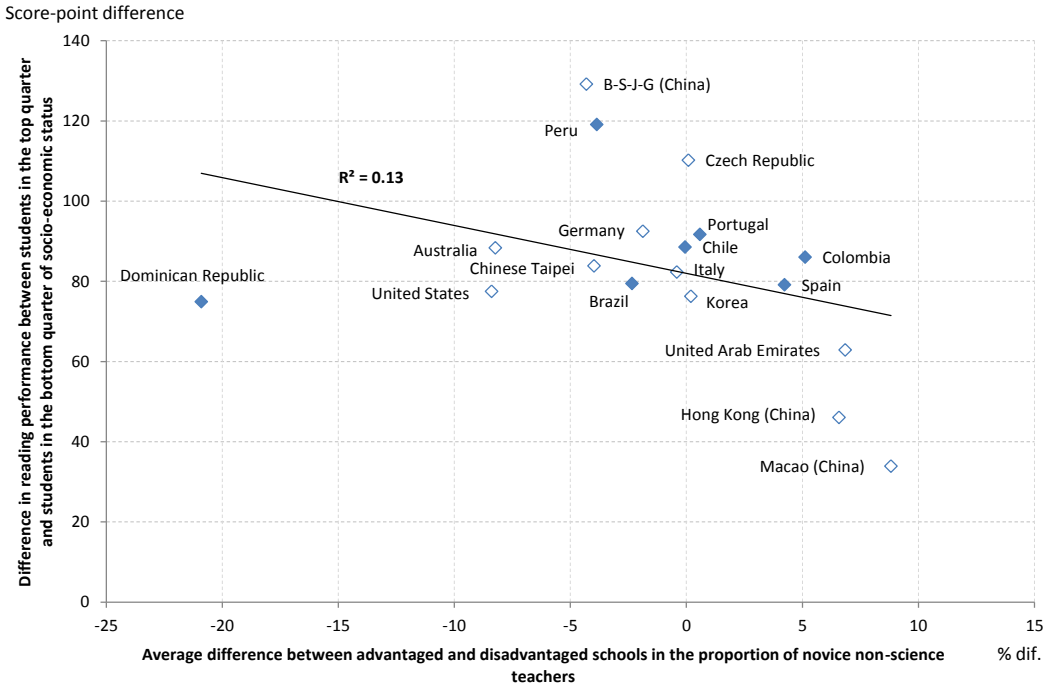
Note: Each diamond represents a PISA-participating country/economy. Ibero-American countries are shown in a darker colour and with labels. The line indicates a positive, significant relationship across all countries/economies.
Source: OECD (2018[20]), *PISA 2015 Database*, www.oecd.org/pisa/data/2015database/; OECD (2018[3]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en.

Among countries/economies that distributed the optional teacher questionnaire, the degree to which teachers were sorted according to their professional experience was also associated with equity in student performance. The PISA data show, in particular, that the more unbalanced the distribution of novice teachers (teachers with five years of experience or less), the more unequal the performance between students with different socio-economic status (r = -0.37) (Figure 4.8).[11]

Past research indicates that more-experienced teachers are more effective, and that differences in teacher effectiveness might be particularly marked in the first years after entering the teacher profession, because the least-effective teachers were more likely to quit the profession than the most effective ones. As well as being a more select pool of teachers (Hanushek, 2006[48]; Hanushek, Rivkin and Schiman, 2016[42]), more experienced teachers also gain valuable skills on the job and through formal professional-development opportunities (Wiswall, 2013[49]; Papay and Kraft, 2015[50]; Kraft and Papay, 2014[51]; Harris and Sass, 2011[33]).

Figure 4.8. Relationship between socio-economic differences in reading performance and in the share of novice teachers

Socio-economic disparities in reading performance and differences between advantaged and disadvantaged schools in the share of novice teachers

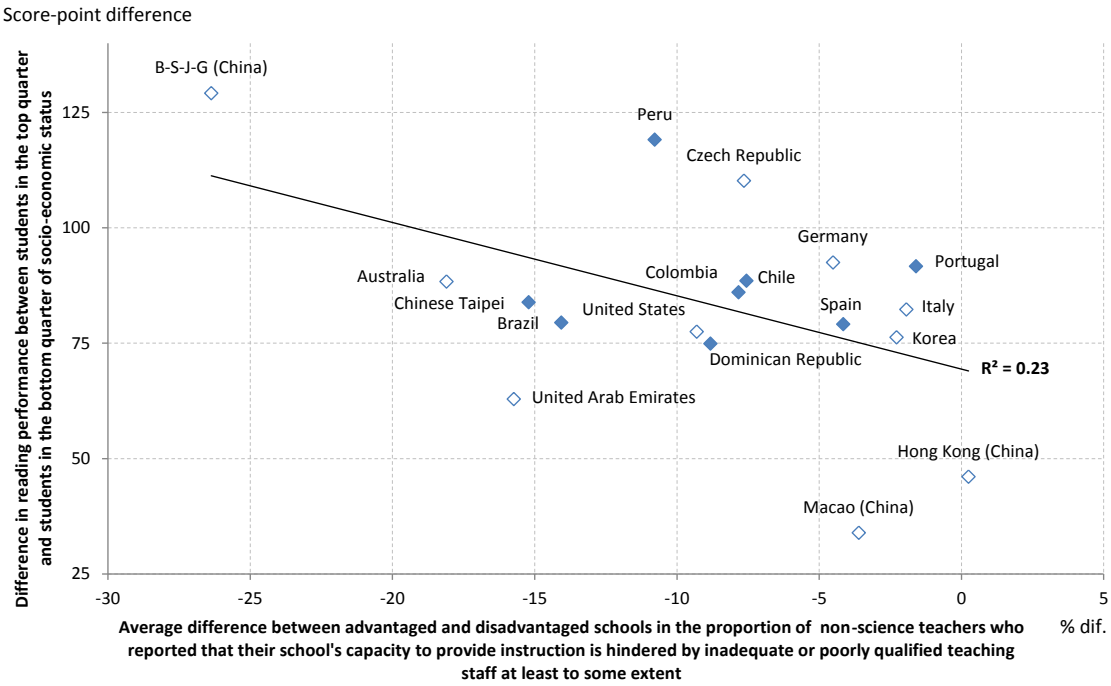


Note: Each diamond represents a PISA-participating country/economy. Ibero-American countries are shown in a darker colour. The line indicates a negative, significant relationship across all countries/economies.
Source: OECD (2018[20]), *PISA 2015 Database*, www.oecd.org/pisa/data/2015database/; OECD (2018[3]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en.

Countries also tend to have wider gaps in reading performance related to socio-economic status if teachers in disadvantaged schools are more likely to report that inadequate or poorly qualified teachers limit the quality of instruction in their school than those in advantaged ones (r = -0.48) (Figure 4.9).[12]

Figure 4.9. Relationship between socio-economic differences in reading performance and in perceptions of teacher quality

Socio-economic disparities in reading performance and differences between advantaged and disadvantaged schools in perceptions of teacher quality



Note: Each diamond represents a PISA-participating country/economy. Ibero-American countries are shown in a darker colour. The line indicates a negative, significant relationship across all countries/economies.
Source: OECD (2018[20]), *PISA 2015 Database*, www.oecd.org/pisa/data/2015database/; OECD (2018[3]), *Effective Teacher Policies: Insights from PISA*, http://dx.doi.org/10.1787/9789264301603-en.

Thus, on average across PISA-participating education systems, both objective and subjective indicators of teacher quality show that an unequal distribution of quality teachers across schools is associated with differences in performance related to students' socio-economic status. In many countries, the more qualified and experienced teachers were less often found in disadvantaged schools and the more pervasive this situation, the greater the difference in student performance related to socio-economic status in the country. This suggests that any teacher policy that aims to tackle student disadvantage should strive to allocate higher-quality teachers, and not just more teachers, to under-served students.

Supporting teachers working in disadvantaged schools

As discussed above, teachers working in disadvantaged schools across Ibero-American countries are no better prepared or more experienced than teachers working in less challenging schools and that principals and teachers working in disadvantaged schools often perceive that inadequate or poorly qualified teachers may be hindering student learning. This section examines whether teachers in disadvantaged schools receive additional support. Teacher support could take the form of participation in a professional-

development programme, in a network of teachers formed specifically for the professional development of teachers, in a formal mentoring or peer-observation scheme at the school level, or informal dialogue with colleagues on how to improve their teaching. Teacher support can also be an aspect of school leadership, as part of transformational practices.

PISA asked teachers whether, over the previous three months, they had participated in certain types of professional development activities. On average across the 18 countries and economies that surveyed teachers, 57% of non-science teachers reported that they had participated in a network of teachers formed specifically for the professional development of teachers, 62% in a formal mentoring or peer-observation scheme at the school level, and 95% had engaged in informal dialogue with colleagues on how to improve their teaching.

However none of these activities – networking, mentoring, peer observation or coaching – were more frequently found in high-needs schools, on average across countries, and in most countries.[13] In fact, mentoring, coaching and peer observation were more frequently found in more-advantaged schools in Chile and Colombia (for non-science teachers), and in Spain (for both science and non-science teachers). Among Ibero-American countries, the opposite pattern was observed only in the Dominican Republic (OECD, 2018[3]). Countries in which teachers in advantaged schools had participated more in mentoring, coaching or peer-observation activities than teachers in disadvantaged schools tended to have greater differences in student performance related to socio-economic status ($r = 0.45$ for reading gaps).

Principals can also play an important role in supporting teacher effectiveness. There has been little quantitative research conducted on the distribution of good-quality principals across schools with different socio-economic profiles (Urick and Bowers, 2014[52]). However, effective leadership can serve multiple goals for schools, and particularly struggling schools, such as improving student achievement or retaining teachers.

To measure principals' quality, PISA 2015 asked non-science teachers the extent to which they agree with the five following statements regarding their school principal: 1) the principal tries to achieve consensus with all staff when defining priorities and goals in school; 2) the principal is aware of teachers' needs; 3) the principal inspires new ideas for [their] professional learning; 4) the principal treats teaching staff as professionals; and 5) the principal ensures teachers are involved in decision making. The index of transformational leadership combines these five items to measure the extent to which teachers view their principal as a transformational leader. Higher values on this index indicate stronger transformational leadership. To examine how principals are sorted across schools, the mean values of the index for schools in the bottom and top quarters of socio-economic status can be compared.

In most of the education systems that distributed the teacher questionnaire, there was no significant difference between advantaged and disadvantaged schools in the level of transformational leadership of their principals, according to teachers. However, in two out of seven Ibero-American countries that collected data – Colombia and Peru – teachers in advantaged schools expressed a higher opinion of their school leader than did teachers in disadvantaged schools. In contrast, in Spain, teachers in disadvantaged schools expressed a higher opinion of their school leaders than those in advantaged schools (OECD, 2018[3]).

What these results imply for policy

PISA data show that inequities in access to quality teachers and teaching affect countries whether they have centralised or decentralised traditions of teacher selection and allocation and that they are strongly related to inequities in learning outcomes between advantaged and disadvantaged students. The unequal access of disadvantaged students to high-quality teachers and teaching is a real concern.

While many countries do compensate schools operating in more challenging environments by allocating additional teachers, few have been successful at reducing inequities in student performance in this way. This suggests that current efforts are not sufficient to compensate for student disadvantage, or that any positive effects are being undermined because policies do not also address the issue of teacher quality as well as quantity in disadvantaged schools. Indeed, in many countries, more qualified and experienced teachers are less likely to be found in disadvantaged schools and the more pervasive this situation, the greater the difference in student performance related to socio-economic status.

These results imply that most countries should do more to oversee how teachers are allocated to schools: they should not only monitor the number of teachers, but also keep a close eye on their qualifications, experience and effectiveness. Any teacher policy that aims to tackle student disadvantage should strive to allocate quality teachers, and not just more teachers, to under-served students.

In response to disparities in teacher quality between advantaged and disadvantaged schools, or between rural and urban schools, countries with decentralised systems of teacher management might need to strengthen the reallocation of school funding and possibly assign the best school leaders to the most-challenging schools.

Countries with more centralised systems of teacher selection and recruitment should, in turn, consider increasing the level of school responsibility in these processes. Across PISA-participating countries and economies, greater levels of school autonomy for managing teachers tend to produce a more equitable sorting of teachers across schools (OECD, 2018[3]). School leaders' capacity to manage human resources cannot be created overnight, however. A gradual approach that initially provides schools with the possibility of creating a limited set of highly attractive project positions for experienced teachers, and of creating stronger and more coherent teams, as has recently been proposed in France (Cour des Comptes, 2017[53]), might be an effective response to this concern.

Targeted financial incentives for teachers – salary increases and other types of financial additional payments – are also often cited as necessary to compensate for unattractive working conditions in particular schools. However, while studies have found positive effects from such schemes in North Carolina (United States) (Clotfelter et al., 2008[13]) they have not in France (Bénabou, Kramarz and Prost, 2009[26]; Prost, 2013[25]). Similar incentives might work differently in different places, depending on the general framework for teacher employment and career progression, and on the size of the incentive.

Alternatively, countries with strong centralised traditions of teacher management could respond to teacher sorting by considering creating a mobility requirement, as used in Japan and Korea, for example (Box 4.3). This requirement should not lead to short job assignments, however, as excessive turnover – a problem found more frequently in disadvantaged schools – can have adverse effects on teacher collaboration and student

performance. At the same time, too low a level of teacher turnover between schools can hinder the spread of new ideas and approaches. By introducing a requirement for teacher mobility (for example every 5 to 7 years), countries might stimulate continuous professional growth while also ensuring that effective teachers are fairly distributed across schools.

In addition to limiting the inequitable sorting of teachers across schools, many education systems can also do more to address the needs of all teachers, particularly novice teachers, in disadvantaged schools. Much can be done during initial training and, later, through mentoring and bespoke professional development opportunities, to equip teachers with the skills needed to work in disadvantaged schools and give them an understanding of the social contexts of those schools and their students. Such support can also indirectly modify teacher preferences. Teachers typically enjoy helping children develop and making a contribution to society, and have no reason to shy away from the challenges of teaching disadvantaged students. But teachers are also more likely to want to work in disadvantaged schools if they feel they have support from principals, can collaborate with colleagues, and are provided with adequate resources to deal with the problems they face.

Notes

[1] While inequality refers simply to the observed variation in a particular characteristic, equity is a normative concept, informed by an idea of social justice. In this chapter, inequity refers to a situation in which the unequal access to educational resources across groups of students (defined by their family background or demographic characteristics) reinforces their initial advantage or disadvantage.

[2] Population coverage was too small to ensure the comparability of results for Argentina. Argentina's results are therefore not discussed in this chapter.

[3] The "modal ISCED level" is defined here as the levels attended by at least one-third of the PISA sample. In Colombia, Costa Rica, Mexico, Portugal and Uruguay, both lower secondary (ISCED level 2) and upper secondary (ISCED level 3) schools meet this definition. In Brazil, Chile, the Dominican Republic and Peru, analyses are restricted to upper secondary schools; in Spain, analyses are restricted to lower secondary schools.

[4] Language of instruction refers to the language in which students from the school took the PISA test.

[5] In order to compute averages and shares based on teacher responses, teacher weights were generated so that the sum of teacher weights within each school is equal to the sum of student weights within the same school. All science teachers within a school have the same weight, as do all non-science teachers within a school. Data for science and non-science teachers are analysed separately, as these define two distinct and non-overlapping populations for sampling.

[6] Overall, the research literature, based mostly on data from the United States, has found mixed results about the effects of teachers' observable characteristics – such as their tertiary degree, their certification status or their experience – on student achievement. Most studies report positive effects of experience, although these are sometimes described as "weak" or as limited to the first few years. Many studies further find positive effects of teacher certifications or licenses on student achievement growth (Clotfelter, Ladd and Vigdor, 2007[27]; Goldhaber and Brewer, 2000[58]; Clotfelter, Ladd and Vigdor, 2010[28]), with some studies, however, reporting only small effects (Kane, Rockoff and Staiger, 2008[55]). Teachers' tertiary qualifications, such as holding a college major in education or a master's degree, are, in contrast, often found to be unrelated to students' performance in school (Buddin and Zamarro, 2009[56]; Chingos and Peterson, 2011[57]).

[7] Results for two sub-national jurisdictions in the United States – Massachusetts (public schools) and North Carolina (public schools) – are not included in the international average reported in this chapter.

[8] Advantaged students are students in the top national quarter of the index of economic, social, and cultural status (ESCS); disadvantaged students are students in the bottom national quarter of this index.

[9] "r" refers to the Pearson correlation coefficient, a measure of the linear association between two variables, which varies between -1 (indicating a perfect inverse relationship between the two variables) and 1 (indicating a perfect linear relationship between two variables). Values close to 0 indicate weak linear relationships. There is also no correlation (r = 0.03) between mean scores in reading and disparities in class size between advantaged and disadvantaged schools.

[10] The correlation between mean scores in science and disparities in science teachers' qualifications between advantaged and disadvantaged schools is not significant (r = 0.21).

[11] Countries/economies in which novice teachers are more frequently found in advantaged schools than in disadvantaged schools also tend to have higher mean performance in reading (r = 0.43).

[12] The correlation between the difference in teachers' perceptions of teacher shortage between advantaged and disadvantaged schools and mean performance in reading is not significant (r = 0.25).

[13] These results are consistent with findings from 38 countries and economies that participated in TALIS 2013: no significant difference was found between schools with low concentrations of disadvantaged students and those with high concentrations of disadvantaged students in teachers' participation in network activities (OECD, 2016, p. 97[54]).

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Chapter 5. Teacher professional development and evaluation

In order to attract and retain effective teachers, Ibero-American countries need to identify and develop the areas where teachers need most support. This chapter reviews the key strategies to achieve this goal: teachers' professional development and evaluation. It starts by describing the professional development systems in the region, particularly focusing on the rate of participation, costs, type and effective modes of training. It then gives an overview of the teacher evaluation systems in a group of selected Ibero-American countries and compares them to the evaluation systems in high-performing countries.

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.

Schools and teachers are trusted with the task of preparing students to play an active and responsible role in society. Teacher competency, together with successful public policies, are fundamental to achieving all this. Thus, a key component of teachers' responsibilities is providing students with both cognitive and non-cognitive skills. These skills include ways of thinking and working (creativity, critical thinking, communication and collaboration), tools for working (including information and communications technology) and skills related to citizenship and personal and social responsibility needed to succeed in today's societies. Systems for professional career development and teacher evaluation are two crucial processes to secure the acquisition of skills by teachers and monitor its development.

In-service professional development programmes aim to give teachers new tools or skills or update the ones they already possess. Professional development is ingrained in the concept of teachers as lifelong learners which acknowledges teachers' need to make continuous improvements throughout their professional life as they adapt to the changing demands and requirements of the school and the classroom (OECD, 2005[1]). As such, professional development involves understanding teachers' needs and helping them to learn, reflect and improve their practice (OECD, 2013[2]). Indeed, we should not only identify and understand teachers' needs but also prioritise them in order to develop strategic work.

Teacher evaluations are a useful mechanism for discovering what these professional development needs are. It is a controversial topic as evaluations are often associated with accountability procedures with high-stakes consequences for teachers. However, evaluation can be more than just a tool for linking performance to consequences for teachers' careers, since it also provides feedback to help identify which area of a teacher's professional development needs improvement. In other words, it can provide information on how teachers are performing and how best to support them and improve their motivation and teaching strategies.

This chapter provides an overview on these two crucial dimensions of teacher quality, professional development and evaluation, across Ibero-American countries. The first section covers professional development, starting with opportunities for induction and mentoring, and then exploring the ongoing professional development used by Ibero-American teachers. The second section reviews the main characteristics of teacher evaluation systems in the region and compares them to the most effective education systems internationally.

The empirical data used for this chapter are mainly drawn from TALIS 2013 (OECD, 2014[3]) and the Programme for International Student Assessment (PISA) 2015 (OECD, 2016[4]).

Professional development in Ibero-American countries

The literature defines the professional development of teachers in many different ways but at their core is the understanding that professional development is about teachers learning procedures, learning how to learn and transforming their knowledge into practices that benefit their students' growth (Avalos, 2011[5]).

The OECD TALIS survey adopts a broad definition of professional development. Specifically, it defines professional development as activities that aim to develop an individual's skills, knowledge, expertise and other characteristics as a teacher (OECD, 2014[3]). As such professional development can take place from the moment in-service teachers begin their professional life at the school. Indeed, mentoring and induction

activities are usually the first forms of professional developments that new teachers are exposed to. Professional development can be provided in many ways, ranging from the most formal (such as courses or workshops) to more informal approaches (such as collaboration with other teachers or participation in extracurricular activities).

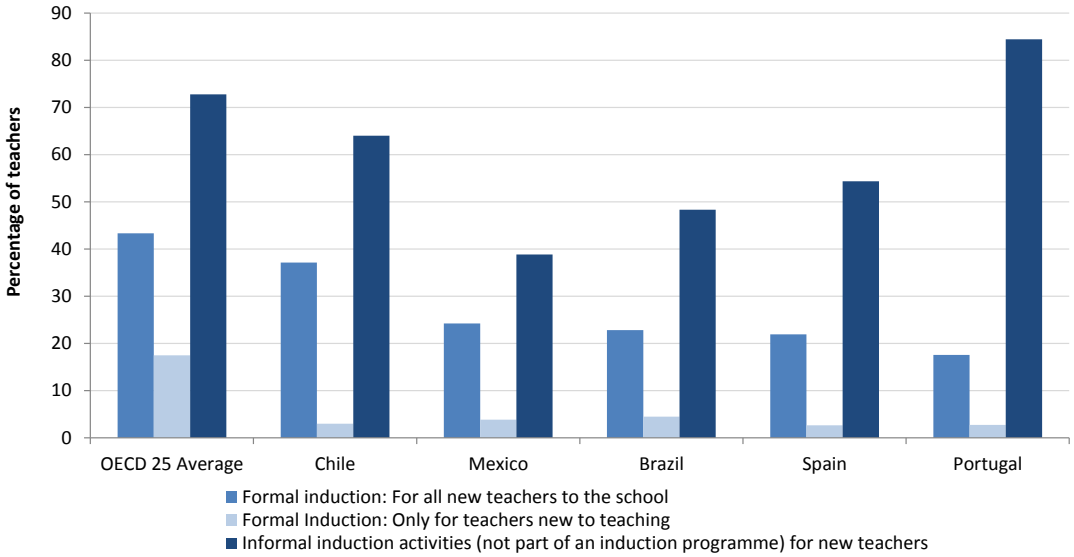
This section describes the different forms of professional development taking place across the Ibero-American region. It starts by describing teachers' participation in induction and mentoring activities. Then it focuses on the role of professional development in career advancement in the region. It describes the types of professional development that teachers' participate in most often, along with the most pressing learning needs of the region. It concludes with an examination of the most effective forms of professional development.

Induction and mentoring

Induction programmes are the range of structured activities used to support teachers' introduction to a school or, for new teachers, into the teaching profession. On average across the 25 OECD countries participating in TALIS 2013, 43% of teachers work in schools whose principals report that formal induction programmes are available for all new teachers to the school, and 18% in schools where induction programmes are only available for teachers new to teaching. In total, around three-quarters of teachers (72%) work in schools with informal induction programmes. But the situation in participating Ibero-American countries is not ideal; in Brazil, Mexico, Portugal and Spain, 70-80% of teachers work in schools without any formal induction programmes (Figure 5.1).

Figure 5.1. Access to induction programmes, TALIS 2013

Percentage of lower secondary education teachers whose school principal reports the existence of induction processes for new teachers in the school



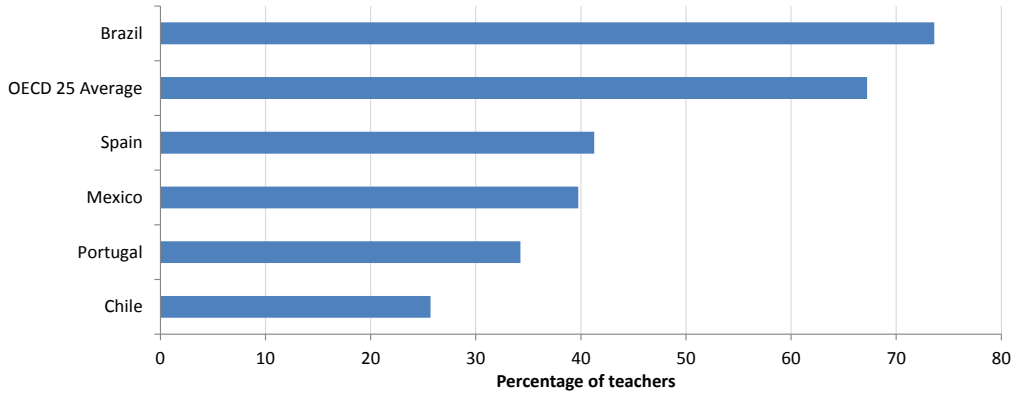
Note: Countries are ranked in descending order according to the proportion of teachers whose school principals report the existence of induction processes for all new teachers to the school. Data derived from questions 33A and 34 of the TALIS principal questionnaire.
Source: Based on OECD (2014[3]), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, http://dx.doi.org/10.1787/9789264196261-en, Table 4.1.

Mentoring is another commonly discussed method of professional development. In TALIS, mentoring is defined as a support structure in schools where more experienced teachers support less experienced ones. This might involve all teachers in the school or only new teachers. Similarly, the literature defines mentoring as personal guidance, usually provided by more experienced teachers to beginning teachers. Recently, mentoring programmes have become a dominant form of teacher induction (Strong, 2009[6]). Indeed, as Hobson and colleagues (2009[7]) recognise, many countries have seen a massive increase in the number of formal school-based mentoring programmes for beginning teachers. The overall objective of these programmes is to give newcomers a local guide, but their character and content vary widely.

Across OECD countries participating in TALIS, 67% of teachers on average work in schools whose principals report that a mentoring programme is available, but a large percentage of teachers in Chile, Mexico, Portugal and Spain have no access to any mentoring programmes (Figure 5.2). Only in Brazil do more than two-thirds of teachers work in schools where mentoring programmes are available for all teachers in the school.

Figure 5.2. Mentoring programmes in lower secondary education, TALIS 2013

Percentage of lower secondary education teachers whose school principal reports the existence of a mentoring system in the school

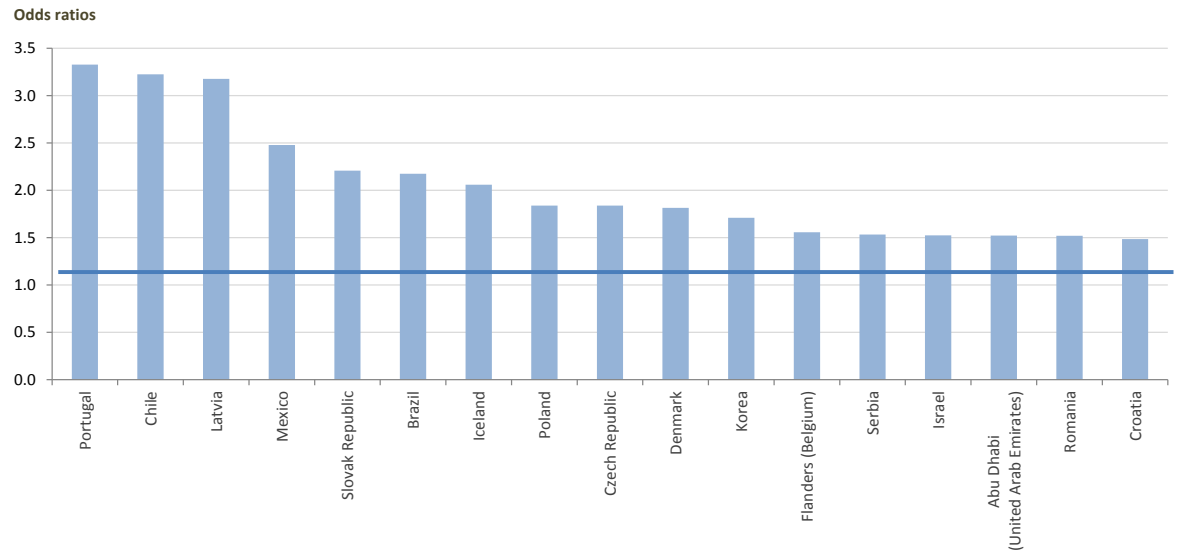


Note: Countries are ranked in descending order of the proportion of lower secondary teachers in schools whose principals report offering mentoring programmes.
Source: Based on OECD (2014[3]), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, http://dx.doi.org/10.1787/9789264196261-en, Table 4.3.

Access to induction and participation in mentoring programmes also helps teachers to engage on formative programmes and to collaborate with peers' professional development. From a lifelong learning perspective, induction and mentoring are the first steps in teachers' commitment to further development. This statement is supported by evidence from TALIS. Figure 5.3 shows the likelihood of a teacher who has participated in formal induction in the past becoming a mentor themselves, compared to teachers who did not participate in induction programmes. In all 17 countries and economies shown in the figure, teachers who have participated in formal induction programmes are more likely to currently be acting as a mentor than teachers who have not. The effect seems to be particularly strong in the Ibero-American countries of Portugal, Chile, Mexico and Brazil where such teachers are two to three times more likely to become mentors than teachers who were not involved in formal induction activities.

Figure 5.3. Predicted effect of formal induction programme participation on acting as a mentor, TALIS 2013

Probability of lower secondary education teachers who report having participated in a formal induction programme to report acting as a mentor versus teachers who report not having participated such programmes

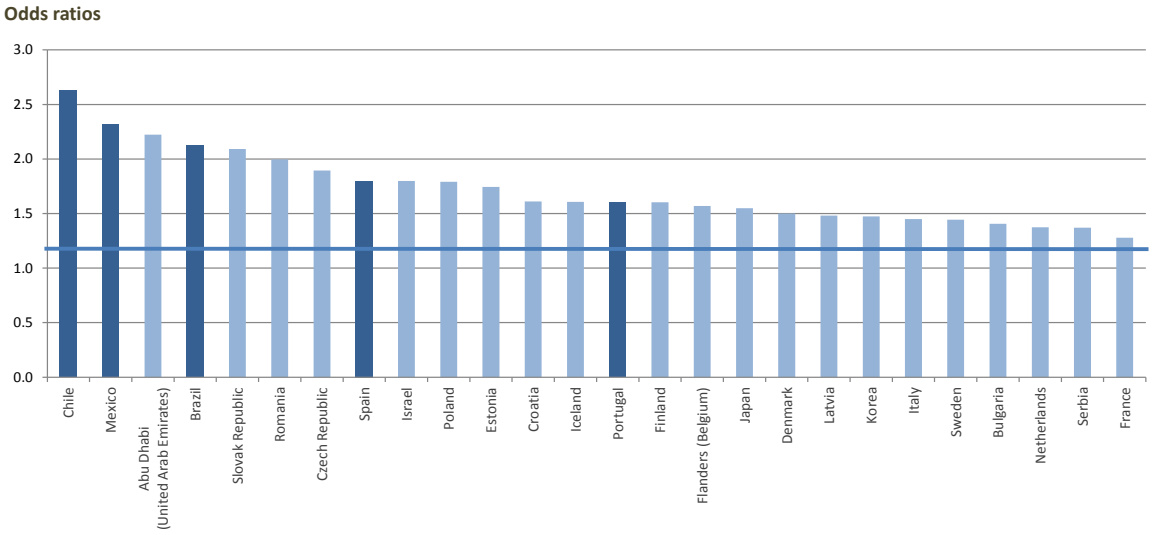


Note: This figure does not include countries for which the odds ratio is not statistically significant at 5% or where the data represent less than 5% of cases.
Countries are ranked in descending order, based on the predicted effect of participating in any induction programme on the probability of acting as a mentor.
Source: OECD (2014[3]), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, http://dx.doi.org/10.1787/9789264196261-en, Figure 4.5.

Furthermore, teachers who report participating in formal induction programmes in the past are also more likely to have participated in three or more types of professional development than colleagues who did not (Figure 5.4). Once again, the effect seems to be particularly strong in Ibero-American countries since in Chile, Mexico, Brazil and Spain teachers who have participated in formal induction programmes are almost twice as likely to have participated in three or more different types of professional development than colleagues who have not.

Figure 5.4. Predicted effect of formal induction programme participation on professional development participation, TALIS 2013

Probability of participation in three or more professional development activities for lower secondary education teachers who report having participated in a formal induction programme versus teachers who report not having participated in such programmes



Note: This figure does not include countries for which the odds ratio is not statistically significant at 5% or where the data represent less than 5% of cases.
Countries are ranked in descending order of the predicted effect of having participated in any induction programme on the reported number of professional development activities.
Source: OECD (2014[3]), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, http://dx.doi.org/10.1787/9789264196261-en, Figure 4.11.

These results reveal that policy actions encouraging the provision of and participation in induction processes can have a substantive link with teachers' commitment both to their peers (through mentoring programmes) and with their own learning and development (through participation in professional development programmes). Box 5.1 gives examples from Chile and Finland of how it has been possible to construct continuous learning opportunities from induction to professional development.

Box 5.1. Teacher development in Chile and Finland

Teacher Professional Development Law: Linking teacher well-being with teacher professionalism in Chile

In 2014, Plan Maestro was developed by civil society (teachers' unions, parents, students, research institutes and non-governmental organisations) to inform the development of the Teacher Professional Development Law (2016). The issues addressed in the 12 proposals of Plan Maestro included: better working conditions and remuneration for teachers, especially in disadvantaged areas; more professional development opportunities; and quality initial teacher education. The new law raised the requirements for entry into initial teacher education (ITE), introduced quality assurance mechanisms into ITE programmes (compulsory accreditation and a diagnostic external exam one year prior to graduation), and established induction programmes for new teachers, specific preparation for mentors and free professional development opportunities. The new law also brought teachers' salaries in line with similar professions, introduced salary increments every two years and improved the ratio of teaching/non-teaching time. It also introduced performance assessments based on content and pedagogical knowledge and portfolios, with evidence of school work, collaboration with colleagues and parents, innovative work and professional development.

Source: Schleicher (2018[8]), *Valuing our Teachers and Raising their Status: How Communities Can Help*, http://dx.doi.org/10.1787/9789264292697-en.

Teacher Development in Finland: The Osaava Programme

In Finland, professional development for teachers is seen as a comprehensive process which begins with initial teacher education. Teacher education has been available in universities since 1971, and a master's degree is a requirement, including a master's thesis. With this kind of research-based initial teacher education, teachers become reflective professionals who actively develop their own work and professional skills and methods. Finland does not have a nationally organised induction system. Education providers and individual schools have autonomy over arranging support for new teachers, which leads to notable differences between schools in how they implement induction. However, there is awareness of the increasing need for support for new teachers, and many different applications of mentoring practices are already in place. A specific model of peer-group mentoring has been developed and is being disseminated by the Finnish Network for Teacher Induction (Osaava Verme), which is part of a seven-year national Osaava programme (2010-16), funded by the Ministry of Education and Culture. The objective of the programme is to motivate education providers and individual institutions to take greater responsibility and a proactive approach to their own staff development activities with the help of networking activities and mutual co-operation.

Source: Schleicher (2012[9]), *Preparing Teachers and Developing School Leaders for the 21st Century: Lessons from Around the World*, http://dx.doi.org/10.1787/9789264174559-en.

Drivers and costs of professional development

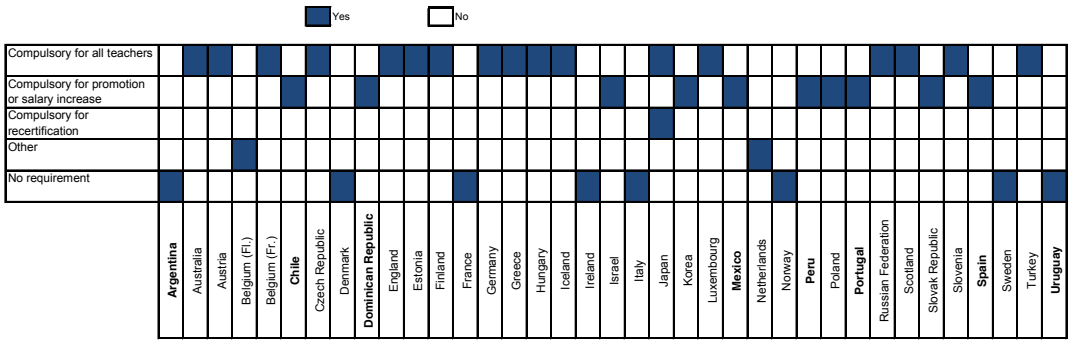
After the initial induction and mentoring stages, educational systems must still ensure that teachers receive the support and training they need throughout their professional careers. These allow teachers to refresh, develop and broaden their knowledge and understanding of teaching. Thus, the provision of professional development must involve a lifelong learning curriculum, which integrates with their initial teacher education, and provides them with pertinent and effective knowledge and skills (OEI, 2013[10]).

Figure 5.5 shows the requirements for professional development in OECD and partner countries. Professional development is compulsory for teachers at all educational levels in three-quarters of the OECD countries and economies. Among the four Ibero-American OECD countries – Chile, Mexico, Portugal and Spain – professional development is only required for promotion or salary increases[1] (OECD, 2014[11]) rather than being mandatory for all teachers as is the case in high-achieving countries like Finland or Korea. Portugal is a good example of the link between professional development and promotion, as it has introduced a lifelong learning approach linking professional development with career progression (OECD, 2015[12]); participation in professional development makes up 20% of teachers' total evaluation for career progression (OEI, 2013[10]). For more information about the situation in Portugal, please see Annex 5.A.

However, despite professional development forming part of the mechanism for improving working conditions or career advancement, TALIS 2013 data showed that in Spain, Portugal and Chile, around three-quarters of teachers felt that there were no incentives to participate in professional development (OECD, 2014[3]). More exploration is needed to understand the reasons behind these figures, but it could indicate that even though there are promotion openings and salary increases associated with their participation in continuing learning, these opportunities may not be attractive enough to warrant their participation.

Finally, Figure 5.5 shows that in Ibero-American countries like Argentina and Uruguay, professional development is not required at all.

Figure 5.5. Requirements for teachers' professional development



Note: Ibero-American countries are highlighted in bold.
Source: Based on OECD (2016[4]), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, http://dx.doi.org/10.1787/9789264267510-en, Table II.6.57.

The cost of participating in professional development can be covered by governments, employers or individuals, or by co-funding arrangements. In systems where professional development is solely linked with career advancement, co-funding arrangements can

include governments subsidising or partially covering the costs of the activity. The funding might cover training costs, pay for teachers' absence during the training or cover the cost of a substitute teacher (OECD, 2014, p. 522[11]).

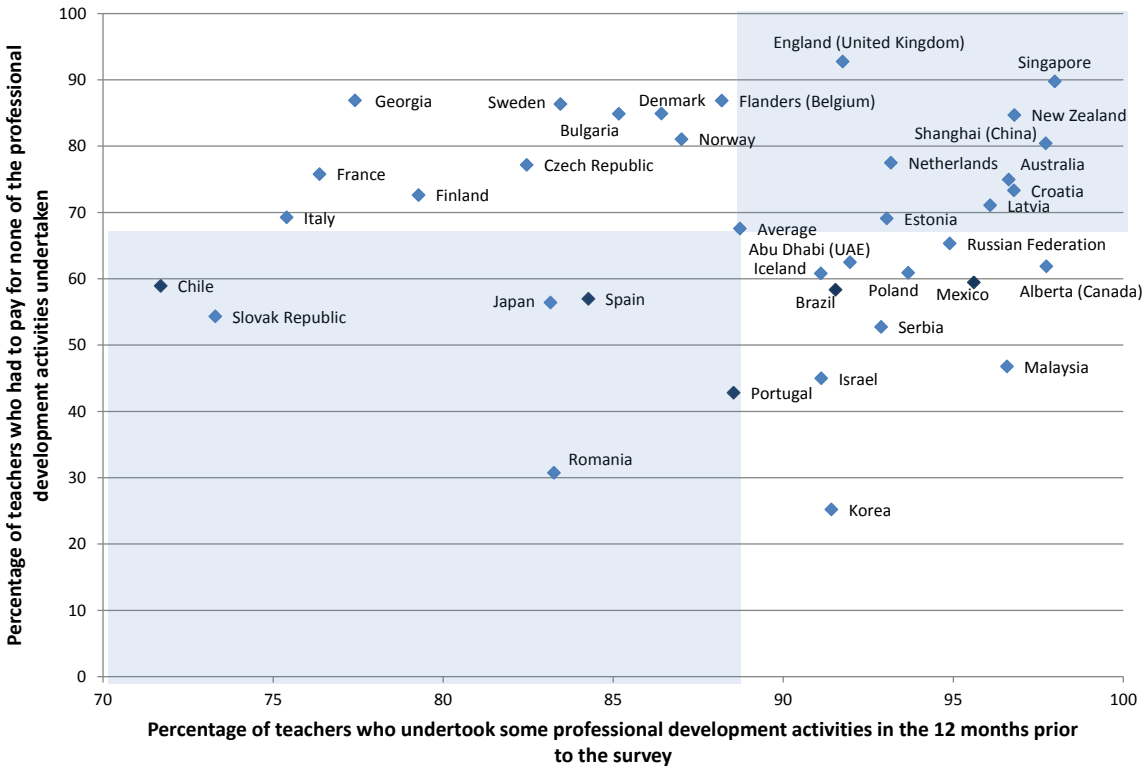
In OECD countries where professional development is compulsory, governments either fully or partially cover the cost, except in Japan and Chile where it is compulsory for raising wages or certification. Where professional development is not compulsory the costs are rarely fully covered in OECD countries. For example, in Portugal these costs are never covered and they are only partially covered in Spain, which covers participation costs but not foregone expenses such as paid leave or the cost of substitute teachers. One exception is Mexico, which covers the costs for lower secondary teachers. (OECD, 2014[11]). In short, the four OECD Ibero-American countries follow a similar pattern to OECD countries overall.

Across the 25 OECD countries and economies that participated in TALIS 2013, 43% of teachers reported that they did not participate in professional development because it was too expensive/unaffordable. This rose to 54% of teachers for Mexico, 73% in Chile and 80% in Portugal. Only Spain, with 38% of teachers, shows a proportion lower than the OECD average.

Figure 5.6 provides a more in-depth look at the links between participation in professional development and the costs involved, based on data from TALIS 2013. It shows a positive correlation between the percentage of teachers who reported not having to pay and their participation in professional development. Chile, Portugal and Spain are located in the bottom-left quadrant which means that both the proportion of teachers participating in professional development and the proportion of teachers reporting that they did not have to pay for any of their development activities are below the international average. Countries located in this quadrant show a lack of support for teachers' professional development which may explain their low participation levels. However, Brazilian and Mexican teachers report high participation rates despite teachers co-funding the costs.

Figure 5.6. Teachers' recent participation in professional development, by their personal financial cost, TALIS 2013

Participation rates and reported responsibility of bearing the cost of professional development activities undertaken by lower secondary education teachers in the 12 months prior to the survey



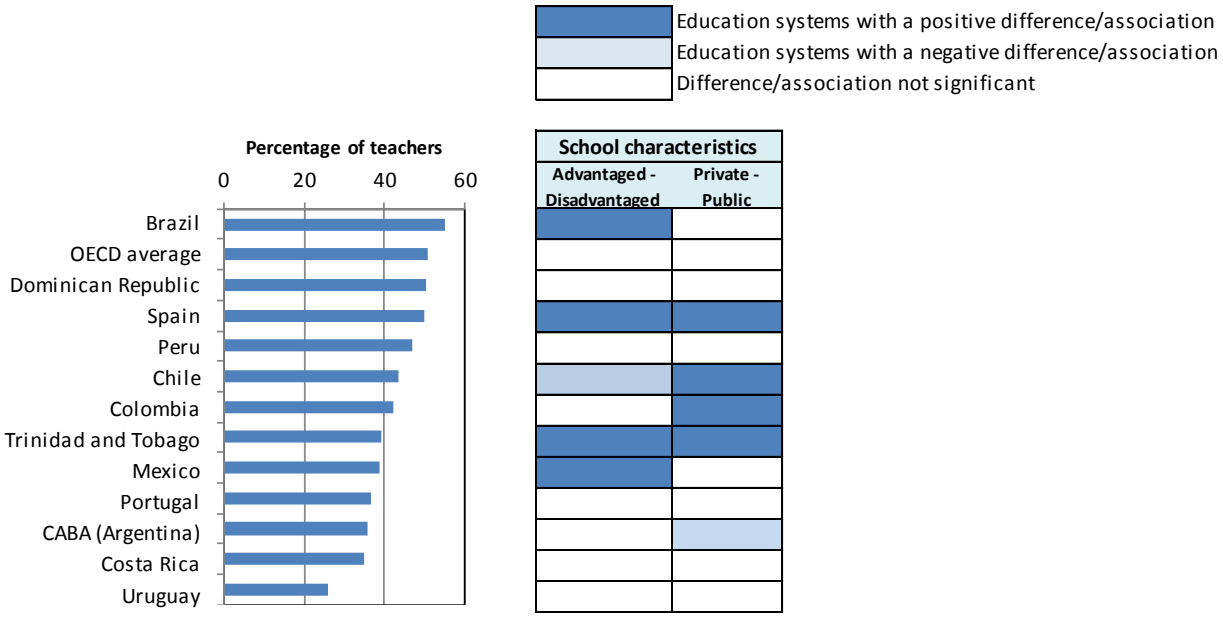
Source: Based on OECD (2014[3]), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, http://dx.doi.org/10.1787/9789264196261-en, Table 4.6.

Participation and need for professional development

PISA 2015 provides the most up-to-date international account of teachers' participation in professional development. The study asked PISA school principals to report the percentage of all teaching staff who had attended a programme of professional development in the three months prior to the PISA 2015 assessment (OECD, 2016[4]). As Figure 5.7 shows, the average student attends a school where principals report that half of their staff (51%) have attended some type of professional development.

In the case of Ibero-American countries, all the countries participating in the study except Brazil show participation rates below the OECD average. In particular, in systems like Argentina's capital region (Ciudad Autonoma de Buenos Aires; CABA), Costa Rica and Uruguay, the average student attends a school where principals report that only around one-third of teachers attended professional development.

Figure 5.7. Teachers' participation in professional development activities and school characteristics, PISA 2015



Note: Countries and economies are ranked in descending order of the percentage of teachers participating in professional development.
Source: Based on OECD (2016[4]), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, http://dx.doi.org/10.1787/9789264267510-en, Table II.6.18.

Figure 5.7 also highlights differences in participation across different types of schools. On average, there are no significant differences in teachers' participation in professional development across schools in OECD countries. However in Mexico, Spain, and Trinidad and Tobago, teachers in socio-economically advantaged schools are more likely to participate in professional development than those in economically disadvantaged ones. Additionally, in Chile, Spain, and Trinidad and Tobago more teachers working in private schools attended professional development than teachers in public schools. It is particularly worrying that those teaching the most vulnerable student populations (i.e. those attending a socio-economically disadvantaged public school) are less likely to access professional development. These results might reveal an unequal distribution of opportunities for continuing learning across schools in these Ibero-American countries (see also Chapter 4 in this volume).

The relevance of professional development is also an important motivator for teachers' participation in continuing learning. Data from TALIS 2013 show that when lower secondary teachers are asked about the main barriers to participation in professional development, around 40% of teachers from OECD countries cited a lack of relevant training on offer as one of the reasons. The situation seems more pronounced in Ibero-American countries where around two-thirds of teachers declared the lack of relevant training as an important barrier for accessing professional development: 68% of teachers in Portugal, 64% in Chile, 62% in Spain, 56% in Mexico and 52% in Brazil.

Figure 5.8 shows that one of the professional development needs in Ibero-American countries concerns teaching students with special needs. Around 20% of teachers from

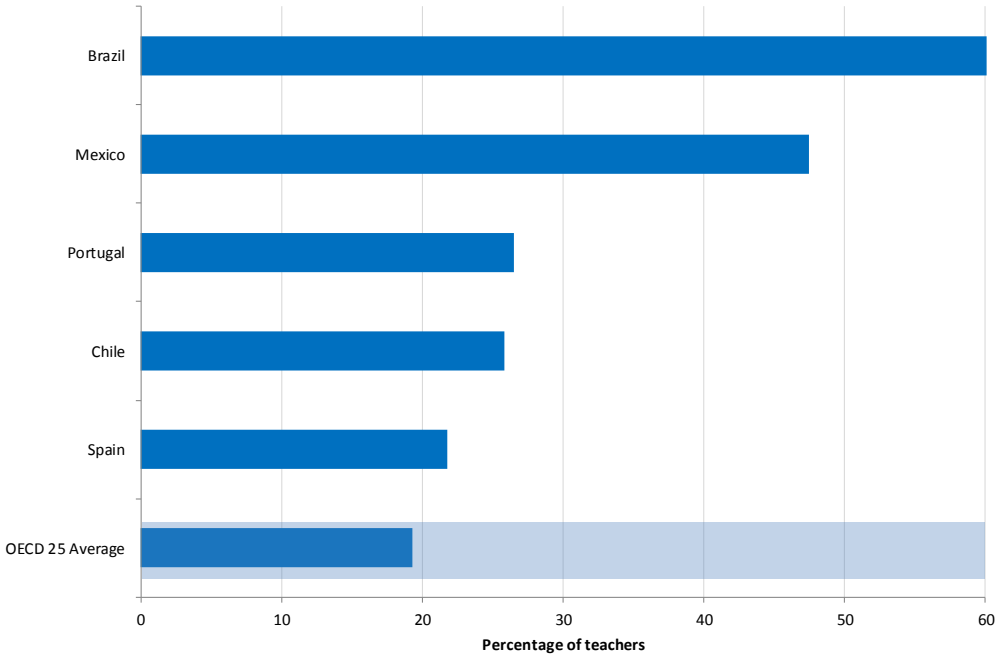
the 25 OECD countries and economies participating in TALIS 2013 reported a high level of need for professional development in this area, compared to 60% in Brazil and 47% in Mexico. This demonstrates considerable concern among teachers about their need for training on issues related to the inclusion of students.

Another area of great demand is training in teaching in multicultural and multilingual settings. Although only 10% of lower secondary teacher from OECD countries expressed a high demand for professional development in this area, a greater percentage of teachers would like this type of training in all of the participating Ibero-American countries. Once again, Brazil (46% of teachers) and Mexico (33% of teachers) had the greatest share of teachers expressing this need.

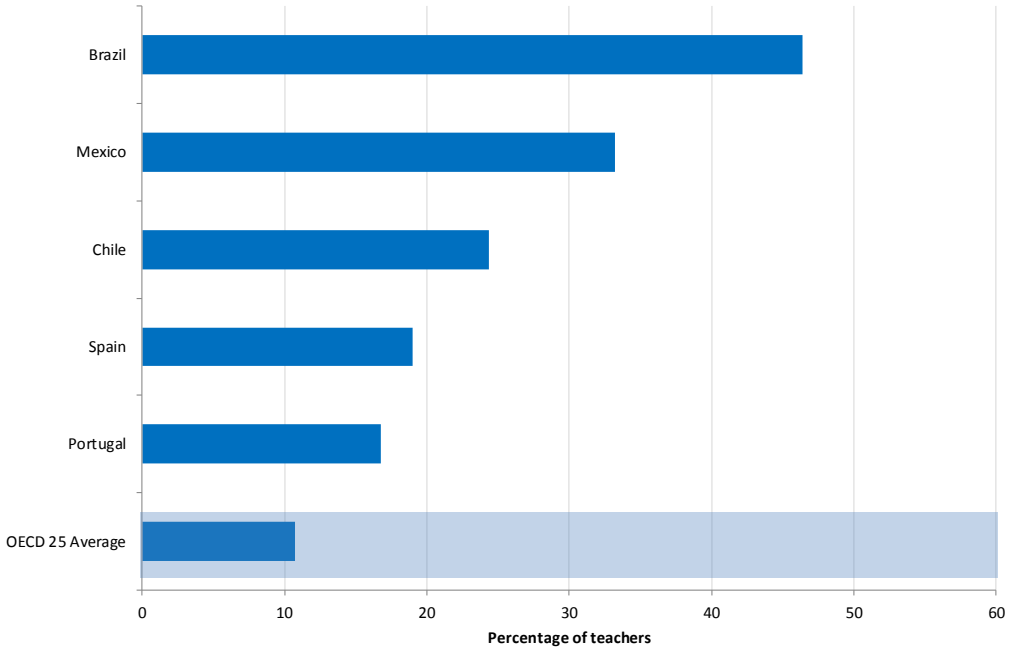
This could be due to two underlying causes. First, the proliferation of specific programmes designed to improve the inclusion of indigenous population in Latin America has translated into an increasing need among teachers to get training on managing culturally diverse classrooms. Second, Ibero-American countries have recently seen a notable increase in the diversity of their classrooms due to recent influx of migrants, especially in Chile and Spain (OECD, 2015[13]).

Figure 5.8. Professional development needs of lower secondary teachers, TALIS 2013

Percentage of lower secondary teachers reporting a high need of professional development in teaching students with special needs



Percentage of lower secondary teachers reporting a high need of professional development teaching in multicultural or multilingual setting



Note: The international OECD average was calculated based on the 25 OECD countries with available data that took part in the TALIS 2013 study.
Source: Based on OECD (2014[3]), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, http://dx.doi.org/10.1787/9789264196261-en, Table 4.6.

Both topics explored in this section relate to the skills teachers need to deal with diversity in the classroom and in schools. The TALIS data found a greater demand for these skills among Ibero-American teachers than in other OECD countries, but it is important to note that this demand does not necessarily reflect a complete lack of relevant training on offer. Indeed, teachers in almost all the Ibero-American countries reported a participation rate in these areas that was greater than or around the same as the OECD average and that these instances of professional development have had a positive impact in their teaching (OECD, 2014, pp. 342-343[3]). Thus, the reported demand could reflect a desire for further development in teaching students with special needs or in multicultural settings.

Effective forms of professional development

Evidence has shown that not all teachers' professional development has an equal impact on teacher practices (Barrera-Pedemonte, 2016[14]; Opfer, 2016[15]) Indeed, the effectiveness of professional development is influenced by factors such as its location, duration, opportunities for peer collaboration and the pedagogical strategies employed. This section reviews the degree to which Ibero-American teachers are engaged in effective forms of professional development.

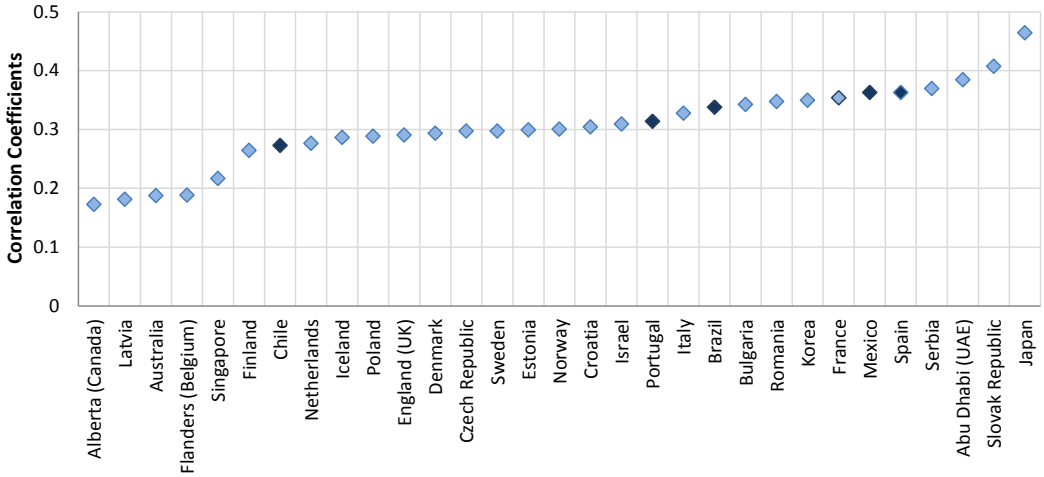
A common characteristic of high-performing countries in PISA has been the use of "school embedded" professional development (OECD, 2018[16]). School embedded professional development means learning activities rooted in teachers' everyday work at their school, taking into account their specific local circumstances. School embedded professional development has the advantage of allowing teachers to experiment, reflect

and value the impact of professional development in their own practice (OEI, 2013, p. 159[10]). It could include mentoring and coaching, working with teachers to ensure common standards for assessing student progress, and engaging in professional collaborative learning (Opfer, 2016[15]).

TALIS results have shown that teachers who participate in school embedded professional development report greater impact on their pedagogical knowledge and practices that those teachers participating in non-school embedded activities (Opfer, 2016[15]).

Figure 5.9. Participation in school embedded professional development and teacher reports of instructional impact by country, TALIS 2013

Correlation between participation in school embedded professional development and teacher reports of instructional impact by country



Note: Countries are ranked in ascending order of the value of the correlation coefficient.
Source: Adapted from OECD (2015[17]), *Embedding Professional Development in Schools for Teacher Success*, http://dx.doi.org/10.1787/5js4rv7s7snt-en, Figure 3.

Figure 5.9 shows the correlation between school embedded professional development and the positive impact reported by teachers. It shows a positive correlation across all countries with available data from TALIS 2013 and among Ibero-American countries the correlation seems to be particularly strong in Spain, Mexico and Brazil.

PISA 2015 provides the most up-to-date data on the levels of participation of teachers in school embedded professional development by asking principals about teachers' participation in four activities: "teachers in our school co-operate by exchanging ideas or material when teaching specific units or series of lessons", "our school invites specialists to conduct in-service training for teachers, "our school organises in-service workshops that deal with specific issues that our school faces" and "our school organises in-service workshops for specific groups of teachers".

Table 5.1 shows the findings for the Ibero-American countries participating in PISA 2015. In particular, it shows the percentage of students attending schools where their teachers have attending embedded professional development. For comparison, it also includes two countries that have excelled in the quality of their teaching workforce, Singapore and Korea (Darling-Hammond et al., 2017[18]).

As the table shows, a few Ibero-American entities are above the OECD average for these four school embedded activities: Portugal, CABA (Argentina), the Dominican Republic, and Trinidad and Tobago. Across the region, it seems that the most common form of embedded professional development is teachers exchanging ideas or materials, since around 9 out of 10 students attend schools where principals reported that teachers co-operate in this way. However, in several Ibero-American countries, teachers' participation in the other three embedded professional development activities (training by invited specialists, and workshops for specific issues and groups of teachers) is low compared with the OECD average. That seems to be the case in Brazil, Chile, Colombia, Mexico and Peru, where less than 70% of students attend schools where teacher partake in these forms of professional development.

Comparing the Ibero-American countries with Korea and Singapore, the main differences are the participation rates in workshops addressing particular issues or aimed at particular groups of teachers. Indeed, 88% of students in Korea and 96% in Singapore attended schools that offer these workshops to teachers, compared with 50-75% of students in most of the Ibero-American countries. The evidence suggests that high-achieving countries invest in professional development that answers teachers' individual needs and the specifics of their work.

Apart from being embedded in schools, the literature has identified some other characteristics of effective professional development (Barrera-Pedemonte, 2016, p. 20[14]):

- **Collective participation** refers to the need for interaction among teachers from the same school to develop meaningful learning among peers.
- **Active learning**: effective professional development programmes provide opportunities to observe, design, or perform teaching practices, as a means of engaging teachers in inquiry-based learning experiences.
- **Duration**: although research has not yet identified an ideal time span, it is argued that longer-term professional development programmes are more effective, both with regard to the time period over which the activity takes place and the total number of hours spent.

TALIS 2013 provides information about the proportion of teachers who reported that these features were part of their professional development. Figure 5.10 and Figure 5.11 below encompass these three components of effective professional development, based on TALIS data. The grey triangle represents the OECD average for each component – as an index of 100 – and the blue triangle shows how far above or below the average the share of teachers is for each component for a given country.

Along with Korea and Singapore, Estonia is another country that has consistently shown high levels of performance (OECD, 2016[4]). Thus, Figure 5.10 focuses on the professional development of both Singapore and Estonia. It shows that Estonia showed a balanced pattern of professional development: the proportion of teachers reporting receiving professional development that included collective participation, involved active learning and operated over the long term were all considerably above the average of the 25 OECD countries participating in TALIS (around one standard deviation from the mean). The same is true of Singapore, except that the proportions of teachers attending professional development involving both active learning and collaborative participation were even further above the OECD average than in Estonia (around 2 standard deviations from the mean).

Table 5.1. School embedded professional development activities, PISA 2015

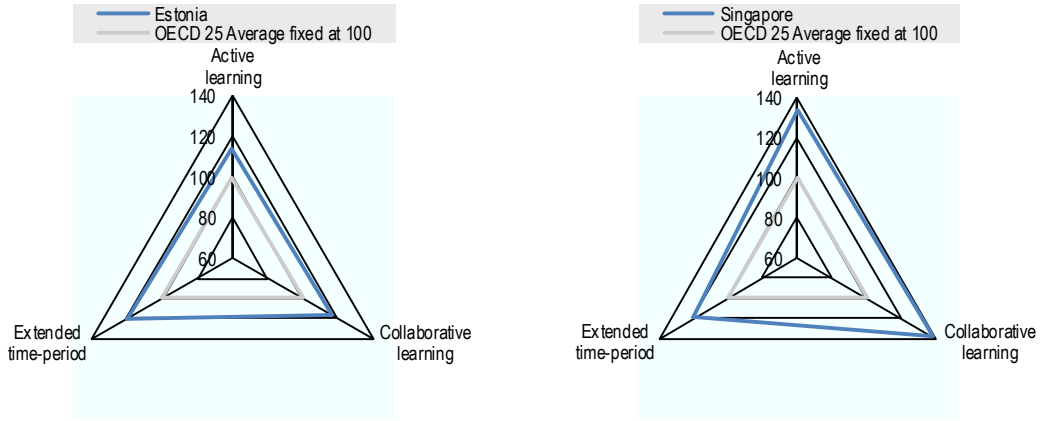
Results based on school principals' reports

Less than half of students
From 50% to 75% of students
More than 75% of students

	Percentage of students in schools where the following types of in-house professional development activities exist			
	The teachers in our school co-operate by exchanging ideas or material when teaching specific units or series of lessons	Our school invites specialists to conduct in-service training for teachers	Our school organises in-service workshops that deal with specific issues that our school faces	Our school organises in-service workshops for specific groups of teachers
Singapore	100	90	98	96
Korea	95	90	96	88
Portugal	98	90	90	71
CABA (Argentina)	96	79	92	71
Trinidad and Tobago	94	87	91	66
Dominican Republic	95	83	91	68
OECD average	96	80	80	69
Costa Rica	94	79	82	48
Chile	89	73	79	57
Uruguay	94	78	80	43
Spain	92	70	72	58
Peru	90	70	78	44
Colombia	89	57	73	54
Mexico	94	56	68	50
Brazil	97	60	49	32

Note: Countries and economies are ranked in descending order of the percentage of students in schools offering school embedded professional development (average of four activities).
Source: Based on OECD (2016[4]), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, http://dx.doi.org/10.1787/9789264267510-en, Figure II.6.11.

Figure 5.10. Effective components of professional development in Estonia and Singapore, TALIS 2013



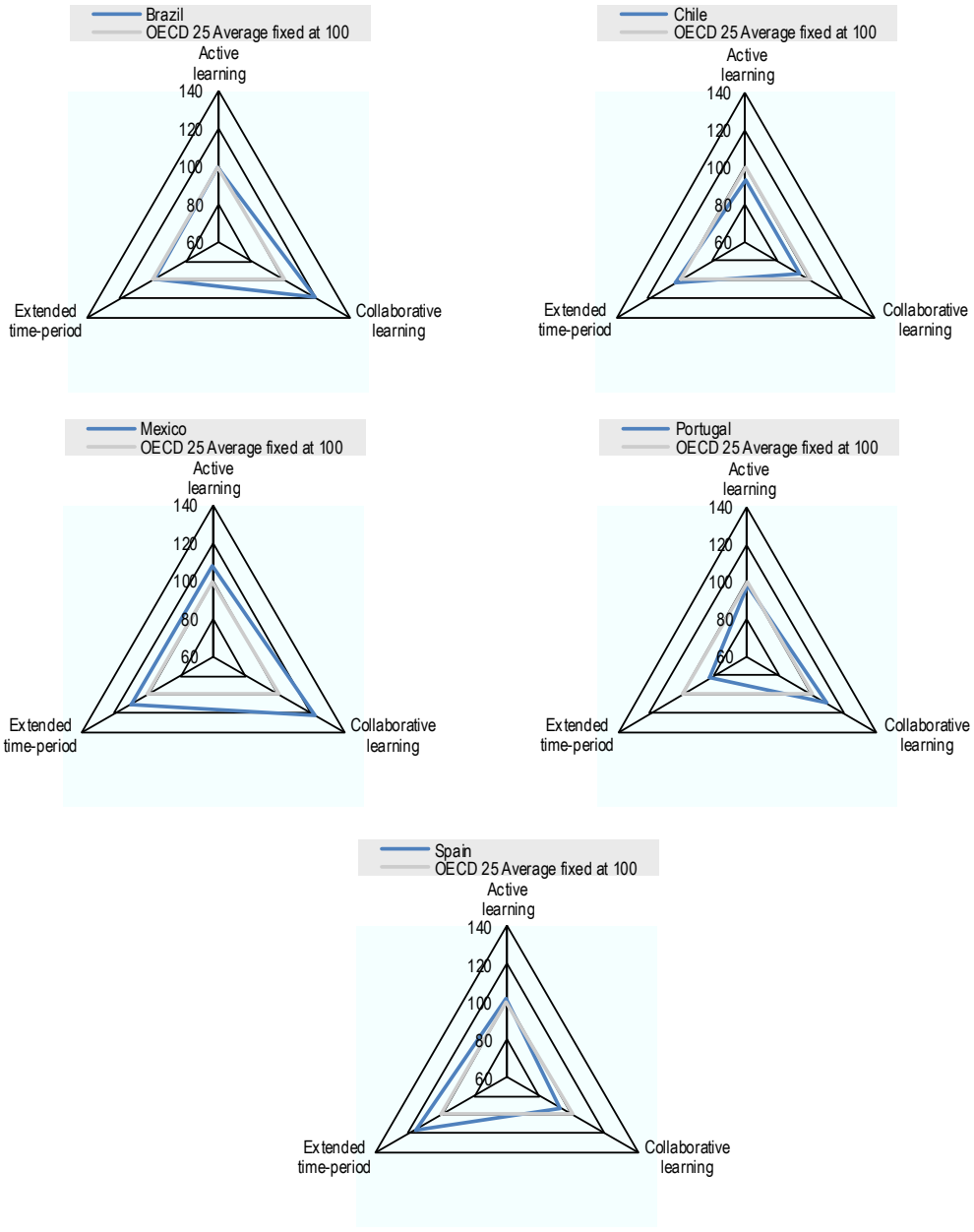
Note: The international OECD average was calculated based on the 25 OECD countries with available data that took part in the TALIS 2013 study.
The OECD average for each index was fixed at 100. All values above 100 are above the OECD average and all values below 100 are below the OECD average. Every 20 units represent a standard deviation away from the average.
Source: Based on OECD (2014[3]), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, http://dx.doi.org/10.1787/9789264196261-en, Table 4.18, http://dx.doi.org/10.1787/888933045335.

Figure 5.11 shows the situation for the Ibero-American countries. Each country presents a different pattern for the three components of effective professional development. In Brazil, Mexico and Portugal, more teachers than the OECD average reported that collaborative activities were included in their professional development, but this was not the case in Chile or Spain. In Spain and Mexico more teachers reported participating in longer-term professional development than the OECD average while all five systems had a similar share of teachers reporting their professional development involved active learning to the average.

Although these graphs paint a somewhat encouraging picture for these components of effective professional development, it is also worth comparing them with the characteristics of educational systems such as Singapore in Figure 5.10, where the use of active learning, collaborative learning and long-term training greatly surpass the OECD average.

Box 5.2 outlines how Colombia and Mexico are cultivating collaboration among teachers.

Figure 5.11. Effective components of professional development across Ibero-American countries, TALIS 2013



Note: The international OECD average was calculated based on the 25 OECD countries with available data that took part in the TALIS 2013 study. The OECD average for each index was fixed at 100. All values above 100 are above the OECD average and all values below 100 are below the OECD average. Every 20 units represent a standard deviation away from the average.

Source: Based on OECD (2014[3]), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, http://dx.doi.org/10.1787/9789264196261-en, Table 4.18, http://dx.doi.org/10.1787/888933045335.

Box 5.2. School embedded professional development in Colombia and Mexico

Colombia: "Todos a Aprender"

The "Let's All Learn" programme (Programa para la Transformación Educativa "Todos a Aprender", PTA) is the main initiative to improve transition grade and primary school teachers' skills in Colombia's most disadvantaged schools. Using a cascade teacher-training model, 100 trainers have provided pedagogical and didactic strategies to 3 000 mentor teachers who in turn provide on-site support for language and mathematics teachers to transform their classroom practices to improve student performance in the national test of quality education (SABER 5). Mentors are an important component of PTA as they are expected to conduct direct classroom observations and organise study groups built around the concept of communities of practice and learning, which includes reflection, collaboration and inclusiveness. Mentors also meet with school principals to improve leadership, strategic and results-based management, and the evaluation and monitoring of the school. PTA also aims to ensure that schools meet the basic conditions needed to operate (e.g. food, transport, physical infrastructure) and to foster the commitment of all educational actors (directors, teachers, students, parents and society in general) to improving education. In 2015, the programme was redesigned to place a greater focus on teaching and academic excellence.

Source: OECD (2016[19]), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, http://dx.doi.org/10.1787/9789264267510-en.

Mexico: The Integral Strategy to Improve Education Achievement

The Estrategia Integral para la Mejora del Logro Educativo (EIMLE) was launched in 2009 to transform conventional classrooms into learning communities in thousands of low-performing schools serving large proportions of students in conditions of vulnerability. EIMLE adopted a new pedagogy of tutorial relationships that had been developed through a small, grassroots pedagogical change initiative called the Learning Community Project. EIMLE developed a strategy to spread the Learning Community Project's pedagogy to 9 000 schools with a history of consistently low performance. EIMLE offered teachers, principals and technical-pedagogical staff in school regions multiple opportunities to observe, practice and refine the new pedagogy of tutorial relationships through classroom-based coaching, teacher collaboration sessions, school exchanges, and learning fairs. During these meetings, EIMLE constantly showcased the new pedagogy and asked all participants to practice it. Between 2009 and 2012, the schools that adopted this new pedagogy increased the proportion of students scoring at "good" and "excellent" levels in the national standardised test at a faster pace than their more privileged counterparts. In addition, EIMLE students were able to match or surpass the scores of wealthier students.

Source: OECD (2017[20]), *Empowering and Enabling Teachers to Improve Equity and Outcomes for All*, http://dx.doi.org/10.1787/9789264273238-en.

Teacher evaluation in Ibero-America

In recent decades, debates on improving the quality of education, and therefore the quality of teachers, have centred around teacher evaluations. Such evaluations are gaining more and more enthusiasts, but are not free from criticism, misgivings and controversies. We know that one of the factors contributing to good-quality education is having good-quality professionals, so it seems logical to want information about how teachers work and how to improve their motivation, preparation, professional development and teaching strategies. Teacher evaluations are one of the most direct ways to identify and improve every teacher's professional practice.

Although the vast majority of educational specialists may agree that the teaching profession should be evaluated, there is no consensus over the answers to some key questions: the scope of the evaluation, what methodology and tools, the most suitable sources of information, what to evaluate, and the intended purposes and outcomes of the evaluation.

Teacher monitoring and evaluation is essential for the continuous improvement of education. Teachers need performance feedback to help them identify any areas of their teaching practice that could be improved and, with the support of committed school leadership, develop schools as professional learning communities. Teacher evaluation also provides opportunities to recognise and reward effective teaching. Based on existing research and in-depth analyses of numerous international teaching evaluation systems, a recent OECD review concluded that "there is no single model or overall best practice for teacher evaluation" (OECD, 2013[2]) but the report provided a series of policy recommendations to improve teacher evaluations. These included:

- Set teaching standards to guide teacher evaluations and professional development.
- Resolve the tensions between the development and accountability functions of teacher evaluations.
- Conduct regular assessment of scholastic attainment, based on multiple sources of evidence, including frequent classroom observations by competent internal school inspectors, and ensure that teacher evaluations nurture professional and school development.
- Establish periodic evaluations for career progression involving external inspectors.
- Prepare teachers for evaluation processes and strengthen the ability of school boards to evaluate their teachers (OECD, 2013[2]).

This section attempts to outline the current situation regarding teacher evaluations in those Ibero-American countries with national evaluation programmes, and offer some indications of how evaluation frameworks can aid professional development.

It starts by comparing the key aspects and commonalities of the teacher evaluation systems devised by the educational authorities in some of the Ibero-American countries with the evaluation methods used by high-performing countries in PISA. It then considers common approaches to strengthening the professionalism of the teaching workforce among the best-performing education systems.

Comparing teacher evaluation in high-performing education systems and Ibero-America

Over recent years, a number of Ibero-American countries, aware of the importance of good teachers in improving the quality of their education systems, have started to develop and apply teacher performance evaluations. Of the Ibero-American countries participating in PISA, Chile, Colombia, the Dominican Republic, Mexico, Peru and Portugal have all devised teacher evaluation systems, which are outlined in more detail in Annex 5.A. Argentina, Brazil, Costa Rica, Spain and Uruguay have not put any overall teacher evaluation systems in place. There is no single universally valid evaluation model for improving the quality of education.

Evaluation models must be adapted to suit the context of each country based on their initial situation. Not all countries require their teachers to have the same level of initial training. Teacher selection processes also differ from each other, as do the environments in which teachers give lessons, continuous training policies and professional development opportunities. These factors, addressed in other chapters of this report, must be taken into account in the design, application and identification of the outcomes of teacher evaluation.

This section describes the areas of teaching evaluation that international studies cite as important factors for improving the quality of the education system. It examines different evaluation systems used by the countries considered to be the highest performing, in order to provide a comparison with the Latin American countries.

Evaluation frameworks

A large majority of countries and the highest-performing economies[2] incorporate lower secondary school teacher evaluation into their legislative systems (OECD, 2016[4]).

Of the 17[3] highest-performing countries for which data are available from 2015, 12 have national or state standards or laws to regulate one or more types of teacher evaluation – Australia, Canada, England (United Kingdom), the Flemish Community of Belgium, Japan, Korea, Macau (China), the Netherlands, New Zealand, Singapore, Slovenia and Switzerland. The countries or economies without a policy framework for teacher evaluations, like Estonia, Hong Kong (China), Norway and Chinese Taipei, do however have similar practices that include a large proportion – if not all – teachers. In Hong Kong (China), for example, the Education Bureau requires all schools to develop their own teacher performance evaluation system. In Norway, approaches to teacher evaluation are not regulated nationally but generally devised at local or school level, and all teachers undergo an evaluation. Germany is the only one of the highest-performing countries that does not have teacher evaluation built into its legislative policy.

In Finland, where there is no national policy framework for teacher evaluation, the basis for teacher evaluation is defined in the contract between the local government authority that employs the teacher and the teacher's union. According to these contracts, school principals, who are seen as the school's educational leaders, usually conduct annual discussions aimed at assessing how well teachers met the individual objectives set during the previous school year and determine their development needs for the following year (OECD, 2013, p. 290[2]). However, in 2013, even though 74% of Finnish secondary school teachers worked in schools whose principals reported that the teachers were formally assessed, 36% of teachers stated that they had not received any formal or informal feedback on their performance or areas for development (OECD, 2014[3]).

Nevertheless, Finland has been highlighted as a model of intelligent accountability (Box 5.3).

Among those high-performing countries with regular teacher evaluations, and where information about the areas assessed and the information sources used for the evaluations is available, the policy frameworks always specify that teachers' core work areas (planning, preparation, lessons and the classroom environment) are assessed. Some countries also take teachers' participation in professional development activities into consideration.

Box 5.3. Intelligent accountability in Finland.

Based on Finland's successful educational performance, three key policy recommendations to develop "intelligent accountability" approach have been identified by the educational specialist Pasi Sahlberg:

1. Build trust and collective responsibility. Teachers should be treated as professionals and, as with other professions, relationships should be based on trust. Granting autonomy to teachers and making them accountable through teacher-based assessment are both signs of trust. Finland and other Nordic countries have shown that educational performance benefits when more responsibility is placed on teachers and they are held accountable. However, the accountability procedure should not "jeopardise the trust and social capital in schools but should instead strengthen it" (Sahlberg, 2010[21]).

2. Promote in-school accountability procedures and match them to external accountability needs An intelligent in-school accountability process requires involving all relevant stakeholders (e.g. principals, teachers and parents) in setting the educational goals of the school. It is also based on the use of data from "student assessments, external examinations, teacher-led classroom assessments, feedback from parents and school self-evaluations" (Sahlberg, 2010[21]). Finally it should examine outcomes across a wide spectrum of learning, not limited to subject knowledge (such as mathematics, languages and science), but also the development of skills, attitudes and values.

3. The relevance of teacher collaboration Accountability procedures, especially external test-based accountability, should be careful not to disrupt the collaboration and networking of teachers. Teacher collaboration is a crucial part of the adoption of innovative practices, and collaboration between and within schools can be effective at improving the quality of instruction and responding adequately to the pressure brought by external teacher-based accountability (Sahlberg, 2010[21]).

Source: OECD (2017[22]), *Empowering and Enabling Teachers to Improve Equity and Outcomes for All*, http://dx.doi.org/10.1787/9789264273238-en.

Many of the Ibero-American countries have undertaken education reforms in recent years which have incorporated teacher evaluation systems. These have examined teachers at the start of their careers as well as the performance level of practising teachers. In addition to including an extensive section on the importance of the teaching profession in the legislation, they have regulated the access to teaching and promotion systems based on evaluation results.

Given the diversity of the evaluation systems used, the limited length of time they have been running (in some cases the first evaluations have not been completed) and the different starting points of the countries in question, it is hard to get an overall picture of teacher evaluation models in Ibero-America and even harder to know if they are having an effect on students' results. To do so, we would need to wait for a few years and observe how each of them has evolved. However Annex 5.A describes the basic frameworks and their intended purposes, methodologies used and the outcomes for the teachers evaluated.

Analysis of the evaluation systems' development shows that they all started out with an in-depth reflection about teachers' main areas of activity and the skills they need to practise their profession to an optimum level. The majority of countries express this reflection in a framework document on the role of the teacher, along with a definition of their work areas, roles and skill levels needed. This can act as a guide for teachers to understand what their roles are and what is expected of them, and also as the basis for designing teacher performance evaluation systems.

Generally all of the Ibero-American evaluation systems set out the various areas of work involved in teaching, which can be grouped into three aspects:

- **teaching process**: teachers' personal skills to select and organise educational content and plan and adapt the teaching process to suit their students
- **work in school**: leadership ability, teamwork, management, relationship and communication with the different education community collectives
- **lifelong learning and professional development**.

Each of these aspects – which the countries organise into different groupings ranging from two to five – have skills and indicators devised to help evaluate them.

Frequency and purpose

Most of the highest-performing countries have a policy framework for teacher evaluation and conduct periodic evaluations of their work. Regular evaluations are generally organised across the whole school and serve a combination of purposes, including professional development and defining teachers' responsibilities and working conditions. A key aspect of these evaluations is to nurture individual and collective professional development.

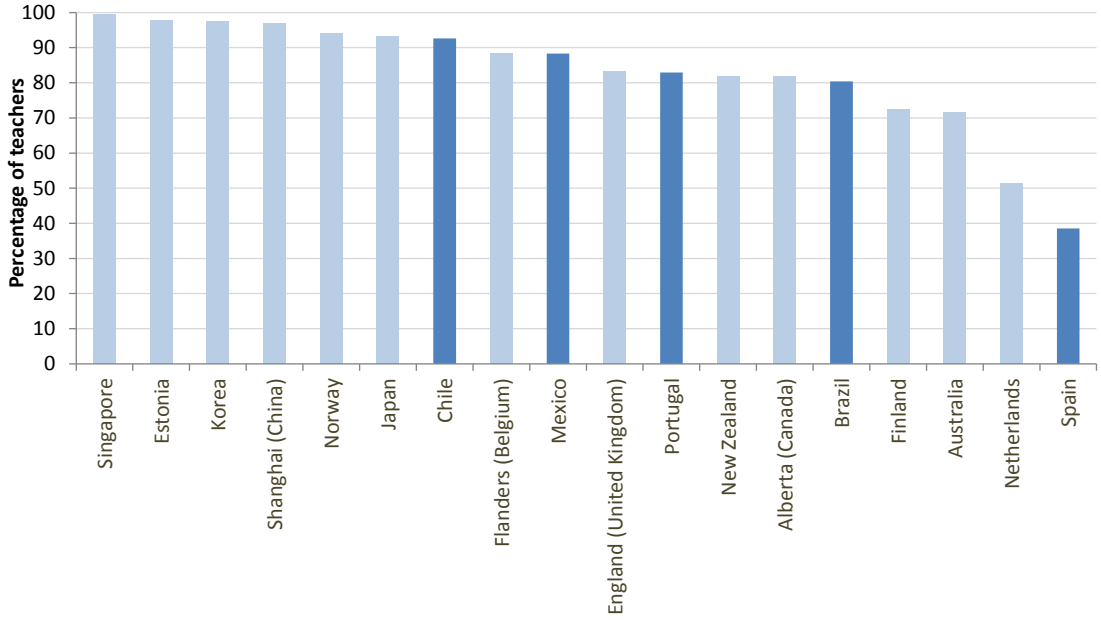
All the evaluation systems designed by the Ibero-American countries have a common purpose: their teacher evaluations have a formative function, meaning that the main objective is to encourage improvement. However, we must not forget that the evaluation results are also used by the administrative authorities to determine teachers' promotions and exercise control over them. Therefore, their evaluations combine both formative and summative elements.

The frequency of periodic evaluations varies widely. In the Flemish Community of Belgium, teachers undergo compulsory evaluations every seven years, the longest interval of all the countries and economies. In the Netherlands it is every six years; in Australia, England (United Kingdom), Korea, New Zealand and Slovenia, every four years; and in Singapore, every three years (Japan did not report how frequently teachers are evaluated). In some of these countries, teachers can undergo periodic evaluations as part of reward schemes or when applying for a promotion. In Canada evaluations vary between jurisdictions but there are usually two regular evaluation processes: general performance

assessments every five years (or more frequently if there are concerns over performance), and more frequent assessments for career development purposes (OECD, 2013[2]).

Figure 5.12. Teachers who received formal appraisals, TALIS 2013

Percentage of lower secondary education teachers whose school principal reports that their teachers were formally appraised by them



Note: The figure only includes data from the high-performing countries and the Ibero-American countries with data available in TALIS 2013.
Countries are ranked in descending order of the percentage of lower secondary teachers whose school principal reports that their teachers are appraised "less than once every two years", "once every two years", "once per year", "twice or more per year".
Source: Based on OECD (2014[3]), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, http://dx.doi.org/10.1787/9789264196261-en, Table 5.1.

Evaluation methodologies

The evaluations in the high-performing countries are usually based on classroom observations and an interview or conversation between the teacher and the inspector. Korea is the only country that does not use interviews as a source of information. Self-evaluations and teacher portfolios are also commonly used. None of the highest-performing countries set tests for their teachers, and only two – England (United Kingdom) and Singapore – use students' results as one of the sources for regularly assessing lower secondary school teachers. However, even if it is not a formal requirement, in all participating countries and schools where head teachers reported that teachers are formally assessed, the majority stated that school examination results are taken into account for teacher evaluations, along with classroom observations and interviews (OECD, 2014, p. 355[3]).

In Ibero-American countries, there is less consensus over the procedures and types of instruments the evaluation systems use than there is over their purpose. One common element in all the countries' systems is the use of peer observation of teaching practice (internal or external). All of the Ibero-American countries studied except Mexico used

classroom observation – whether a video recording of various sessions or with an observer present in the class. Such observation aims to check teachers' ability to plan classes, convey subject knowledge to their students at their level, manage the classroom atmosphere, come up with motivational activities and assess learning.

Another procedure common to many of the countries examined in Annex 5.A is the evaluation of a portfolio compiled by the teacher. In addition to collating evidence of the work carried out inside and outside the classroom, the portfolio invites teachers to reflect on their own practice, which makes a positive impact on professional performance.

The majority of the countries also use a self-evaluation report and a report conducted by teachers' direct superiors in order to analyse areas related to team work and leadership management. Some countries like Chile and Mexico use pedagogical subject knowledge as the source of information carrying the most weight in the teacher evaluation. An interview with an external assessor is also an important part of the evaluation in Chile.

All the Ibero-American countries share the practice of returning an individual evaluation report incorporating not only the score obtained but also recommendations to improve the teacher's skills. The state of New York offers a good example of an educational system using multiple perspectives to assess teachers (Box 5.4).

Outcomes of evaluations

The outcomes of the teacher evaluations vary widely, even in the highest-performing countries. Some countries, like Korea, use separate processes to make decisions about teachers' careers, salaries and professional development (OECD, 2013, p. 287[2]), but the majority of countries base development tasks, promotion decisions and pay increases on a single evaluation process (Figure 5.13).

In eight of the highest-performing countries for which information is available, evaluations are used, to some extent, for the professional development of teachers. In some cases, such as Australia, Macau (China), New Zealand and Singapore, an evaluation systematically translates into a professional development plan for teachers; in others, like Korea, a poor performance results in compulsory training. In England (United Kingdom), the Flemish Community of Belgium and Slovenia, the results of teacher evaluations are less formally related to professional development, but they are expected to have an influence on professional development activities.

Box 5.4. Using multiple instruments to appraise teachers

New York State's teacher evaluation system is typical of most state evaluation systems in the United States in that it provides considerable flexibility to school districts (local education agencies) over the instruments they use for teacher evaluations. However, the state maintains control over the weighting of the different measures used in the evaluation process. In addition, the state approves some instruments (observations and surveys) while giving the districts greater discretion to approve measures of teachers' contributions to student learning growth.

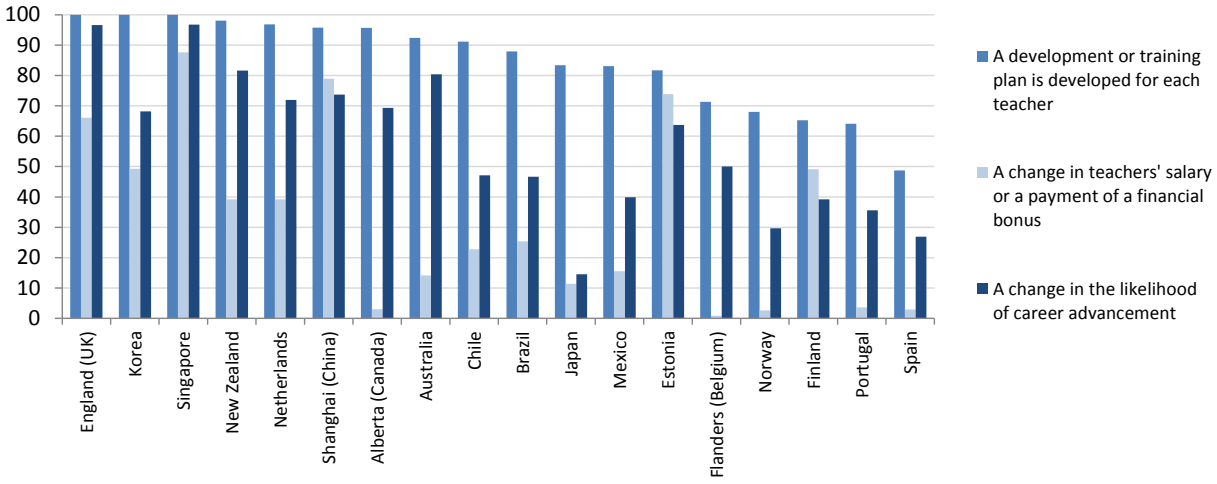
The key features of New York's teacher evaluation system are:

- Multiple measures of teacher performance are required for teacher evaluation, including classroom observations and evidence of teachers' contribution to student learning growth (standardised test score growth in tested subjects and year levels along with district-approved measures of student learning growth for all teachers). Student growth measures constitute 40% of teacher evaluation scores while other state-approved measures such as classroom observations, surveys and portfolios constitute the remaining 60%.
- Student learning objectives are used to measure teachers' contribution to student learning growth in all subjects. Teachers receive guidance in setting appropriate learning objectives for their students and the school districts exercise considerable discretion in approving appropriate assessments and measures to determine student growth.
- Observations must be at least 31% of the 60%, and a minimum of two observations must be conducted each year for each teacher. Anyone conducting classroom observations must be trained and certified to ensure that results of such observations are consistent across classrooms. Districts may select from a variety of state-approved observation protocols (such as Danielson's Framework for Teaching, CLASS [Classroom Assessment Scoring System], and Marzano's Causal Teacher Evaluation System).
- State-approved parent and/or student surveys may be used as part of the 60%, as well as structured review of lessons plans, portfolios and/or other teacher artefacts.

Source: OECD (2013[21]), *Synergies for Better Learning: An International Perspective on Evaluation and Assessment*, http://dx.doi.org/10.1787/9789264190658-en.

Figure 5.13. Outcomes of teacher appraisals, TALIS 2013

Percentage of lower secondary education teachers whose school principal reported that the following outcomes occurred "sometimes", "most of the time" or "always" after formal teacher appraisals



Note: Countries are ranked in descending order of the proportion of lower secondary teachers attending school whose principals reported that appraisals led to a development or training plan for the teacher.
Source: Based on OECD (2014[3]), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, http://dx.doi.org/10.1787/9789264196261-en, Table 5.3.

In many countries, teachers' career advancement is at stake in evaluations. However, in some countries, such as Japan, evaluation results are not formally linked to career promotions and nor are special evaluations conducted to gain a promotion. In England (United Kingdom), the results of regular evaluations are not formally linked to job promotions either, but in 2013, 97% of lower secondary school principals reported that the results of formal evaluations influence the likelihood of teachers being promoted (OECD, 2014[3]) (Figure 5.13).

Teachers' salaries are only directly dependent on periodic evaluations in Singapore, where a salary increase is given for good performance in the form of an earnings assignment. In Australia, England (United Kingdom), Macau (China), New Zealand and Slovenia, the impact of evaluations on teachers' salaries reflects their influence on career progression. In the Flemish Community of Belgium, Japan and Korea, the results of regular teacher evaluations are not used to determine salary levels, but Korea has a separate performance-based incentive system which means teachers must undergo annual evaluations (OECD, 2013[2]).

In terms of the outcomes of evaluations, the majority of the Ibero-American countries analysed use performance evaluation as a means for teachers to ascend the career ladder, which is linked to salary increases. In some cases the salary increases are a direct consequence of the evaluation, while in other cases teachers need a positive score in their performance evaluation to be able to sit a promotion evaluation. Teachers who do not pass may have to leave the profession, normally after undergoing a period of training and supervision, and a second – or even a third – opportunity to take the evaluation.

Conclusion

Professional development and teacher evaluations are two components that need to be combined to guide and improve teachers' performance. A holistic evaluation of all the main components of teaching effectiveness can help identify areas where teachers need support. High-stakes teacher evaluations are not enough to build a high-quality teaching workforce. Evaluations should have a formative component, clearly outlining training opportunities for teachers. Professional development opportunities help teachers to update their skills, learn and reflect on the areas where they need the most help.

While professional development is compulsory for teachers in most OECD countries, in Ibero-American countries it is mainly used as a mechanism for promotion and salary increases. In other words, in Ibero-American countries, participation in continuous learning takes place within a framework of incentives in which professional development is seen as step to better working conditions. However, in high-performing OECD countries like Finland and Estonia, professional development is ingrained within a concept of lifelong learning for teachers; teachers are required to update their skills, making it compulsory in these countries. The available data also suggest that most of the cost of professional development in Ibero-American countries falls on the teachers, a situation associated with low levels of participation in professional development.

In general, teachers in the Ibero-American schools sampled by PISA 2015 have lower participation rates in professional development than the OECD average. In a few of the countries, teachers working in socio-economically advantaged and private schools were more likely to participate in professional development than those in public and socio-economically disadvantaged schools. Among the Ibero-American countries participating in TALIS 2013, teachers also showed high levels of need for training in teaching students with special needs and for teaching in multicultural or multilingual classrooms.

This chapter also showcased the some of the attributes of the most effective forms of professional development. These tend to be school embedded, based on active learning, promote collaborative learning and take place over an extended period of time. Although in some Ibero-American countries, collaborative learning was more common than the OECD average, most countries in the region were less likely to provide workshops tailored to specific school needs or a particular set of teachers.

There was considerable variety across the region in the area of teacher evaluation systems. Among the Ibero-American countries which have evaluation systems, a few common attributes can be identified. First, evaluations tend to have both a formative and summative component: they are used both to hold teachers accountable to identify the main areas for further improvement. Second, countries in the region use multiple instruments to assess teachers such as observation of the teaching practices in the classroom, portfolios, self-evaluation and student assessments. Third, as with professional development, teachers' evaluations play a crucial role in promotions and salary increases.

In high-performing education systems, evaluations are conducted in systematic manner and are usually embedded in specific legislation or framework overseeing teachers' career structures. At the same, teachers value the process and expect the outcome of their evaluations to have an impact not only on their performance in the classroom but also in the career development.

Is teacher evaluation a key factor in enhancing teacher quality and thus improving students' results? Those who have studied educational practices and policies in the

highest-performing countries claim that evaluation is an important element, but it must not be forgotten that students' results do not depend on teachers alone. In 1966 the Coleman report broadly documented the influence of a student's social, cultural and economic context, combined with their personal and family experiences and circumstances (Coleman et al., 1966[23]); the school's socio-cultural context, its culture, leadership and available resources are also factors at play. Despite these caveats, it is safe to say that a commitment to improving teachers' professional development is especially important if we want to enhance the quality of the education system, particularly if this is targeted at those who work in the most-challenging schools.

This latter consideration is particularly important in Latin American countries since they exhibit high levels of social inequality which have a very negative effect on school results. Policies to support the professional development and performance evaluation of teachers must not neglect the difficult conditions in which a large majority of them work. Alongside the policies that a significant number of Latin American countries are developing to support the professional development of teachers, special attention should be paid to the conditions in which teachers work and the learning time dedicated to students.

Annex 5.A. Teacher evaluation systems in Ibero-American countries participating in PISA

This annex describes the teacher evaluation systems that are currently being used in Chile, Colombia, the Dominican Republic, Mexico, Peru and Portugal, all Ibero-American countries that participated in the general PISA study.

Argentina, Brazil, Costa Rica, Spain and Uruguay also participated in PISA but they do not currently have teacher evaluation systems at the national level, so they have not been included in this annex.

Teacher evaluation in Chile

Chile has the most well-developed teacher evaluation system of all the Latin American countries. In 2004, Chile enacted the Law on Teacher Evaluation (Law 19.961), then regulated under Education Decree No. 192 of 30 August 2004 and published on 11 June 2005 (Ministry of Education, Chile, 2004[24]). The Ministry of Education, through the Centro de Perfeccionamiento, Experimentación e Investigaciones Pedagógicas (Centre for Training, Experimentation and Pedagogical Research; CPEIP), is in charge of teacher evaluation.

The Teacher Evaluation Regulation compels all teachers in public schools to be assessed every four years; if they fail to reach the expected standards they must undergo a re-evaluation the following year or two years later, depending on the performance level attained. Since 2016, in addition to teachers in state schools, those who teach in government-dependent private schools also have to be evaluated.

Chile's teacher performance evaluation is of a formative nature. Its purpose is to ascertain how well teachers perform based on the standards set out in the Good Teaching Framework, developed in 2003 and revised in 2008, by the Ministry of Education (Ministry of Education, Chile, 2008[25]). This framework covers four areas: 1) teaching preparation; 2) creating an environment conducive to learning; 3) professional responsibilities; and 4) providing education for all. Various criteria and their associated measurement parameters are defined for each area.

The methodology used is a mixture of qualitative and quantitative approaches. It uses four sources of information with different weightings to get the final results of the evaluation:

1. **Self-evaluation** (10%). This invites teachers to reflect on their own teaching practice. It uses a questionnaire in which teachers must state how often they carry out the activities or tasks listed, based on the established criteria (Good Teaching Framework). Teachers respond to the questionnaire and the answers are subsequently scored by the evaluators reflecting a performance level in the criteria.

2. **Portfolio** (60%). Over 12 weeks, teachers must gather evidence of their teaching practice, both written documentation and video recordings. The written evidence should be about their best practices and it should refer to at least three classes in one teaching unit of the same topic, show the evaluation they conducted on it and answer questions on their development. The second component in the portfolio is a recording of a 40 minute class. The final part of the portfolio is the submission of a piece of collaborative written work produced alongside other teachers in the school for the joint development of learning activities for the students.
3. **Interview with a peer inspector** (20%). This is a conversation structured around six questions based on teaching practice. Since 2015, the assessed teachers know the questions in advance, allowing them to reflect upon them beforehand. The peer inspectors are teachers with at least five years' experience in the same school level and the same speciality as the teacher being evaluated, who have attained outstanding results in their own performance evaluations and been trained by the CPEIP to undertake this task.
4. **Third party reference report** (10%). This is a report drawn up by the school principal and the technical head of education, on the work conducted by the teacher. They answer similar questions to those in the self-evaluation and, similarly, they place the teacher at a performance level determined by each criterion.

In this evaluation it is important for teachers to incorporate contextual information about things that have facilitated or inhibited their practice into the evidence provided.

Once the evaluation process has ended, the teacher receives an individual report showing their overall performance profile, qualitative evaluations of their strengths and weaknesses in each of the four areas, and final recommendations for them to improve their practice.

There are four performance levels: Outstanding, Competent, Basic and Unsatisfactory. Attaining the first two levels is seen as positive. Teachers who obtain the Basic or Unsatisfactory level must undertake a professional growth programme to acquire the competences, skills and knowledge established in the domains and criteria of the Good Teaching Framework. This programme is based on the results of the report and involves professional mentorship or guidance; participating in training courses, workshops or seminars; and observing classes led by other teachers. Once they have completed the growth programme, teachers who obtained an Unsatisfactory performance level must be re-assessed the following year. If they receive two consecutive unsatisfactory evaluations, the outcome is removal from their posts. Teachers who obtain the Basic performance level must undergo another evaluation after two years to demonstrate that they have made full use of the improvement activities. Teachers who remain at a basic level after three evaluations are also removed from their posts.

In addition to individual reports, the school management team are issued a report giving the performance level of each of the evaluated teachers and an additional strength and weaknesses description of the school. The local authority also receives a report containing a list of all the evaluated teachers and their performance levels, a section containing the portfolio results, the strengths and weaknesses of the state teachers, and a summary listing the percentage of teachers at each performance level.

In 2016, Chile implemented a Professional Development System (PDS) for teachers, which was put into place based on the specifications outlined in law 20903. The new PDS

was designed to be rolled out on a gradual basis so that it would eventually affect almost all teachers, while Teacher Evaluation (TE) was first designated for public sector teachers only. The PDS uses aspects of previous TE initiatives, namely the TE Portfolio and a disciplinary-pedagogical knowledge assessment, while at the same time recognising teacher experience (in years). The implementation period for the PDS is 2016-2019, but full implementation (along with other changes in education legislature) is expected by around 2025.

The Recognition System establishes five development bands: Initial, Early, Advanced, Expert I and Expert II. All teachers are placed in one of these career bands based on their qualifications, years of experience and evaluation results. Those in the Initial and Early bands must go through the Recognition System but the evaluation is voluntary for those in the upper bands.

To advance in their careers, teachers must sit a test of specific and educational knowledge in their area of discipline, and submit a similar portfolio of teaching activity to that submitted for their performance evaluation. They also need to have taught for a certain number of years before they can apply for a promotion: 4 years for the Early and Advanced bands, 8 years for the Expert I band and 12 years for the Expert II band. Teachers who enter at the initial band have two opportunities to progress to the Early band. If they fail on the first attempt, they can apply again in two years. If they do not manage to advance to the next band on their second attempt, they cannot progress in their teaching careers.

The Recognition System is linked to pay increases. All teachers who manage to advance to a new band, receive a salary increase. The aim of this development system is to increase the value of a teaching career. Teachers who work in schools that educate the most disadvantaged students also earn larger increases and improved working conditions.

Teacher evaluation in Colombia

In 2007, the Ministry of National Education of Colombia passed a decree (Decree no. 3782 of 2 October 2007) regulating the implementation of annual teacher and school principal performance evaluations (Ministry of Education, Colombia, 2007[26]), as set out in the Statute of Professional Teaching passed in 2002 (Decree-law of 19 June 2002).

Chapter IV of the Statute describes three types of evaluation: 1) the trial period evaluation; 2) performance evaluation for teachers and principals; and 3) skills evaluation for teachers and principals.

The **trial period evaluation** applies to teachers who have been in their post for at least four months after passing the entry exam to the teaching council. A satisfactory evaluation leads to entry onto the register of teachers, while failing the evaluation means the teacher's removal from their post.

Teacher performance evaluations are applied annually to all teachers who have been teaching for at least three months during that academic year. They assess two main groups of basic skills. First, they assess the functional skills related to academic, administrative and community management, and, for principals, also executive management skills. Together, these account for 70% of the total evaluation score. The remaining 30% of the evaluation examines behavioural skills including leadership ability, communication ability, team work and negotiation. The results are divided into three performance levels: Outstanding (scores of over 90 points), Satisfactory (60-90 points)

and Unsatisfactory (below 60 points). In all cases, teachers receive an individual report during their personal interview. Based on a detailed analysis of the breakdown of each skill and the joint reflections of the teacher and the inspector (the school principal for teacher evaluations or the executive officer of the Secretariat of Education for principal evaluations), a personal and professional development plan is set out. Teachers who have passed the evaluation may request a skills evaluation if they meet the rest of the set requirements. Teachers who obtain two consecutive Unsatisfactory evaluations are removed from the register of teachers.

This evaluation is set out as ongoing and systematic, using a primarily qualitative methodology based on gathering information throughout the school year. This is evaluated by the inspector at least twice during the school year: halfway through and at the end of the academic year. All teachers and principals must provide evidence of their work including the planning and organisational aspects as well as the outcomes obtained. This means that they must provide documentary proof and testimonials that allow the inspector to check how well the teacher is developing their professional skills. The documentation provided must include their annual teaching plan, teaching units, students' work and the results of internal and external tests, educational material drawn up by teachers, letters or emails sent to families, and complaints received. They may also use supporting material to provide opinions about their work from their students and their families and other members of the educational community.

The purpose of this evaluation is to allow the administrative authority to conduct a control. However, as it is based on the provision of evidence, the teacher or principal concerned essentially internalises the skills they need to develop or improve. This brings about a self-reflection process, underpinned by feedback from the inspector, which also establishes an improvement process for the teachers or principals being evaluated.

Teacher and principal skills evaluation: the regulatory development of this type of evaluation is stipulated in Decree 1075 of 2015 establishing the requirements to participate in and be eligible for a promotion and salary increase (Ministry of Education, Colombia, 2015[27]). These evaluations are arranged by accredited regional bodies, every six years at most. This evaluation is voluntary for teachers and principals, but teachers who wish to gain a promotion or a pay increase may apply for it. To participate in this evaluation, teachers must have served a minimum of three years in their current grade or band, show proof of any necessary qualifications, and have obtained at least a satisfactory evaluation performance. If they have requested a salary increase, applicants will have to show proof of two satisfactory evaluations during previous school years.

The purpose of this evaluation is primarily formative since it encourages the teacher or principal to reflect on their teaching practice in order to improve it.

The methodology used is primarily qualitative as 80% of the evaluation is based on making a video which, following the guidelines and criteria set out by the education authority, must contain different components of their teaching practice. The videos are evaluated by other teachers (peer evaluation) who have been selected based on their training and merits and have received specific training to conduct this type of evaluation. The remaining 20% of the score is determined by a self-evaluation report carried out by the teacher or principal being evaluated, student surveys (if the evaluee teaches students in year 7 and above), teacher surveys (if the evaluee is a principal or co-ordinator), and the average of the last two performance evaluations.

To pass this evaluation and therefore move up a band or gain a salary increase, teachers must obtain a score above 80% in the skills evaluation, meaning that only those who pass the evaluation benefit from its outcomes.

Teacher evaluation in Mexico

Mexico was one of the first Ibero-American countries to incorporate teacher evaluation into its legislation, although, as stated by Martínez Rizo (OEI, 2013[10]), the effectiveness of the evaluation system was influenced by the Sindicato Nacional de Trabajadores de la Educación (National Union of Educational Workers; SNTE).

In 1993 Mexico created the National Teaching Career Programme with the aim of improving the quality of its education system by strengthening the teaching profession. It is a voluntary programme. The evaluation is based on the general Lineaments of the Teaching Career (Secretariat of Public Education, Mexico, 2011[28]), stipulated by the Secretaría de Educación Pública (Secretariat of Public Education; SEP) and the SNTE and amended in 2013. Teachers who undergo the evaluation enter one of the programme's five established levels and, as a result, they receive incentive pay correlating to an increase of 20-150% of base salary. With different weightings based on the teacher's profile, The evaluation takes into account the following areas: 1) time in the job; 2) academic background; 3) continuous professional development courses undertaken; 4) professional training (measured by a knowledge and training test); 5) teachers' professional performance; and 6) their students' results. Each area is given a different weighting based on the teacher's profile. Since 2006, students' results have been measured using census tests conducted by the SEP, and these results account for between 40% and 50% of the total evaluation score.

On 11 September 2013, Mexico approved the General Law of Professional Teaching Service which created a Professional Teaching Service and an amendment to the National Institute for Education Assessment and Evaluation (Secretariat of Public Education, Mexico, 2013[29]). It replaced the National Teaching Career Programme with the Promotions and Incentives Programme for primary and lower secondary school teachers, which has similar aims to the previous programme.

Article 52 of the law states that all primary and lower secondary school teachers must undergo performance evaluations and devised an evaluation model. Its purpose is mainly formative: to detect areas where practising teachers need to improve and help them to better their teaching practices through training and evaluation. This model came into force in 2015 and all teachers must undergo the evaluation at least every four years.

This evaluation model is based on the teaching profile recognised by the General Law of Professional Teaching Service and it is structured around five areas, corresponding to the skills and abilities required for all teachers across the country. These are:

1. Knowing their students, knowing how they learn and what they have to learn.
2. Organising and assessing educational work, and assuming a relevant teaching approach.
3. Recognising themselves as professionals who are continually improving in order to help students learn.
4. Assuming the legal and ethical responsibilities inherent to the profession for the good of their students.

5. Participating in the efficient running of the school and fostering its links with the community to ensure that all students successfully complete their schooling.

For each of these aspects, a series of parameters and performance indicators adapted to the different stages of education and professional profiles has been established.

The evaluation process has been amended based on its first two years of implementation. It currently comprises three stages containing information gleaned using different sources and methodologies. The first stage is a professional responsibilities report, which evaluates how well the set tasks were carried out, the strengths and areas for improvement. This report is drawn up based on a questionnaire completed by the teacher and school principal. The second stage is the teaching project, which involves submitting a project that clearly reflects the context of the school where the teacher works and a syllabus for various classes, the application of planned activities with proof of the work done by the students while the learning unit was being taught, and the teacher's reflection on their own practice. The last stage is the teaching and curricular knowledge exam, involving a test on the curriculum, discipline, learning processes and teaching approach, which the teacher must pass.

Once the information has been collected, the evaluated teachers obtain an individual results report. Teachers who obtain more than 1 000 points are assigned one of the three performance levels: Pass (1 000-1 199 points), Good (1 200-1 399 points) or Outstanding (more than 1 400 points). They will all gain recognition and, if they meet the conditions, they will be considered for the job promotion.

Teachers who score under 1 000 points overall, or who could not be marked because they did not submit all the evaluation documents, or did not obtain an adequate level in at least two of them, receive a Fail grade. Their level of performance will not be recognised and they will have to undergo a re-evaluation within twelve months. Teachers who fail three evaluations may be removed from their post.

Teacher evaluation in Peru

The legal framework of the Public Teaching Career is set out under Title 2 of the Teaching Reform Law (Law no. 29944 of 25 November 2012) of the Ministry of Education of Peru. This title, the regulation of which was adopted in 2013 (Ministry of Education, Peru, 2013[30]) outlines the evaluations for teachers in the public sector, assessing their entry, promotion, assumption of wider responsibilities and overall performance. There were multiple modifications to the Teaching Reform Law, two of them affecting teaching evaluation: Law 30541 of 23 February 2017 (Ministry of Education, Peru, 2017[31]), and Law 30747 from 5 April 2018.

The Public Teaching Career comprises eight bands. Teachers can progress through these bands by accumulating merits and passing the compulsory system evaluations.

To get into teaching, candidates must first pass a state test on general skills, knowledge of their chosen specialist subject, and curricular and pedagogical expertise. The second phase, co-ordinated by the Local Management Authorities, evaluates their teaching ability, professional development, merits and professional experience. The Ministry of Education is responsible for setting out the conceptual frameworks, technical specifications and the qualification system for the first stage. It also prepares the procedures, instruments and qualification system for the second stage, in keeping with the Good Teacher Performance Framework of 2012.

At least every five years, all state school teachers must undergo teacher performance evaluation. The purpose of these evaluations is essentially formative since they aim to check teachers' skills and professional performance and identify their training needs in order to support them in the improvement of their teaching practice.

Even though the main purpose is formative, if a teacher does not pass the assessment for three consecutive years, he or she will be removed from the public teaching career. In addition, teachers must pass the assessments in order to apply for a promotion and access other positions. So it has high consequences.

The evaluations are conducted by evaluation commissions, chaired by the school principal or the Management Department (if there is no principal).

The Good Teacher Performance Framework sets out the areas to be evaluated (Ministry of Education, Peru, 2014[32]). These are 1) preparing to teach students; 2) learning to teach students; 3) participating in community-associated school management; and 4) professional development and the *teacher's identity* (commitment to the profession).

The evaluation uses multiple tools and information sources to collect this information: classroom observation by an accredited observer, surveys given to students' families, evaluation guidelines, the teachers' commitments and responsibilities, planning, that is also collected by these instruments, and observation of their classroom space and material management.

The outcomes of this evaluation are different for teachers who gain a sufficent performance level in the evaluation and those who do not pass. In order to remain a public teacher, they must pass the performance evaluation which is, in turn, a requirement to access promotion evaluation and take on greater responsibilities. Therefore, passing the evaluation means career progress and development.

Teachers who do not pass the evaluation must undergo specific training to strengthen their teaching practice for a period of six months and then retake the evaluation. If they fail to pass a second time, they will receive a further six months of training and undergo a third evaluation. If they fail the evaluation the third time round, they will be removed from the public teaching career.

In addition to the entry and performance evaluations, Peru has two other types of evaluations: one for progressing up the teaching scale and the other for gaining greater responsibilities. In both, candidates must pass a national knowledge and skills test, and be assessed by evaluation commissions appointed to each type of responsibility or scale. In the case of promotion, the assessment is about professional experience and there is no scale differentiation.

Teacher evaluation in Portugal

Since 2012, the teacher performance evaluation system for nursery, primary and secondary school teachers in Portugal, has been regulated on a national scale by means of a decree (General Secretary of Education Science, Portugal, 2012[33]). Portugal's teacher performance evaluation is linked to the career development of non-university level teachers. They are seven levels to teaching careers. Teachers start on the first level and gradually progress based on their evaluation results. This advancement is reflected both in the assumption of new responsibilities and the salary earned.

The purpose of evaluation in Portugal is two-fold. It has an accountability role, as all teachers must be evaluated at different stages of their professional trajectory and this evaluation is used by the state to check on teachers. It also has a formative purpose, as all teachers receive feedback from their evaluations which they can use as a starting point to improve their performance and progress their careers.

The Portuguese evaluation model is based on three differently weighted areas. First, the scientific and educational dimension, which accounts for 60% of the final evaluation, assesses teachers' personal skills in terms of their subject knowledge and their ability to organise content instructively, plan lessons and ensure that learning is having an effect on their students through their relationship with them and management of in-class situations. The second area, accounting for 20% of the total, is participation in school life and community outreach. The third dimension, also 20%, is continuous learning and professional development.

The evaluations use diverse methods and sources of information. The chairman of the general council, school principal, the education council and its evaluation section, internal and external inspectors, and the evaluees themselves take part. Each of these groups play different roles in the evaluation process. While the collective and one-person bodies (i.e school authorities) have the task of organising the process and preparing the instruments and registration documents for the evaluation, the co-ordinator of the teacher's department acts as the school's internal inspector. Their role is to evaluate the teaching project and the teacher's self-report. To do so, they must take into account the registration documents drawn up by the education council. The teaching project is a two-page document in which the teachers must, on an annual basis, succinctly reflect the school's educational project in their teaching areas. The self-report – also annual and three pages long – involves a reflection on their teaching practice, the type of classroom activities, an analysis of the results obtained and their contribution to the school's educational project. The internal inspector writes an evaluation report on each of the teachers they have assessed based on the documentation they provided.

An external inspector appointed by the education authority is in charge of observing the teacher in the classroom and recording their performance in the scientific and educational area. This observation is compulsory for teachers in their qualification period, those in Bands 2 and 4 of their teaching careers, those who have received a negative evaluation and those who wish to gain excellent results. The inspector must observe at least 180 minutes of teaching at different points over 2 years.

The educational authorities draw up a final report based on the whole evaluation process. It is sent in writing to the evaluee and includes information from the different sources. The final score is based on the weighted score for each dimension, and there are five levels of performance: Excellent, Very Good, Good, Acceptable and Fail.

The outcomes of these evaluations determine teachers' career advancement. Those who obtained the level of Excellent progress one year up the scale the following school year; those deemed as Very Good progress six months up the scale. Achieving a level of Good means being considered for the evaluation cycle in order to make progress while those who get a Regular score must successfully complete the training programme set out by the inspector and approved by the education council, so that the evaluation period is taken into account and they can progress in the teaching career. Finally, teachers who receive a Fail, are not given active service time and must start the evaluation course again. In addition, they must draw up a year-long training plan that includes classroom observations. Two consecutive failed evaluations lead to an investigation process and, in

the case of temporary teachers, this will result in them being unable to continue their teaching post or compete for teaching places for the next three years.

Teacher evaluation in the Dominican Republic

In recent years, progress has been made concerning teacher performance evaluations in the Dominican Republic. Although Title IX of the Teaching Statute adopted in 2003 (Ministry of Education, Dominican Republic, 2003[34]) already stipulated the need to conduct teacher performance evaluations every three years, the practice itself was not incorporated into the system until 2017 (Ministry of Education, Dominican Republic, 2017[35]). Under an agreement between the Ministry of Education, the Dominican Institute of Education Quality Evaluation and Research, and the Organisation of Ibero-American States, a teacher performance evaluation model was built in 2017.

The model has multiple evaluation phases. The first two relate to collecting information and the next phases involve conducting the evaluation and returning the results. All teachers who had been in the profession for at least a year participated in the first phase, which took place during the last four months of 2017. During this phase, information was collected using different instruments: classroom observations, teaching plans, a self-evaluation form, evaluations by the principal and a professional performance questionnaire. The second phase was conducted during the months of February and March 2018 and collected information from a sample of students and families.

This evaluation aims to measure a large part of the teaching skills specified in 2014 by the Ministry of Education document entitled "Professional and performance standards for the accreditation and development of the teaching career" (Ministry of Education, Dominican Republic, 2014[36]). The standards are grouped into four main areas: 1) the student and their learning; 2) curriculum content; 3) the teaching and learning process; and 4) personal and professional commitment. Each one has 3 or 4 parameters (11 in total) that qualify the areas with specific teaching practice aspects, and 118 indicators are used to assess teachers' performance.

The purpose of this evaluation is fundamentally summative. It is not an evaluation of the process; instead it analyses the results to verify the degree of skills acquired by the teachers.

The methodology used is a mixture of qualitative and quantitative approaches. Some aspects are assessed during classroom observations and through an analysis of the teachers' work, using both other teachers (peer evaluation) and their superiors as inspectors. Surveys are used to examine other areas.

Once the field work is complete, each teacher will receive an individual report detailing their results and the administrative authority will receive a general report on the overall level of teachers in the country.

The main expected outcome of this evaluation is a pay rise. The increase depends on the score each teacher gets. As this is a diagnostic evaluation, continuous professional development programmes to improve the quality of teaching will be drawn up based on the general performance results.

Notes

[1] For Mexico, only for pre-primary, primary and lower secondary teachers of general programmes.

[2] This section takes into account the highest-performing countries – those that gained an above-average share of students in the higher performance brackets in PISA 2015 (Level 5 and above) in science, reading and maths, while also having a below-average proportion of students who did not reach the basic skills level (Level 2) in those subjects. Therefore, these systems promote excellence and are also inclusive in their capacity to ensure minimum learning standards for all.

[3] Australia, Beijing-Shanghai-Juanitas-Guangzhou (China) (hereinafter "BSJG [China]"), Canada, Estonia, Finland, Germany, Hong Kong (China), Japan, Korea, Macau (China), the Netherlands, New Zealand, Norway, Singapore, Slovenia, Switzerland and Chinese Taipei. The analysis includes two sub-national jurisdictions in the OECD that meet the aforementioned criteria and contribute to the system indicators published in the OECD's annual *Education at a Glance* report: England (United Kingdom) and the Flemish Community of Belgium.

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Annex A. PISA tables for comparison

Table A A.1. Mean score and variation in science performance

	Mean score		Standard deviation		Percentiles													
					5th		10th		25th		Median (50th)		75th		90th		95th	
	Mean	S.E.	S.D.	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.
OECD																		
Australia	510	(1.5)	102	(0.9)	336	(2.6)	372	(2.5)	438	(2.2)	515	(1.8)	583	(1.9)	639	(2.2)	672	(2.8)
Austria	495	(2.4)	97	(1.3)	335	(3.8)	365	(3.4)	424	(3.6)	498	(2.9)	565	(2.8)	621	(3.0)	652	(3.6)
Belgium	502	(2.3)	100	(1.2)	332	(3.4)	364	(3.8)	429	(3.5)	508	(2.9)	577	(2.2)	629	(2.1)	657	(2.2)
Canada	528	(2.1)	92	(0.9)	369	(3.3)	404	(2.9)	465	(2.5)	531	(2.5)	593	(2.2)	644	(2.6)	674	(2.7)
Chile	447	(2.4)	86	(1.3)	308	(3.1)	336	(2.7)	385	(3.0)	445	(3.2)	509	(3.2)	560	(3.3)	589	(3.4)
Czech Republic	493	(2.3)	95	(1.4)	338	(4.1)	367	(3.7)	424	(3.4)	493	(3.0)	561	(2.5)	618	(3.1)	650	(3.8)
Denmark	502	(2.4)	90	(1.1)	351	(3.8)	383	(3.6)	440	(3.1)	504	(2.8)	565	(2.8)	617	(3.2)	648	(4.0)
Estonia	534	(2.1)	89	(1.1)	384	(4.3)	416	(3.3)	473	(2.7)	537	(2.4)	597	(2.7)	648	(2.9)	677	(3.7)
Finland	531	(2.4)	96	(1.3)	364	(4.6)	402	(4.2)	466	(3.5)	535	(2.9)	599	(2.5)	651	(2.7)	681	(3.5)
France	495	(2.1)	102	(1.4)	322	(4.1)	355	(3.7)	421	(3.4)	501	(2.5)	571	(2.4)	623	(2.8)	652	(3.3)
Germany	509	(2.7)	99	(1.5)	342	(4.4)	376	(4.3)	439	(3.6)	512	(3.3)	580	(2.8)	636	(2.9)	669	(3.8)
Greece	455	(3.9)	92	(1.8)	305	(5.7)	333	(5.6)	388	(5.2)	456	(4.5)	522	(3.8)	575	(4.1)	604	(4.5)
Hungary	477	(2.4)	96	(1.6)	319	(4.0)	347	(4.1)	406	(3.5)	480	(3.3)	547	(3.0)	601	(3.5)	630	(3.7)
Iceland	473	(1.7)	91	(1.2)	324	(3.5)	354	(3.1)	408	(2.9)	474	(2.5)	538	(2.3)	593	(3.3)	622	(3.9)
Ireland	503	(2.4)	89	(1.3)	356	(5.0)	387	(3.9)	441	(3.2)	503	(2.9)	565	(2.5)	618	(2.5)	648	(3.2)
Israel	467	(3.4)	106	(1.6)	295	(4.9)	327	(4.6)	389	(4.4)	466	(4.6)	544	(4.1)	606	(3.7)	640	(3.5)
Italy	481	(2.5)	91	(1.4)	328	(4.1)	359	(3.8)	415	(3.2)	483	(3.5)	547	(2.8)	599	(2.8)	626	(3.3)
Japan	538	(3.0)	93	(1.6)	375	(5.3)	412	(4.4)	475	(3.9)	545	(3.4)	605	(3.2)	655	(4.0)	683	(4.7)
Korea	516	(3.1)	95	(1.5)	352	(4.7)	388	(4.5)	451	(3.8)	520	(3.7)	584	(3.3)	636	(3.7)	665	(3.9)
Latvia	490	(1.6)	82	(1.1)	355	(3.3)	382	(3.0)	432	(2.4)	491	(2.2)	548	(2.0)	596	(2.2)	623	(3.3)
Luxembourg	483	(1.1)	100	(1.1)	323	(2.9)	351	(2.6)	407	(2.2)	482	(1.7)	556	(1.7)	615	(2.3)	649	(3.1)
Mexico	416	(2.1)	71	(1.1)	301	(3.2)	325	(2.5)	366	(2.2)	414	(2.4)	464	(2.8)	510	(3.1)	535	(3.4)
Netherlands	509	(2.3)	101	(1.5)	341	(4.0)	372	(4.3)	434	(3.9)	512	(2.9)	583	(2.5)	638	(2.9)	668	(3.6)
New Zealand	513	(2.4)	104	(1.4)	341	(3.5)	374	(3.8)	439	(3.8)	516	(3.0)	588	(2.8)	647	(3.5)	682	(3.8)
Norway	498	(2.3)	96	(1.3)	338	(3.8)	370	(3.3)	432	(3.0)	501	(2.7)	566	(2.9)	622	(3.3)	655	(3.9)
Poland	501	(2.5)	91	(1.3)	354	(4.3)	384	(3.4)	437	(2.9)	502	(3.0)	565	(3.1)	619	(3.5)	650	(4.0)
Portugal	501	(2.4)	92	(1.1)	349	(3.8)	379	(3.2)	435	(3.4)	503	(3.3)	568	(2.7)	620	(3.1)	649	(3.1)
Slovak Republic	461	(2.6)	99	(1.5)	296	(5.3)	329	(4.6)	391	(3.6)	463	(2.9)	532	(2.8)	588	(3.2)	621	(3.7)
Slovenia	513	(1.3)	95	(1.1)	354	(3.1)	386	(2.6)	445	(2.1)	515	(1.8)	581	(2.1)	636	(3.0)	667	(3.6)
Spain	493	(2.1)	88	(1.1)	344	(4.0)	374	(3.5)	432	(2.9)	496	(2.4)	556	(2.4)	605	(2.4)	633	(2.9)
Sweden	493	(3.6)	102	(1.4)	322	(4.7)	357	(4.6)	421	(4.2)	496	(4.1)	567	(4.2)	625	(4.0)	658	(4.4)
Switzerland	506	(2.9)	100	(1.5)	339	(4.7)	373	(4.1)	433	(4.3)	509	(3.5)	580	(3.3)	632	(2.9)	662	(3.3)
Turkey	425	(3.9)	79	(1.9)	301	(3.8)	325	(3.5)	368	(3.7)	421	(4.9)	482	(5.5)	532	(6.1)	560	(5.7)
United Kingdom	509	(2.6)	100	(1.0)	345	(2.9)	377	(3.2)	438	(2.9)	512	(3.3)	581	(3.1)	638	(3.2)	670	(3.5)
United States	496	(3.2)	99	(1.4)	336	(4.1)	368	(3.9)	425	(3.7)	495	(3.8)	567	(3.9)	626	(3.9)	658	(4.9)
European Union total	495	(0.7)	98	(0.4)	333	(1.3)	364	(1.1)	425	(1.0)	497	(0.9)	565	(0.8)	620	(1.0)	652	(1.1)
OECD total	488	(1.1)	100	(0.5)	328	(1.3)	358	(1.2)	414	(1.3)	487	(1.4)	560	(1.4)	620	(1.4)	653	(1.5)
OECD average	493	(0.4)	94	(0.2)	336	(0.7)	368	(0.6)	426	(0.6)	495	(0.5)	561	(0.5)	615	(0.5)	645	(0.6)

Table A A.1. Mean score and variation in science performance (*continued*)

	Mean score		Standard deviation		Percentiles													
					5th		10th		25th		Median (50th)		75th		90th		95th	
	Mean	S.E.	S.D.	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.	Score	S.E.
Partners																		
Albania	427	(3.3)	78	(1.5)	301	(3.8)	328	(3.2)	373	(3.2)	426	(3.6)	481	(4.8)	530	(5.0)	558	(4.7)
Algeria	376	(2.6)	69	(1.5)	268	(3.4)	291	(3.3)	329	(2.5)	373	(2.5)	419	(3.2)	465	(4.5)	496	(6.1)
Brazil	401	(2.3)	89	(1.3)	265	(2.4)	291	(2.1)	337	(1.9)	394	(2.5)	460	(3.3)	522	(4.1)	558	(4.6)
B-S-J-G (China)	518	(4.6)	103	(2.5)	341	(6.5)	377	(6.0)	445	(5.6)	524	(5.6)	595	(5.3)	649	(5.6)	677	(6.5)
Bulgaria	446	(4.4)	102	(2.1)	283	(4.8)	313	(4.8)	370	(5.3)	446	(5.8)	521	(5.1)	578	(5.2)	611	(5.6)
CABA (Argentina)	475	(6.3)	86	(2.7)	331	(8.4)	364	(7.7)	416	(7.0)	476	(7.4)	537	(7.4)	586	(7.9)	612	(8.6)
Colombia	416	(2.4)	80	(1.3)	291	(3.9)	315	(3.1)	357	(2.8)	412	(2.8)	471	(2.9)	524	(3.4)	554	(3.5)
Costa Rica	420	(2.1)	70	(1.2)	310	(2.6)	332	(2.3)	370	(2.3)	416	(2.3)	466	(2.8)	514	(3.3)	541	(3.7)
Croatia	475	(2.5)	89	(1.2)	332	(3.5)	360	(3.3)	411	(3.4)	474	(3.3)	538	(2.8)	593	(3.3)	624	(3.9)
Cyprus[1]	433	(1.4)	93	(1.2)	286	(2.9)	314	(2.5)	365	(2.1)	429	(2.0)	497	(2.2)	557	(2.8)	590	(4.1)
Dominican Republic	332	(2.6)	72	(1.8)	224	(3.0)	244	(2.7)	281	(2.5)	326	(2.8)	376	(3.3)	429	(4.9)	461	(6.3)
FYROM	384	(1.2)	85	(1.3)	248	(3.2)	277	(3.0)	325	(1.9)	381	(1.7)	440	(2.1)	496	(2.7)	528	(4.1)
Georgia	411	(2.4)	91	(1.3)	267	(3.8)	297	(3.7)	348	(3.0)	408	(3.1)	471	(3.1)	531	(3.9)	566	(4.5)
Hong Kong (China)	523	(2.5)	81	(1.4)	379	(5.5)	413	(4.5)	473	(3.5)	529	(2.7)	579	(2.6)	622	(2.7)	646	(3.2)
Indonesia	403	(2.6)	68	(1.6)	296	(4.1)	319	(3.2)	356	(2.9)	399	(3.1)	447	(3.3)	493	(3.9)	522	(4.9)
Jordan	409	(2.7)	84	(1.6)	268	(5.2)	299	(3.8)	351	(3.4)	410	(3.1)	468	(3.0)	517	(3.4)	544	(3.5)
Kosovo	378	(1.7)	71	(1.1)	266	(3.3)	289	(2.2)	328	(2.2)	375	(1.9)	426	(2.2)	474	(3.7)	501	(4.3)
Lebanon	386	(3.4)	90	(1.8)	249	(4.6)	276	(3.9)	322	(3.6)	379	(4.2)	446	(5.1)	511	(4.9)	545	(5.2)
Lithuania	475	(2.7)	91	(1.4)	329	(3.2)	357	(3.8)	410	(2.9)	473	(2.8)	540	(3.3)	597	(3.7)	626	(4.3)
Macao (China)	529	(1.1)	81	(1.0)	389	(3.6)	420	(2.3)	474	(1.7)	532	(1.7)	586	(1.8)	630	(2.0)	656	(3.2)
Malta	465	(1.6)	118	(1.5)	273	(4.2)	310	(4.3)	382	(3.4)	466	(2.9)	548	(2.8)	618	(3.4)	656	(4.4)
Moldova	428	(2.0)	86	(1.4)	290	(4.0)	318	(3.0)	367	(2.6)	427	(2.4)	488	(2.9)	541	(3.1)	570	(3.8)
Montenegro	411	(1.0)	85	(0.9)	277	(2.8)	304	(2.1)	352	(1.5)	407	(1.5)	468	(1.9)	526	(2.9)	558	(3.1)
Peru	397	(2.4)	77	(1.4)	278	(3.2)	301	(2.6)	342	(2.4)	392	(2.7)	448	(3.3)	500	(3.9)	529	(4.7)
Qatar	418	(1.0)	99	(0.7)	268	(1.9)	295	(1.8)	344	(1.3)	410	(1.4)	486	(2.1)	554	(1.9)	589	(2.4)
Romania	435	(3.2)	79	(1.7)	309	(4.2)	334	(3.8)	379	(3.6)	433	(3.6)	488	(4.1)	539	(5.1)	570	(5.4)
Russia	487	(2.9)	82	(1.1)	352	(4.1)	379	(3.8)	428	(3.4)	486	(3.6)	544	(3.3)	595	(3.5)	623	(3.7)
Singapore	556	(1.2)	104	(0.9)	373	(3.7)	412	(2.8)	485	(2.2)	564	(1.6)	631	(1.8)	683	(2.2)	712	(3.1)
Chinese Taipei	532	(2.7)	100	(1.9)	358	(4.6)	395	(4.6)	465	(3.5)	540	(2.7)	603	(3.5)	655	(4.2)	685	(4.9)
Thailand	421	(2.8)	78	(1.6)	301	(2.7)	324	(2.9)	365	(2.6)	416	(3.1)	473	(3.6)	528	(4.9)	559	(6.0)
Trinidad and Tobago	425	(1.4)	94	(1.1)	279	(4.0)	306	(3.5)	356	(1.9)	420	(2.0)	491	(2.1)	551	(3.3)	585	(3.7)
Tunisia	386	(2.1)	65	(1.6)	287	(3.1)	306	(2.6)	341	(2.2)	382	(2.5)	428	(2.5)	472	(3.8)	500	(5.3)
United Arab Emirates	437	(2.4)	99	(1.1)	284	(3.3)	312	(2.8)	364	(2.8)	431	(3.1)	505	(3.2)	571	(3.2)	608	(3.0)
Uruguay	435	(2.2)	87	(1.3)	301	(2.8)	326	(2.6)	372	(2.4)	431	(2.7)	496	(3.0)	552	(3.6)	583	(4.2)
Viet Nam	525	(3.9)	77	(2.3)	404	(4.7)	428	(4.1)	470	(4.3)	522	(4.0)	576	(4.5)	624	(6.6)	655	(8.3)
Argentina*	432	(2.9)	81	(1.2)	303	(4.1)	329	(3.5)	376	(3.4)	431	(3.2)	487	(3.4)	536	(3.7)	567	(4.1)
Kazakhstan*	456	(3.7)	76	(2.6)	340	(4.2)	363	(3.3)	403	(3.2)	451	(3.6)	505	(4.6)	558	(6.9)	590	(8.7)
Malaysia*	443	(3.0)	76	(1.4)	320	(3.7)	345	(3.5)	389	(3.4)	443	(3.4)	496	(3.4)	541	(3.9)	568	(5.0)

1. Footnote 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".
Footnote 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.
*Argentina, Kazakhstan and Malaysia: Coverage is too small to ensure comparability.
Source: OECD (2016[1]), *PISA 2015 Results (Volume I): Excellence and Equity in Education*, http://dx.doi.org/10.1787/9789264266490-en, Table I.2.3.

Table A A.2. Percentage of students at each proficiency level in science

	All students															
	Below Level 1b (below 260.54 score points)		Level 1b (from 260.54 to less than 334.94 score points)		Level 1a (from 334.94 to less than 409.54 score points)		Level 2 (from 409.54 to less than 484.14 score points)		Level 3 (from 484.14 to less than 558.73 score points)		Level 4 (from 558.73 to less than 633.33 score points)		Level 5 (from 633.33 to less than 707.93 score points)		Level 6 (above 707.93 score points)	
	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%
OECD																
Australia	0.6	(0.1)	4.3	(0.3)	12.8	(0.5)	21.6	(0.5)	27.3	(0.5)	22.3	(0.5)	9.2	(0.4)	2.0	(0.2)
Austria	0.5	(0.2)	4.5	(0.5)	15.8	(0.8)	23.9	(0.8)	28.1	(0.8)	19.5	(0.8)	6.8	(0.5)	0.9	(0.2)
Belgium	0.5	(0.1)	4.9	(0.4)	14.4	(0.6)	21.9	(0.6)	26.8	(0.7)	22.5	(0.7)	8.0	(0.4)	1.0	(0.1)
Canada	0.1	(0.1)	1.8	(0.2)	9.1	(0.4)	20.2	(0.6)	30.3	(0.5)	26.1	(0.7)	10.4	(0.5)	2.0	(0.2)
Chile	1.0	(0.2)	8.9	(0.6)	25.0	(0.9)	31.0	(1.0)	23.8	(0.9)	9.1	(0.7)	1.2	(0.2)	0.0	(0.0)
Czech Republic	0.3	(0.1)	4.3	(0.5)	16.1	(0.8)	25.9	(0.8)	27.7	(0.9)	18.4	(0.7)	6.3	(0.4)	0.9	(0.2)
Denmark	0.3	(0.1)	3.0	(0.3)	12.5	(0.7)	25.9	(0.9)	31.1	(1.1)	20.2	(0.8)	6.1	(0.5)	0.9	(0.2)
Estonia	0.0	(0.0)	1.2	(0.2)	7.5	(0.6)	20.1	(0.7)	30.7	(0.9)	26.9	(0.9)	11.6	(0.7)	1.9	(0.3)
Finland	0.3	(0.1)	2.3	(0.3)	8.9	(0.6)	19.1	(0.7)	29.2	(0.8)	26.0	(0.8)	11.9	(0.6)	2.4	(0.3)
France	0.9	(0.2)	5.8	(0.5)	15.3	(0.6)	22.0	(0.9)	26.5	(0.8)	21.4	(0.8)	7.2	(0.5)	0.8	(0.1)
Germany	0.4	(0.1)	3.8	(0.4)	12.8	(0.7)	22.7	(0.8)	27.7	(0.8)	22.0	(0.8)	8.8	(0.6)	1.8	(0.2)
Greece	1.2	(0.3)	9.1	(1.0)	22.4	(1.1)	28.4	(1.1)	25.2	(1.1)	11.6	(0.9)	2.0	(0.3)	0.1	(0.1)
Hungary	0.8	(0.2)	6.8	(0.6)	18.4	(0.9)	25.5	(0.8)	27.3	(0.9)	16.6	(0.8)	4.3	(0.4)	0.3	(0.1)
Iceland	0.8	(0.2)	5.8	(0.5)	18.7	(0.9)	29.0	(1.0)	27.3	(0.9)	14.6	(0.8)	3.5	(0.4)	0.3	(0.1)
Ireland	0.3	(0.1)	2.7	(0.4)	12.4	(0.8)	26.4	(0.9)	31.1	(0.9)	20.1	(0.8)	6.3	(0.4)	0.8	(0.2)
Israel	2.1	(0.4)	9.5	(0.8)	19.9	(0.9)	24.4	(0.8)	23.3	(1.0)	15.0	(0.8)	5.1	(0.5)	0.7	(0.1)
Italy	0.6	(0.2)	5.4	(0.5)	17.2	(0.8)	27.1	(0.9)	28.6	(1.0)	17.0	(0.7)	3.8	(0.4)	0.2	(0.1)
Japan	0.2	(0.1)	1.7	(0.3)	7.7	(0.6)	18.1	(0.8)	28.2	(0.9)	28.8	(0.9)	12.9	(0.8)	2.4	(0.4)
Korea	0.4	(0.1)	2.9	(0.4)	11.1	(0.7)	21.7	(0.9)	29.2	(0.9)	24.0	(1.0)	9.2	(0.7)	1.4	(0.2)
Latvia	0.1	(0.1)	2.6	(0.3)	14.5	(0.7)	29.8	(0.8)	31.7	(0.8)	17.4	(0.8)	3.5	(0.4)	0.3	(0.1)
Luxembourg	0.5	(0.1)	6.4	(0.5)	18.9	(0.6)	24.8	(0.7)	25.1	(0.7)	17.3	(0.6)	6.0	(0.4)	0.9	(0.2)
Mexico	1.1	(0.3)	11.7	(0.7)	35.0	(1.0)	34.7	(0.9)	15.1	(0.9)	2.3	(0.3)	0.1	(0.1)	0.0	c
Netherlands	0.3	(0.1)	4.0	(0.5)	14.3	(0.7)	21.8	(0.9)	26.1	(0.9)	22.4	(0.8)	9.5	(0.5)	1.6	(0.2)
New Zealand	0.4	(0.1)	4.0	(0.4)	13.0	(0.8)	21.6	(0.8)	26.3	(0.8)	21.8	(0.8)	10.1	(0.6)	2.7	(0.4)
Norway	0.6	(0.1)	4.1	(0.4)	14.0	(0.7)	24.6	(0.8)	29.1	(0.8)	19.6	(0.8)	6.9	(0.5)	1.1	(0.2)
Poland	0.3	(0.1)	2.6	(0.4)	13.3	(0.7)	26.6	(0.9)	29.9	(0.9)	19.9	(0.8)	6.3	(0.5)	1.0	(0.2)
Portugal	0.2	(0.1)	3.2	(0.4)	14.0	(0.9)	25.4	(0.8)	28.8	(0.8)	21.0	(0.8)	6.7	(0.5)	0.7	(0.1)
Slovak Republic	2.1	(0.3)	8.9	(0.7)	19.7	(0.8)	27.6	(0.8)	24.8	(0.7)	13.3	(0.6)	3.3	(0.3)	0.3	(0.1)
Slovenia	0.2	(0.1)	2.8	(0.3)	11.9	(0.5)	23.3	(0.7)	29.1	(0.9)	22.1	(0.8)	9.1	(0.6)	1.5	(0.3)
Spain	0.3	(0.1)	3.7	(0.4)	14.3	(0.7)	26.5	(0.7)	31.3	(0.7)	18.9	(0.7)	4.7	(0.4)	0.3	(0.1)
Sweden	0.9	(0.2)	5.7	(0.5)	15.0	(0.9)	24.0	(0.9)	26.8	(0.9)	19.0	(0.9)	7.2	(0.6)	1.3	(0.2)
Switzerland	0.5	(0.2)	4.0	(0.5)	13.9	(0.8)	22.8	(0.8)	26.3	(1.1)	22.7	(1.0)	8.6	(0.6)	1.1	(0.2)
Turkey	1.1	(0.2)	11.8	(1.0)	31.6	(1.5)	31.3	(1.3)	19.1	(1.4)	4.8	(0.9)	0.3	(0.1)	0.0	(0.0)
United Kingdom	0.4	(0.1)	3.4	(0.3)	13.6	(0.7)	22.6	(0.7)	27.5	(0.7)	21.6	(0.7)	9.1	(0.6)	1.8	(0.2)
United States	0.5	(0.1)	4.3	(0.5)	15.5	(0.8)	25.5	(0.8)	26.6	(0.9)	19.1	(0.9)	7.3	(0.6)	1.2	(0.2)
European Union total	0.6	(0.0)	4.7	(0.1)	15.3	(0.2)	24.6	(0.2)	27.6	(0.2)	19.6	(0.2)	6.6	(0.2)	1.0	(0.1)
OECD total	0.6	(0.1)	5.4	(0.2)	17.5	(0.3)	25.4	(0.3)	25.6	(0.3)	17.8	(0.3)	6.5	(0.2)	1.1	(0.1)
OECD average	0.6	(0.0)	4.9	(0.1)	15.7	(0.1)	24.8	(0.1)	27.2	(0.1)	19.0	(0.1)	6.7	(0.1)	1.1	(0.0)
Partners																
Albania	1.6	(0.3)	10.3	(0.8)	29.8	(1.2)	34.5	(1.0)	18.9	(1.3)	4.5	(0.6)	0.3	(0.1)	0.0	(0.0)
Algeria	3.9	(0.5)	24.1	(1.0)	42.8	(1.0)	22.7	(1.1)	5.6	(0.6)	0.9	(0.2)	0.0	(0.0)	0.0	c
Brazil	4.4	(0.3)	19.9	(0.6)	32.4	(0.6)	25.4	(0.6)	13.1	(0.6)	4.2	(0.4)	0.6	(0.1)	0.0	(0.0)
B-S-J-G (China)	0.6	(0.2)	3.8	(0.5)	11.8	(0.9)	20.7	(1.1)	25.8	(1.1)	23.8	(1.1)	11.5	(1.1)	2.1	(0.5)
Bulgaria	2.7	(0.4)	12.4	(1.0)	22.8	(1.1)	25.2	(1.1)	22.6	(1.2)	11.4	(0.9)	2.7	(0.4)	0.2	(0.1)
CABA (Argentina)	0.7	(0.3)	4.8	(0.9)	17.2	(1.8)	30.8	(1.9)	29.0	(1.9)	14.9	(1.8)	2.6	(0.7)	0.1	(0.1)
Colombia	1.7	(0.3)	14.5	(0.9)	32.8	(0.9)	30.6	(0.9)	15.9	(0.7)	4.1	(0.4)	0.3	(0.1)	0.0	(0.0)
Costa Rica	0.7	(0.2)	10.1	(0.6)	35.6	(1.0)	35.5	(0.8)	15.2	(0.9)	2.7	(0.4)	0.1	(0.1)	0.0	(0.0)
Croatia	0.4	(0.2)	5.1	(0.5)	19.2	(1.0)	29.5	(0.9)	27.5	(1.0)	14.4	(0.7)	3.6	(0.4)	0.4	(0.1)

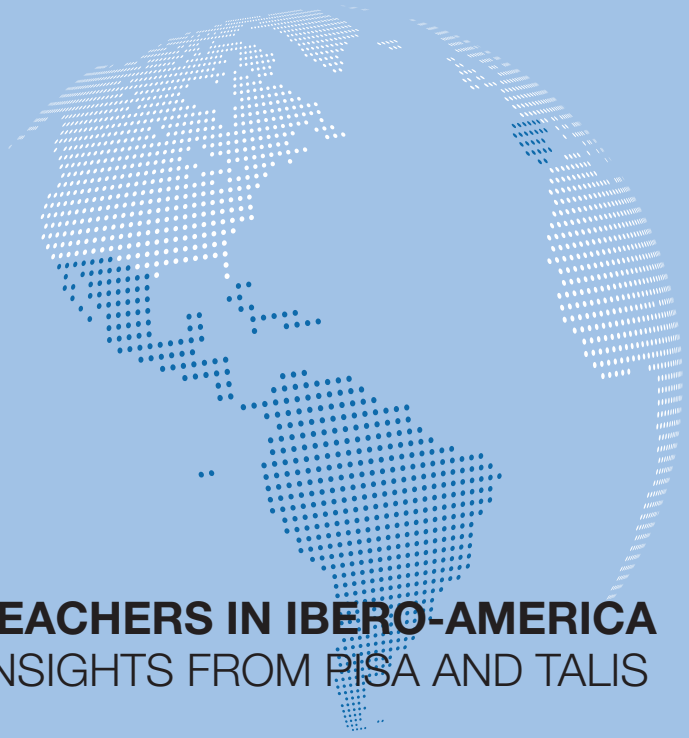
Table A A.2. Percentage of students at each proficiency level in science (*continued*)

	All students															
	Below Level 1b (below 260.54 score points)		Level 1b (from 260.54 to less than 334.94 score points)		Level 1a (from 334.94 to less than 409.54 score points)		Level 2 (from 409.54 to less than 484.14 score points)		Level 3 (from 484.14 to less than 558.73 score points)		Level 4 (from 558.73 to less than 633.33 score points)		Level 5 (from 633.33 to less than 707.93 score points)		Level 6 (above 707.93 score points)	
	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%	S.E.	%
Cyprus[1,]	2.3	(0.3)	12.9	(0.6)	26.9	(0.8)	28.6	(0.8)	19.6	(0.7)	8.1	(0.4)	1.5	(0.2)	0.1	(0.1)
Dominican Republic	15.8	(1.0)	39.6	(1.3)	30.4	(1.3)	11.3	(0.8)	2.6	(0.5)	0.3	(0.1)	0.0	(0.0)	0.0	c
FYROM	6.8	(0.5)	22.3	(0.8)	33.8	(0.9)	24.6	(0.7)	10.3	(0.5)	2.0	(0.3)	0.2	(0.1)	0.0	(0.0)
Georgia	4.2	(0.4)	16.0	(0.9)	30.5	(1.1)	28.2	(1.0)	15.2	(0.7)	4.9	(0.5)	0.8	(0.2)	0.1	(0.1)
Hong Kong (China)	0.1	(0.1)	1.6	(0.3)	7.8	(0.6)	19.7	(0.9)	36.1	(0.9)	27.4	(1.1)	6.9	(0.6)	0.4	(0.1)
Indonesia	1.2	(0.4)	14.4	(1.1)	40.4	(1.5)	31.7	(1.3)	10.6	(0.8)	1.6	(0.3)	0.1	(0.1)	0.0	c
Jordan	4.2	(0.5)	15.2	(0.9)	30.4	(0.9)	30.9	(1.0)	16.1	(0.9)	3.1	(0.4)	0.2	(0.1)	0.0	c
Kosovo	4.0	(0.5)	24.4	(1.0)	39.3	(1.1)	24.4	(1.0)	7.2	(0.7)	0.7	(0.2)	0.0	(0.0)	0.0	c
Lebanon	6.8	(0.7)	23.6	(1.3)	32.3	(1.2)	22.0	(1.2)	11.6	(0.9)	3.3	(0.4)	0.4	(0.1)	0.0	(0.0)
Lithuania	0.5	(0.1)	5.4	(0.5)	18.9	(0.8)	29.7	(0.9)	26.3	(0.7)	15.1	(0.7)	3.9	(0.5)	0.3	(0.1)
Macao (China)	0.1	(0.1)	1.1	(0.2)	6.9	(0.4)	20.6	(0.7)	34.2	(0.9)	28.0	(0.7)	8.3	(0.5)	0.9	(0.2)
Malta	3.9	(0.4)	10.6	(0.7)	18.0	(0.9)	23.4	(0.8)	21.7	(0.9)	14.8	(0.9)	6.1	(0.4)	1.6	(0.3)
Moldova	2.3	(0.3)	11.8	(0.6)	28.2	(0.8)	31.5	(1.2)	19.7	(0.9)	5.9	(0.6)	0.7	(0.1)	0.0	(0.0)
Montenegro	3.1	(0.3)	15.8	(0.5)	32.1	(0.7)	29.0	(0.6)	15.1	(0.5)	4.4	(0.3)	0.5	(0.1)	0.0	(0.0)
Peru	2.8	(0.3)	19.0	(0.8)	36.7	(1.0)	27.9	(1.0)	11.5	(0.7)	2.0	(0.3)	0.1	(0.1)	0.0	c
Qatar	3.9	(0.2)	17.9	(0.5)	28.0	(0.6)	24.6	(0.5)	16.4	(0.5)	7.5	(0.3)	1.6	(0.1)	0.1	(0.0)
Romania	0.9	(0.2)	9.3	(0.9)	28.4	(1.4)	35.0	(1.4)	19.9	(1.0)	5.9	(0.7)	0.7	(0.2)	0.0	(0.0)
Russia	0.1	(0.1)	2.9	(0.4)	15.2	(1.0)	31.2	(0.9)	30.9	(0.9)	16.0	(0.9)	3.5	(0.4)	0.2	(0.1)
Singapore	0.2	(0.1)	2.0	(0.2)	7.5	(0.5)	15.1	(0.5)	23.4	(0.6)	27.7	(0.7)	18.6	(0.7)	5.6	(0.4)
Chinese Taipei	0.3	(0.1)	2.7	(0.3)	9.4	(0.6)	18.1	(0.6)	27.0	(0.9)	27.1	(0.8)	12.7	(0.8)	2.7	(0.5)
Thailand	1.1	(0.2)	11.9	(0.8)	33.7	(1.1)	32.2	(0.9)	16.0	(0.8)	4.6	(0.6)	0.4	(0.2)	0.0	(0.0)
Trinidad and Tobago	2.9	(0.5)	15.0	(0.7)	27.9	(0.9)	27.1	(0.8)	18.3	(0.7)	7.3	(0.5)	1.3	(0.2)	0.1	(0.1)
Tunisia	1.6	(0.3)	20.0	(1.1)	44.2	(1.1)	26.6	(1.1)	6.8	(0.6)	0.7	(0.3)	0.0	(0.0)	0.0	c
United Arab Emirates	2.6	(0.3)	13.0	(0.6)	26.1	(0.7)	26.9	(0.6)	19.0	(0.7)	9.5	(0.5)	2.5	(0.2)	0.2	(0.1)
Uruguay	1.2	(0.2)	11.2	(0.8)	28.4	(0.9)	30.3	(0.8)	20.3	(0.8)	7.4	(0.5)	1.2	(0.2)	0.1	(0.0)
Viet Nam	0.0	(0.0)	0.2	(0.1)	5.7	(0.7)	25.3	(1.4)	36.6	(1.2)	23.9	(1.2)	7.1	(0.8)	1.2	(0.5)
Argentina*	1.4	(0.3)	10.1	(0.8)	28.2	(1.0)	34.2	(1.0)	20.1	(1.1)	5.3	(0.5)	0.7	(0.2)	0.0	(0.0)
Kazakhstan*	0.2	(0.1)	4.1	(0.6)	23.8	(1.3)	38.2	(1.2)	23.9	(1.3)	8.1	(0.9)	1.7	(0.5)	0.1	(0.1)
Malaysia*	0.5	(0.1)	7.3	(0.7)	25.9	(1.2)	36.4	(1.0)	23.6	(1.1)	5.8	(0.6)	0.6	(0.2)	0.0	(0.0)

Note: See Note 1 below Table A A.1.
*Argentina, Kazakhstan and Malaysia: Coverage is too small to ensure comparability.
Source: OECD (2016[1]), *PISA 2015 Results (Volume I): Excellence and Equity in Education*, http://dx.doi.org/10.1787/9789264266490-en, Table I.2.1a.

References

OECD (2016), *PISA 2015 Results (Volume I): Excellence and Equity in Education*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264266490-en. [1]



TEACHERS IN IBERO-AMERICA
INSIGHTS FROM PISA AND TALIS

As countries around the world look to improve learning outcomes for their students, governments are renewing their focus on teacher policy. Demands on schools and teachers are also becoming more complex as economic and social changes make high-quality schooling more important than ever. Designing a teacher-centric strategy in education, skills and innovation will be essential to keep up with the developing world's fast economic progress. This is particularly relevant for Ibero-American countries as they embark on a path of structural reforms to harness new and sustainable sources of growth.

To work towards more efficient education policies in the Ibero-American region, we need to ask the following questions: What is the current socio-economic climate that its teachers are working in and how does it affect the teaching workforce? Who are Ibero-America's teachers and how do they compare to those in other countries and groupings? How can the best talent be attracted to and retained by the teaching profession? Can teacher sorting compensate for student disadvantage? And can professional development opportunities and teacher evaluation help to improve the quality of the region's teachers – and, by extension, student learning outcomes?

Teachers in Ibero-America: Insights from PISA and TALIS hopes to answer these questions. It provides an overview of the main education challenges that Ibero-American countries face and highlights innovative mechanisms to overcome them. It examines success stories, from both within and outside the region, that Ibero-America could benefit and learn from.

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