TALIS 2018 Results

TEACHERS AND SCHOOL LEADERS AS LIFELONG LEARNERS

VOLUME I

TEACHING AND LEARNING INTERNATIONAL SURVEY

OECD

TALIS 2018 Results (Volume I)

TEACHERS AND SCHOOL LEADERS AS LIFELONG LEARNERS

OECD
BETTER POLICIES FOR BETTER LIVES

Please cite this publication as:
OECD (2019), *TALIS 2018 Results (Volume I): Teachers and School Leaders as Lifelong Learners*, TALIS, OECD Publishing, Paris.
https://doi.org/10.1787/1d0bc92a-en

ISBN (print) 978-92-64-75256-6
ISBN (PDF) 978-92-64-54134-4

Series: TALIS
ISSN: 2312962X (print)
ISSN: 23129638 (online)

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.

Photo credit: Cover © Hill Street Studios/Gettyimages

Corrigenda to OECD publications may be found on line at: www.oecd.org/about/publishing/corrigenda.htm.

Foreword

These days, education is no longer just about teaching students something, but about helping them develop a reliable compass and the tools to navigate with confidence through an increasingly complex, volatile and uncertain world. We live in this world in which the kind of things that are easy to teach and test have also become easy to digitise and automate, and where society no longer rewards students just for what they know – Google knows everything – but for what they can do with what they know. Today's teachers need to help students think for themselves and work with others, and to develop identity, agency and purpose.

That's why 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, such as knowledge about a discipline, knowledge about the curriculum of that discipline, and knowledge about how students learn in that discipline; and it entails knowledge about professional practice so teachers 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 as active lifelong learners.

There are aspects that make the job of teachers much more challenging and different from that of other professionals. Teachers need to be experts at multitasking as they respond to many different learner needs all at the same time. They also do their job in a classroom dynamic that is always unpredictable and that leaves teachers no second to think about how to react. And whatever a teacher does, even with just a single student, will be witnessed by many and can frame the way in which the teacher is perceived in the school from that day forward.

But we expect much more from 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 promote collaboration and social cohesion; to provide continual assessment and feedback to students; and to ensure that students feel valued and included. Not least, 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. And it is precisely these aspects that motivate the vast majority of people to become teachers: according to the OECD Teaching and Learning International Survey (TALIS), nine out of ten teachers in participating OECD countries and economies consider the opportunity to influence children's development and contribute to society a major motivation to join the profession.

It seems many school systems can do more to support teachers in achieving that mission. For a start, school systems should take a greater interest in the professional views of teachers as experts on teaching and learning. Surveys such as TALIS – which establish a teacher perspective on how teaching and learning can be organised to achieve the best outcomes – are still quite rare.

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

Policy makers are rarely successful with education reform unless they help people recognise what needs to change, and build a shared understanding and collective ownership for change; unless they focus resources, build capacity, and create the right policy climate with accountability measures designed to encourage innovation and development, rather than compliance; and unless they tackle institutional structures that, too often, are built around the interests and habits of systems rather than learners. Where teachers are not engaged in the design of change, they will rarely help with the implementation of change.

The views of teachers as expressed in TALIS tell us a lot about the gap between pedagogical vision and practice, and between professional aspirations and a still highly industrial organisation of work. To meet a growing demand for high-quality teachers, countries will need to work harder, not just to make teaching financially more attractive, but – most importantly – intellectually more attractive by better supporting a teaching profession of advanced knowledge workers who operate with a high level of professional autonomy and within a collaborative culture. This also means providing teachers with better opportunities to prepare for tomorrow's world. According to TALIS, little more than half of teachers across the participating OECD countries

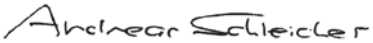
and economies received training in the use of technology for teaching, and less than half feel well prepared when they join the profession. Contrast this with the view of two thirds of teachers who report that the most impactful professional development they participated in focused on innovation in their teaching.

Successful education systems in the 21st century will do whatever it takes to develop teachers' ownership over professional practice. I meet many people who say we cannot give teachers and education leaders greater autonomy because they lack the capacity and expertise to deliver on it. There may be some truth in that. But simply perpetuating a prescriptive model of teaching will not produce creative teachers: those trained only to reheat pre-cooked hamburgers are unlikely to become master chefs. By contrast, when teachers feel a sense of ownership over their classrooms, and when students feel a sense of ownership over their learning, that is when productive teaching takes place. So the answer is to strengthen trust, transparency, professional autonomy and the collaborative culture of the profession all at the same time.

The industrial model of schooling makes change in a fast-moving world far too slow. Even the best education minister can no longer do justice to the needs of millions of students, hundreds of thousands of teachers and tens of thousands of schools. The challenge is to build on the expertise of teachers and school leaders and enlist them in the design of superior policies and practices. Imagine a giant open-source community of teachers where they can share their ideas and practice, and which unlocks teachers' creativity simply by tapping into the desire of people to contribute, collaborate and be recognised for their contributions. This is the next TALIS satellite project through which the OECD will establish a global video library of teaching, Global Teaching InSights.

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

TALIS reminds us that many teachers and schools are ready for that. To encourage their growth, education policy needs to inspire and enable innovation, and identify and share 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. Successful schools will always be places where great people want to work, and where their ideas can be best realised, where they are trusted and where they can put their trust.



Andreas Schleicher
Director for Education and Skills

Acknowledgements

The OECD Teaching and Learning International Survey (TALIS) is the outcome of a collaboration among the participating countries and economies, the OECD Secretariat, the European Commission and an international consortium led by the International Association for the Evaluation of Educational Achievement (IEA).

The development of this volume was guided by Andreas Schleicher and Yuri Belfali and led by Karine Tremblay (TALIS Project Manager). Noémie Le Donné managed its production, with contributions from Pablo Fraser and Emily Groves. Chapter 1 was co-authored by Pablo Fraser, Aakriti Kalra, Noémie Le Donné and Karine Tremblay. Noémie Le Donné was the lead author of Chapters 2 and 4; Karine Tremblay the lead author of Chapter 3; and Pablo Fraser the lead author of Chapter 5. Additional drafting and input to these chapters was provided by Maxence Castiellllo, Gabor Fülöp, Aakriti Kalra, Henri Pearson and Markus Schwabe. Statistical analyses and outputs were co-ordinated by Gabor Fülöp and Judit Pál, and prepared by Valentin Burban, Maxence Castiello, Gabor Fülöp, Hélène Guillou, Judit Pál and Markus Schwabe.

Emily Groves supported report preparation, production, project co-ordination and communications. Florence Bernard provided translation support and verification. Rose Bolognini, Cassandra Davis, Sophie Limoges and Henri Pearson provided support for report production and communications. Susan Copeland was the main editor of the volume, with contributions from Emily Groves and Henri Pearson. Fung Kwan Tam designed the publication. The authors wish to thank Francesco Avvisati, Miyako Ikeda, Steffen Knoll, Ann-Kristin Koop, Sabine Meinck, Alejandro Paniagua, Heather Price, Giannina Rech, Nóra Révai, Agnes Stancel-Piątak and Carine Viac, as well as members of the TALIS Governing Board and National Project Managers, who all provided valuable feedback and input at various stages of the data and report production.

The development of the report was steered by the TALIS Governing Board, chaired by João Costa (Portugal).

The technical implementation of TALIS was contracted out to an international consortium of institutions and experts co-directed by Ralph Carstens (IEA) and Steffen Knoll (IEA) with support from Alena Becker, Viktoria Böhm, Agnes Stancel-Piątak, David Ebbs, Jean Dumais and John Ainley. Design and development of the questionnaires were led by a Questionnaire Expert Group, and an independent Technical Advisory Group provided guidance on the technical aspects of the survey.

Annex D of this volume lists the members of various TALIS bodies, as well as the experts who have contributed to TALIS in general.

We would like to gratefully acknowledge the contribution to TALIS of the late Fons van de Vijver, who was Chair of the Technical Advisory Group and an advisor to TALIS since the first cycle in 2008.

Table of contents

BOXES

FIGURES

TABLES

Executive summary

Most of us will interact with teachers during at least two stages of our lives, first as students, and later on as parents. It is no surprise, then, that societies worldwide often feel heavily invested in the teaching profession and its development. Indeed, few professions are as debated, examined and re-examined as teaching, especially by those who are not themselves practitioners. But teachers, in turn, are also invested in the societies they serve: 90% of them say that the chance to contribute to society and influence children's development was an important reason for becoming a teacher, according to the OECD Teaching and Learning International Survey (TALIS).

TALIS aims to make the voice of teachers and school leaders heard all the way up to the policy level. The survey asks teachers about their working life in school, covering everything from their school environment and how they interact with colleagues, to their teaching practices and participation in continuous professional development. TALIS also covers the experience of school leaders, addressing areas such as their role in school policy implementation, their concerns about school resources and their own professional development and training.

Following on from the first two cycles of TALIS in 2008 and 2013, the results from this third cycle examine the level of professionalism in teaching and to what extent teachers see their profession as offering relevant and attractive careers. Professionalism is analysed in TALIS 2018 by looking at five pillars: the knowledge and skills required to teach; the perceived prestige of the profession; career opportunities; the collaborative culture among teachers; and the level of professional responsibility and autonomy of teachers and school leaders.

This first volume, *Teachers and School Leaders as Lifelong Learners*, focuses on the first pillar: the knowledge and skills involved in the work. It first looks at how teachers apply their knowledge and skills in the classroom in the form of teaching practices, with due attention given to the demographics of the workforce and socio-cultural makeup of classrooms and the school climate that provide the context of learning environments. It then assesses the ways in which teachers acquired their knowledge and skills during their early education and training, as well as the steps they take to develop them through continuous professional development.

WHAT PRACTICES ARE TEACHERS USING IN THE CLASSROOM AND HOW HAS THIS CHANGED?

During a typical lesson, practices centred on managing the class and ensuring clarity of instruction are widely applied in OECD countries and economies participating in TALIS, with at least two-thirds of teachers frequently relying on these practices. What is less prevalent, however, is the use of practices that involve student cognitive activation (i.e. getting students to evaluate information and apply knowledge in order to solve a problem), despite their high potential leverage on student learning. Only around half of teachers adopt this approach.

In OECD countries and economies participating in TALIS, only 78% of a typical lesson is dedicated to teaching, with the remainder of the time spent keeping order or dealing with classroom administrative tasks. In around half of the countries that participate in TALIS, this represents a decrease in time spent on actual teaching and learning in class over the last five to ten years.

Student assessment represents a key part of the learning process, and research shows that the way teachers choose to assess their students in class can have a marked effect on learning outcomes. In OECD countries participating in TALIS, 79% of teachers routinely assess their students' progress by observing them and providing immediate feedback, while 77% of teachers report administering their own assessment to their students. Only 41% of teachers allow students to evaluate their own progress. Overall, however, more teachers tend to report frequently using student assessment practices in 2018 than in 2013.

Schools appear to be recognising the value of innovative teaching in responding to the challenges of the 21st century. The vast majority of teachers and school leaders say that their schools are open to innovative practices and have the capacity to adopt them. On average across OECD countries in TALIS, 78% of teachers also report that they and their colleagues help each other implement new ideas. However, teachers in Europe and millennial teachers are less likely to report such openness to innovation.

HOW HAVE TEACHERS AND THEIR CLASSROOMS CHANGED OVER TIME?

The average age of teachers in OECD countries participating in TALIS is 44, but there is considerable variation across countries. In a number of countries, the teaching workforce has aged over the last five to ten years, with a few examples of significant age increases between 2013 and 2018. Those countries will face the challenge of attracting and preparing large numbers of new teachers in the coming years, unless they also experience declines in student numbers.

In terms of classroom environments, relations between students and teachers have improved in most countries since 2008, with 95% of teachers agreeing that students and teachers usually get on well with each other. However, 14% of principals report regular acts of intimidation or bullying among their students. These incidents have decreased in a number of countries since 2013, but increased in others.

Recent changes in migration flows have affected the makeup of classrooms. Almost one-third of teachers in OECD countries in TALIS report that they work in schools where at least 1% of the student population are refugees, and 17% of teachers work in schools where at least 10% of the students have a migrant background.

Ninety-five per cent of school leaders report that their teachers believe that children and young people should learn that people of different cultures have a lot in common. In terms of school diversity policy, a large majority of schools in OECD countries and economies in TALIS that have a multicultural student body have integrated global issues throughout the curriculum, as well as teaching their students how to deal with ethnic and cultural discrimination – 80% of teachers report working in schools where this is the case.

WHY DO TEACHERS JOIN THE PROFESSION AND HOW ARE THEY PREPARED IN THE EARLY YEARS?

Teaching was the first-choice career for two out of three teachers in OECD countries participating in TALIS. But this is true for only 59% of male teachers, compared to 70% of female teachers. While 90% of teachers cite the opportunity to contribute to children's development and society as a major motivation to join the profession, only 61% say that the steady career path offered by teaching was an important part of their decision making.

During their education and training, teachers were instructed first and foremost on subject content, pedagogy and classroom practice. The next most common area of instruction was student behaviour and classroom management, which was included in the training of 72% of teachers in OECD countries and economies in TALIS. The use of information and communication technology (ICT) for teaching (56%) and teaching in a multicultural setting (35%) were, however, more rarely included in training.

When teachers reach the stage of actually teaching, upon completing their initial preparation, only 38% of them participate in some kind of formal or informal induction in their first school, despite the positive impact of induction processes on novice teachers' transition to school and perceived efficacy. At the same time, while school principals also generally consider mentoring to be important for teachers' work and students' performance, only 22% of novice teachers have an assigned mentor, on average across OECD countries and economies in TALIS.

WHAT KIND OF PROFESSIONAL DEVELOPMENT DO TEACHERS AND PRINCIPALS PARTICIPATE IN AND HOW DO THEY FEEL ABOUT IT?

Taking part in some kind of in-service training is commonplace among teachers and principals in the OECD countries and economies that participate in TALIS, with more than 90% of teachers and principals having attended at least one professional development activity in the year prior to the survey. Attending courses and seminars outside of school is one of the most popular types of professional development for teachers – more than 70% participate in this kind of training. Only 44% of teachers, however, participate in training based on peer learning and networking, despite the fact that collaborative learning is one of the aspects of training that teachers in TALIS identify as the most impactful. Indeed, teachers also report that professional development based on collaboration and collaborative approaches to teaching is among the most impactful for them.

Eighty-two per cent of teachers report that the training had a positive impact on their teaching practice. Teachers who report participating in such impactful training also tend to display higher levels of self-efficacy and job satisfaction.

But some areas of professional development are still lacking, according to teachers. Developing advanced ICT skills is one area in which teachers say that they need more training, along with teaching in multicultural/multilingual settings and teaching students with special needs. Around half of teachers and principals also report that their participation in the professional development available to them is restricted by scheduling conflicts and lack of incentives.

Reader's guide

The results referred to in this volume are provided in Annex C.

Country coverage

The publication features results on teachers and school principals working in schools providing lower secondary education (ISCED Level 2) in 48 countries and economies, as well as in 1 sub-national entity (the Flemish Community of Belgium) that opted for its data to be adjudicated. It also features results on primary teachers and school principals in 15 countries/economies (ISCED level 1) and on upper secondary teachers and school principals in 11 countries/economies (ISCED level 3).

In tables, countries and economies are ranked in alphabetical order. There are two exceptions to this rule:

- The Flemish Community of Belgium is indented and italicised, under Belgium, for tables based on ISCED 2 teacher and principal data for TALIS 2018.
- Countries that have not met TALIS standard participation rates are placed at the bottom of the tables.

There are five sub-national entities participating in TALIS 2018. They are referred to in the following manner:

- The province of Alberta, in Canada, is referred to as Alberta (Canada).
- The Flemish Community of Belgium is referred to as Flemish Comm. (Belgium) in tables and figures.
- Ciudad Autónoma de Buenos Aires is referred to as CABA (Argentina).
- The nation of England is referred to as England (United Kingdom) or England (UK) in tables and figures.
- The municipality of Shanghai, in China, is referred to as Shanghai (China).

Chinese Taipei and Cyprus did not participate directly in TALIS 2018: their data collection and processing were managed exclusively by the international research consortium. Their data are reported in the result tables listed in Annex C.

Two notes are added to the information on Cyprus:

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

One note is added to the information on the data for Israel:

- 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.

Classification of levels of education

The classification of levels of education is based on the International Standard Classification of Education (ISCED). ISCED is an instrument for compiling statistics on education internationally. ISCED-97 was recently revised, and the new International Standard Classification of Education (ISCED-2011) was formally adopted in November 2011 and is now the basis of the levels presented in this publication. It distinguishes between nine levels of education:

- early childhood education (ISCED level 0)
- primary education (ISCED level 1)
- lower secondary education (ISCED level 2)

- upper secondary education (ISCED level 3)
- post-secondary non-tertiary level of education (ISCED level 4)
- short-cycle tertiary education (ISCED level 5)
- bachelor's or equivalent level (ISCED level 6)
- master's or equivalent level (ISCED level 7)
- doctoral or equivalent level (ISCED level 8).

More information can be found in Annex B.

Reporting teacher data

The report uses "teachers" as shorthand for the TALIS target population of lower secondary teachers. TALIS covers teachers who, as part of their regular duties in a target school, provide instruction in programmes at the ISCED 2 level (lower secondary education). "Primary teachers" refer to teachers providing instruction in programmes at the ISCED 1 level (primary education). "Upper secondary teachers" refer to teachers providing instruction in programmes at the ISCED 3 level (upper secondary education).

Reporting principal data

The report uses "principals" and "school leaders" as equivalent shorthand for the TALIS target population of lower secondary principals. School principals provided information on their schools' characteristics and their own work and working conditions by completing a principal questionnaire. Where responses from school principals are presented in this publication, they are usually weighted by the school weights. In some cases, principal responses are treated as attributes of the teachers' personal working conditions. In such cases, principals' answers are analysed at the teacher level and weighted by the teacher weights.

International averages

The OECD and TALIS averages correspond to the arithmetic mean of the respective country estimates. They are calculated for most indicators based on the main survey data (ISCED 2 level) presented in this report. The European Union average, called "EU total", takes the European Union Member States as a single entity, to which each country contributes in proportion of the estimated size of the target population. It can be used to assess how a country compares with the European Union as a whole.

The system-level estimates of the Flemish Community of Belgium are not included in the international averages, as the Flemish Community of Belgium already contributes to the international averages through the means of Belgium as a whole.

The system-level estimates of countries that have not met the standards for TALIS participation rates are excluded from the international averages. This is the case for the estimates based on the responses of lower secondary principals in Australia.

In the case of some countries, data may not be available for specific indicators, or specific categories may not apply. Readers should, therefore, keep in mind that the terms "OECD average", "TALIS average" and "EU total" refer to the countries included in the respective averages. Each of these averages may not necessarily be consistent across all columns of a table.

The number of countries or economies included in an international average is indicated next to that average:

- **OECD average-31**: arithmetic average based on ISCED 2 teacher data across 31 OECD countries and economies with adjudicated data. The report refers to the average teacher "across the OECD" as equivalent shorthand for the average teacher "across the 31 OECD countries and economies participating in TALIS".
- **OECD average-30**: arithmetic average based on ISCED 2 principal data across 30 OECD countries and economies with adjudicated data. The report refers to the average school or principal "across the OECD" as equivalent shorthand for the average school or principal "across the 30 OECD countries and economies participating in TALIS".
- **TALIS average-48**: arithmetic average based on ISCED 2 teacher data across 48 TALIS 2018 countries and economies with adjudicated data.
- **TALIS average-47**: arithmetic average based on ISCED 2 principal data across 47 TALIS 2018 countries and economies with adjudicated data.
- **EU total-23**: weighted average based on ISCED 2 teacher or principal data across all EU Member States that participate in TALIS with adjudicated data.

The list of countries and economies included in each international average is provided in Annex B.

Data underlying the figures

Five symbols are used to denote non-reported estimates:

a: The question was not administered in the country because it was optional or it is part of a questionnaire from a TALIS cycle the country has not participated in. Therefore, data are missing.

c: There are too few or no observations to provide reliable estimates and/or to ensure the confidentiality of respondents (i.e. there are fewer than 10 schools/principals and/or 30 teachers with valid data; and/or the item non-response rate [i.e. ratio of missing or invalid responses to the number of participants for whom the question was applicable] is above 50%).

m: Data were collected but subsequently removed for technical reasons (e.g. erroneous translation) as part of the data checking process.

p: Data were collected but are not reported for technical reasons (e.g. low participation rate) as part of the data adjudication process.

w: Data were withdrawn or were not collected at the request of the country concerned.

TALIS results are based exclusively on self-reports from teachers and school leaders and, therefore, represent their opinions, perceptions, beliefs and accounts of their activities. No data imputation from administrative data or other studies is conducted and, as with any self-reported data, this information is subjective and may, therefore, differ from data collected through other means (e.g. administrative data or video observations). The same is true of school leaders' reports about school characteristics and practices, which may differ from descriptions provided by administrative data at a national or local government level.

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, two or three decimal places. Where the value 0.0, 0.00 or 0.000 is shown, this does not imply that the standard error is zero, but that it is smaller than 0.05, 0.005 or 0.0005, respectively.

Focusing on statistically significant differences

This volume only comments on statistically significant differences or changes. These are denoted in darker colours in figures and in bold font in tables. See Annex B for further information.

Abbreviations

ISCED	International Standard Classification of Education
Dif.	point difference
% dif.	percentage-point difference
ICC	intra-class correlation coefficient
ICT	information and communication technology
S.D.	standard deviation
S.E.	standard error

Further technical documentation

For further information on the TALIS instruments and the methods used in TALIS, see the *TALIS 2018 Technical Report*.

This report uses the OECD StatLinks service. All tables and charts are assigned a URL leading to a corresponding Excel™ workbook containing the underlying data. These URLs are stable and will remain unchanged over time. In addition, readers of the e-books will be able to click directly on these links and the workbook will open in a separate window if their Internet browser is open and running.

What is TALIS?

INTRODUCTION

The OECD Teaching and Learning International Survey (TALIS) is an international, large-scale survey of teachers, school leaders and the learning environment in schools. TALIS uses questionnaires administered to teachers and their school principals to gather data. Its main goal is to generate internationally comparable information relevant to developing and implementing policies focused on school leaders, teachers and teaching, with an emphasis on those aspects that affect student learning. It gives a voice to teachers and school leaders, allowing them to provide input into educational policy analysis and development in key areas. It is also a collaboration between participating countries and economies, the OECD, an international research consortium, teachers' unions and the European Commission.

TALIS must serve the goals of its three main beneficiaries: policy makers, education practitioners and researchers. First, it must help policy makers review and develop policies that promote the teaching profession and the best conditions for effective teaching and learning. Secondly, TALIS must also help teachers, school leaders, and education stakeholders to reflect upon and discuss their practice and find ways to enhance it. Thirdly, TALIS must build upon past research while informing the future work of researchers.

WHICH COUNTRIES AND ECONOMIES PARTICIPATE IN TALIS?

The first cycle of TALIS was conducted in 2008 in 24 countries. The second cycle, five years later – TALIS 2013 – included 34 participants. The following year, in 2014, four additional countries and economies participated, bringing the second cycle total to 38 participants. TALIS 2013 broadened its scope to include options for participants to also survey teachers and leaders in primary schools (ISCED level 1), in upper secondary schools (ISCED level 3), and in schools that had participated in the 2012 cycle of the Programme for International Student Assessment (PISA), an option referred to as the TALIS-PISA link.

TALIS 2018 has expanded to include additional countries, bringing the total number of participants to 48 countries and economies.[1] While maintaining the focus on lower secondary education (ISCED level 2, as classified by the International Standard Classification of Education [ISCED-2011] (UNESCO-UIS, 2012[1]), which identifies comparable levels of education across countries), TALIS 2018 offered the same three options as TALIS 2013. In 2018, 15 countries and economies surveyed teachers and school leaders in their primary (ISCED level 1) schools, 11 did so in their upper secondary (ISCED level 3) schools and 9 countries conducted the survey in schools that participated in the 2018 Programme for International Student Assessment (PISA) through the TALIS-PISA link option.

The main survey (ISCED level 2) has been conducted in 31 OECD countries and economies – Alberta (Canada),[2] Australia,[3] Austria, Belgium (the Flemish Community of Belgium[3] also participated as a sub-national entity of Belgium), Chile, Colombia,[4] the Czech Republic, Denmark,[2, 3] England (United Kingdom),[3] Estonia, Finland, France,[3] Hungary, Iceland, Israel, Italy, Japan,[3] Korea,[3] Latvia, Lithuania, Mexico, the Netherlands[3], New Zealand, Norway, Portugal,[2] the Slovak Republic, Slovenia,[2] Spain,[3] Sweden,[2, 3] Turkey[2, 3] and the United States – as well as in Brazil,[2] Bulgaria, Ciudad Autónoma de Buenos Aires (Argentina),[2] Croatia,[2] Cyprus,[5, 6, 7] Georgia, Kazakhstan, Malta, Romania, the Russian Federation, Saudi Arabia, Shanghai (China), Singapore, South Africa, Chinese Taipei,[2, 3, 7] the United Arab Emirates[2, 3] and Viet Nam.[2, 3]

WHAT IS THE TALIS SURVEY ABOUT?

Nine main themes were selected for inclusion in the TALIS survey: teachers' instructional practices, school leadership, teachers' professional practices, teacher education and initial preparation, teacher feedback and development, school climate, job satisfaction, teacher human resource issues and stakeholder relations, teacher self-efficacy. Two cross-cutting themes were added to this list: innovation, and equity and diversity. More information on the conceptualisation of the eleven themes can be found in the *Teaching and Learning International Survey* (*TALIS) 2018 Conceptual Framework* (Ainley and Carstens, 2018[2]).

WHAT ARE THE KEY FEATURES OF TALIS DESIGN?

The key features of TALIS 2018 survey design are as follows:

- **International target population:** lower secondary education teachers and school leaders of mainstream schools.
- **Target sample size:** 200 schools per country; 20 teachers and 1 school leader in each school.
- **Target response rates for teachers:** 75% of the sampled schools, together with a 75% response rate from all sampled teachers in the country. A school is considered to have responded if 50% of sampled teachers respond.
- **Target response rates for school leaders:** 75% of the sampled school leaders.

- **Questionnaires:** Separate questionnaires for teachers and school leaders, each requiring between 45 and 60 minutes to complete.
- **Mode of data collection:** questionnaires completed on paper or on line.
- **Survey windows:** September to December 2017 for Southern Hemisphere countries (with some countries extending into January 2018 as an exception) and March to May 2018 for Northern Hemisphere countries (with some early starting participants in January and February, and some extending into July 2018).

The sample size for the ISCED 1 and ISCED 3 options is the same as the sample size for ISCED 2: 200 schools per country and 20 teachers and 1 school leader per school. For the TALIS-PISA link, 150 schools were surveyed per country. The target response rates for all TALIS survey options were the same as those for the core ISCED 2 sample. Further details on the sample for all target populations can be found in Annex A.

WHAT KINDS OF RESULTS DOES TALIS PROVIDE?

TALIS results are based exclusively on self-reports from teachers and school leaders and, therefore, represent their opinions, perceptions, beliefs and accounts of their activities. No data imputation from administrative data or other studies is conducted. Giving a voice to teachers provides insight into how they perceive the learning environments in which they work and how policies that are put in place are carried out in practice. But, as with any self-reported data, this information is subjective and may, therefore, differ from data collected through other means (e.g. administrative data or video observations). The same is true of school leaders' reports about school characteristics and practices, which may differ from descriptions provided by administrative data at a national or local government level.

In addition, as a cross-sectional survey, TALIS cannot measure causality. For instance, in examining the relationship between teachers' participation in professional development and self-efficacy in teaching, it is possible to determine the sense (positive, negative) of the association, its strength and its statistical significance, but it is not possible to establish whether participating in professional development depends on self-efficacy or whether self-efficacy depends on participation in professional development.

The analyses presented in this report are conducted with an emphasis on the following aspects: 1) reporting of results about both teachers and school leaders throughout the report; 2) meaningful international comparisons; 3) trends; 4) contextualisation of results and 5) cross-theme analyses.

1. This report intends to provide results for both teachers and school leaders. The *TALIS 2013 Results* report (OECD, 2014[6]) focused on results regarding teachers but also included one chapter and a few sections with results about school principals. The key findings highlighted in the 2013 report and in the *School Leadership* report (OECD, 2016[4]) proposed including more results on school leaders in the *TALIS 2018 Results* report. To the extent that the themes are covered in the teacher and the principal questionnaires, results about school leaders and their schools are, therefore, spread throughout the report.
2. The analyses presented in this report aim at drawing meaningful international comparisons for benchmarking. Given that the number of participating countries and economies in TALIS has grown since the first two cycles, the average estimated from all participants in TALIS 2018 does not refer to the same populations of teachers and school leaders across time. Therefore, this report focuses on the average across the OECD countries and economies participating in TALIS 2018, as they belong to a more steady and coherent entity.
3. The report also aims at making the best use of the data accumulated over the three cycles since 2008. In 2018, for the first time, three data points (2018, 2013 and 2008) are available for some indicators across many countries and economies, making trend analyses possible to inform the monitoring of the teaching profession in lower secondary education. Yet, changes over time need to be interpreted with great caution (see Annex B).
4. Emphasis is also put on contextualising teachers', principals' and schools' practices and attitudes by breaking down results according to pre-selected contextual variables. The *TALIS 2013 Results* report analysed how experienced teachers and trained teachers were distributed across more or less challenging schools (OECD, 2014, pp. 40-44[6]). This report substantially expands this kind of analyses, especially to describe how teachers', principals' and schools' practices vary by teachers' characteristics – particularly teachers' gender, age and experience – and by schools' characteristics – geographical location, school type and composition.
5. The ambition of this report is to include cross-theme analyses in each chapter. Each chapter consistently depicts the state of a given aspect of teachers' and principals' work and analyses the way this aspect relates to key outcomes of teachers, or school leaders' professionalism (see more detail in Chapter 1).

While this report focuses mainly on lower secondary teachers and school leaders, Chapters 2 to 5 also present some data and analyses for key indicators from primary and upper secondary teachers through text boxes. Two other types of text boxes are included throughout the report: text boxes highlighting examples of local or national education policies or practices and methodological boxes.

Box A **TALIS' contributions to the Sustainable Development Goals**

The Sustainable Development Goals (SDGs) were adopted by the United Nations in September 2015 (United Nations, 2015[3]). Goal 4 of the SDGs seeks to ensure "inclusive and equitable quality education and promote lifelong learning opportunities for all".

The OECD, through its large-scale international studies, is committed to helping countries monitor and report their work towards achieving and sustaining the SDGs (OECD, 2016[4]). TALIS data, in particular, can contribute to providing information to Goal 4's Target 4.c: "By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States" (United Nations, 2015, p. 17[3]). Target 4.c consists of one global indicator and six thematic indicators:[8]

- Global Indicator 4.c.1: Proportion of teachers in:

  1. pre-primary education
  2. primary education
  3. lower secondary education
  4. upper secondary education

  who have received at least the minimum organised teacher training (e.g. pedagogical training) pre-service or in-service required for teaching at the relevant level in a given country, by sex.

- Thematic indicators:

  - 4.c.2 Pupil-trained teacher ratio, by education level
  - 4.c.3 Percentage of teachers qualified according to national standards, by education level and type of institution
  - 4.c.4 Pupil-qualified teacher ratio by education level
  - 4.c.5 Average teacher salary relative to other professions requiring a comparable level of qualification
  - 4.c.6 Teacher attrition rate, by education level
  - 4.c.7 Percentage of teachers who received in-service training in the last 12 months, by type of training

TALIS data on professional development fit perfectly with indicator 4.c.7 for primary, lower secondary, and upper secondary teachers. For the other indicators, it is possible to consider some of the current TALIS indicators as "proxy measures" for the SDGs, particularly when no other internationally comparable indicator is currently available. For example, although TALIS does not have an indicator that aligns perfectly with 4.c.1, data on teacher certification and highest educational level attained can still be a proxy for qualified teachers and, thus, provide some information on the extent to which countries have achieved Goal 4.

The contribution of TALIS to the SDGs is not limited to the 4.c indicators. Other targets, means of implementation, and indicators of Goal 4 indirectly address the contribution of teachers to a quality education system. For example, the intent underlying indicator 4.7.1 is to monitor the "[e]xtent to which (i) global citizenship education and (ii) education for sustainable development, including gender equality and human rights, are mainstreamed at all levels in: (a) national education policies, (b) curricula, (c) teacher education and (d) student assessment" (UNESCO, 2016, p. 73[5]). TALIS 2018 also collects information with regard to schools' policies and teachers' practices related to student diversity and various kinds of discrimination, which, in part, contribute to the goals of indicator 4.7.1.

Other OECD data, such as those derived from the OECD Programme for the International Assessment of Adult Competencies (PIAAC) and the OECD Programme for International Student Assessment (PISA), provide a solid evidence base for monitoring education systems. OECD analyses promote peer learning, as countries can compare their experiences in implementing policies. Together, OECD indicators, statistics and analyses can be seen as a model of how progress towards the SDG education goal can be measured and reported.

Sources: UNESCO (2015[3]), *Transforming our World: The 2030 Agenda for Sustainable Development*; UNESCO (2016[5]), *Education 2030: Incheon Declaration and Framework for Action for the Implementation of Sustainable Development Goal* 4.

HOW IS THIS REPORT ORGANISED?

This volume is the first of two volumes forming the *TALIS 2018 Results* report. The chapters included in this volume present the first results and policy recommendations emerging from TALIS 2018.

- **Chapter 1** gives readers who are closely involved with teaching and learning an overview of the main findings and recommendations of the volume.
- **Chapter 2** describes what teachers do in their classrooms and how teaching has changed over the past five to ten years. It also examines the extent to which teachers and school leaders engage in related activities to support student learning. Finally, it describes the extent to which teachers and schools are able to innovate in their methods of teaching and working together.
- **Chapter 3** describes how the teaching landscape has changed since 2008, both with regard to teachers' and school leaders' demographics, as well as with contexts for teaching and learning. The chapter also sets the scene for the remainder of the report, by identifying school resources issues that, according to teachers and school leaders, particularly require action.
- **Chapter 4** presents how teachers were attracted to and prepared for the teaching profession. The chapter also explores the support provided to new teachers in their early career years.
- **Chapter 5** examines participation in and need for training of teachers and principals. It reports teachers' views on the characteristics of effective training. It concludes by examining barriers to participation in training and the support received by teachers and principals to overcome them.
- **Annex A** contains information about the TALIS target populations, the TALIS samples and a summary of the adjudication outcomes for each sample, along with cautionary notes about the interpretations of results, whenever necessary.
- **Annex B** contains information about complex variables derived from the teacher and principal questionnaires analysed in the volume, and statistical methods used to analyse TALIS data.
- **Annex C** contains the full list of online result tables.
- **Annex D** lists the members of the TALIS Governing Board, managers in the TALIS national centres, members of the OECD Secretariat, members of the TALIS Consortium, and members of TALIS expert groups that contributed to the TALIS 2018 cycle.

Notes

1. The Flemish Community of Belgium also participated in TALIS 2018 as a sub-national entity of Belgium.

2. Countries and economies that participated in the ISCED 3 option.

3. Countries and economies that participated in the ISCED 1 option.

4. On 25 May 2018, the OECD Council invited Colombia to become a Member. While Colombia is included in the OECD averages reported in this publication, at the time of its preparation, Colombia was in the process of completing its domestic procedures for ratification and the deposit of Colombia's instrument of accession to the OECD Convention was pending.

5. Note by Turkey: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall reserve its position concerning the "Cyprus issue".

6. Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

7. Chinese Taipei and Cyprus did not participate directly in TALIS 2018: their data collection and processing were managed exclusively by the international research consortium. Their data are reported in the result tables listed in Annex C.

8. "Global indicators" are compulsory for UN member states. As such, every country should commit to achieving these indicators by 2030. "Thematic indicators" seek to provide a wide framework of indicators that can assist completion of the global indicator. These indicators are not compulsory for every country or region. From the total of 43 indicators for Goal 4, 11 are global indicators and 32 are thematic indicators.

References

Ainley, J. and R. Carstens (2018), "Teaching and Learning International Survey (TALIS) 2018 Conceptual Framework", *OECD Education Working Papers*, No. 187, OECD Publishing, Paris, https://dx.doi.org/10.1787/799337c2-en. [2]

OECD (2016), *School Leadership for Learning: Insights from TALIS 2013*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264258341-en. [4]

OECD (2014), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264196261-en. [6]

UNESCO (2016), *Education 2030: Incheon Declaration and Framework for Action for the Implementation of Sustainable Development Goal 4*, UNESCO, Paris, http://uis.unesco.org/sites/default/files/documents/education-2030-incheon-framework-for-action-implementation-of-sdg4-2016-en_2.pdf. [5]

UNESCO-UIS (2012), *International Standard Classification of Education: ISCED 2011*, UNESCO Institute for Statistics, Montreal, http://uis.unesco.org/sites/default/files/documents/international-standard-classification-of-education-isced-2011-en.pdf. [1]

United Nations (2015), *Transforming our World: The 2030 Agenda for Sustainable Development*, United Nations, New York, NY, http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E. [3]

What TALIS 2018 implies for policy

The international report on the results of the 2018 Teaching and Learning International Survey focuses on the notion of professionalism and examines its various dimensions. This first volume, *Teachers and School Leaders as Lifelong Learners,* explores the knowledge and skills dimensions of professionalism for teachers and school leaders. This chapter, an overview of the main findings presented in the first volume, offers policy pointers emerging from these findings and discusses trade-offs that policy makers need to consider in designing teacher policies.

A note regarding Israel

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.

PROFESSIONALISM OF TEACHERS AND SCHOOL LEADERS

Teacher professionalism as an overarching framework for TALIS 2018

In today's knowledge-based economies and societies, knowledge and skills are key to individual and collective success, with high expectations and demands placed on education systems and their teachers and school leaders. Teachers are expected to have a deep and broad understanding of what they teach and the students they teach. They are also expected to understand the research-theory-practice nexus and to have the inquiry and research skills to become lifelong learners who grow in their profession. But teachers today are increasingly expected to perform additional tasks, such as facilitating the development of students' social and emotional skills, responding to students' individual differences and working collaboratively with other teachers and parents to ensure the holistic development of students. The demands on school leaders are also significant. In many education systems, school leaders are not only expected to lead the administration and management of their school but also to create conditions that lead to improved teaching and learning. These include developing school improvement plans, encouraging teachers' collaboration and participation in effective professional development, counselling students and parents about student progress and student orientation, and connecting the school to a larger network of schools and the local community. This is what communities expect from teachers and the question is how communities can best support their teachers to fulfil these expectations.

Teachers and school leaders are at the centre of any attempt to improve the quality of education. Decades of research have found that teachers and school leaders shape the quality of instruction, which strongly affects students' learning and outcomes (Barber and Mourshed, 2009[1]; Darling-Hammond, 2017[2]; OECD, 2018[3]). As a result, education systems have sought how to:

1. attract high-achieving candidates into the profession
2. provide quality initial and continuous training to new recruits and in-service teachers
3. support teachers in the continuous development of their craft and spread good practices
4. foster job satisfaction and the status of the profession, with a view to retaining quality teachers and school leaders (OECD, 2005[4]).

The Teaching and Learning International Survey (TALIS) defines teachers as those who provide instruction in programmes at a given educational level as part of their regular duties in a target school. Target schools are defined as schools that comprise at least one teacher. Principals are defined as heads of target schools. In these definitions, active delivery of instruction is considered the core and common element of the mission of schools and the work of teachers, both within and across countries. Compared to the rich and animated debate on what defines the occupations of teachers and school leaders, the TALIS definitions are very simple. However, through the breadth and depth of indicators collected, TALIS aims to contribute to the debate about teaching as a profession (Guerriero, 2017[5]; Ingersoll and Collins, 2018[6]). By examining the "professionalism framework" through the lens of the indicators available in TALIS, it can help identify levers to enhance the degree of professionalism of teachers and school leaders worldwide.

TALIS defines teaching as a profession underpinned by five pillars:

1. the knowledge and skills base, which includes shared and specialised knowledge, as well as standards for access to the profession and development of specific skills through pre-service training and in-service professional development
2. the status and standing of the profession, captured through the ethical standards expected of professional workers, the intellectual and professional fulfilment of the job, and the working regulations applying to teaching (such as competitive reward structures on par with professional benchmarks and room for career progression)
3. peer control, which relies upon self-regulated and collegial professional communities that provide opportunities for collaboration and peer feedback to strengthen professional practices and the collective identity of the profession
4. responsibility and autonomy, captured through the degree of autonomy and leadership that teachers and school leaders enjoy in their daily work, to make decisions and apply expert judgement and to inform policy development at all levels of the system, so that professionalism can flourish
5. The perceived prestige and societal value of the profession.

Using these five pillars, this report takes stock of existing classifications and has adapted and expanded them to the new analytical potential of TALIS 2018 instruments. It examines not only the different attributes of professionalism, but also the policies and practices that support and enhance them. As part of the third cycle, and given the hundreds of variables collected over 48 countries – sometimes across 3 levels of education and at 3 points in time – TALIS 2018 will be released in two volumes examining these five pillars of professionalism. This first volume, *Teachers and School Leaders as Lifelong Learners*, explores the knowledge and skills dimension of professionalism. The second volume, *Teachers and School Leaders as Valued Professionals*, to be published in early 2020, will focus on status and standing, peer control, and responsibility and autonomy.

Using TALIS 2018 data, the professionalism of teachers and school leaders is measured through many different indicators. These range from fact-based indicators (teachers' levels of education, participation in professional development, type of work contract and rates of absenteeism) to more subjective factors (sense of preparedness and self-efficacy, perceived needs for professional development, job satisfaction, and perceived levels and sources of stress). Although TALIS collects information on both teachers and school leaders, its analyses offer greater depth and a more complete picture for teachers than for school leaders.

TALIS 2018 results and policy pointers

As previously noted, this volume of the TALIS 2018 international report focuses on the first pillar of professionalism for teachers and school leaders: the dimension of knowledge and skills in their work. Any profession needs to have a specialised set of knowledge and skills that makes it distinctive and from which practitioners draw their legitimacy and prestige. This first volume shows how teachers and school principals see their practice and how they develop their knowledge and skills to help students develop the cognitive and socio-emotional skills and academic knowledge needed in today's changing world. It examines how much the landscape of teaching has changed since the 2008 and 2013 cycles of TALIS, in terms of the profiles of teachers, school leaders and students and the climate in schools and classrooms. It also explores links between the content and features of initial teacher education and continuous professional development and individuals' feelings of preparedness for the job, self-efficacy and job satisfaction. These analyses help to determine to what extent a strong knowledge and skills base supports the work of teachers and school leaders, as well as how and in what areas teachers and school leaders can develop further. The volume also examines teachers' and school leaders' perspectives on school resources issues and priority areas for intervention and additional spending. This helps give them a voice on these issues, as an important first step towards greater leadership and regulation by the profession.

This chapter presents an overview of the main findings on these issues and offers policy pointers to consider in designing teacher policies. Chapters 2 and 3 look at how teachers and principals continuously adjust their practices to changing times and how they best support students to develop cognitive and socio-emotional skills in our changing world. Chapters 4 and 5 examine support mechanisms to enhance the knowledge base of teachers and school leaders to drive the success of teaching and learning, through initial training (Chapter 4) and continuous professional development (Chapter 5).

Highlighting the connections between results on different cross-cutting issues, the summary of main findings that makes up the rest of this chapter is structured as follows:

- ***Promoting quality teaching for every student*** examines whether teachers' and school leaders' work and working conditions shape environments conducive to student learning and well-being and also how to ensure quality teaching for every student.
- ***Supporting the professional growth of teachers and school leaders throughout their careers*** analyses whether teaching is becoming increasingly professionalised in terms of knowledge and skills and how to support the professional growth of teachers and school leaders.
- ***Attracting quality teachers and school leaders and monitoring workforce dynamics*** describes the teacher and principal workforces and suggests directions for attracting quality teachers and school leaders and monitoring workforce dynamics.

For each of these broad objectives, the chapter points out promising education policies and practices that could be considered to improve conditions for teaching and learning and professionalism for teachers and school leaders. These policy recommendations draw on findings emerging from the TALIS 2018 data or on evidence-based research. However, it is acknowledged that, as TALIS results vary across countries and economies, the proposed policy pointers may not be relevant to all education systems and should be interpreted as suggestive.

PROMOTING QUALITY TEACHING FOR EVERY STUDENT

To examine the skills of teachers, TALIS has developed indicators designed to capture what teachers do in their classrooms: how they distribute their class time on various activities; how often they use effective teaching practices; and how well they are able to implement certain practices and achieve certain goals.

Goal: Make the most of teachers' time to support quality teaching

An important pre-condition for use of quality teaching practices is making the most of classroom time to implement them. On average across the OECD, teachers report spending 78% of classroom time on actual teaching and learning (the equivalent of 47 minutes of a 60-minute lesson), 13% of classroom time on keeping order in the classroom (the equivalent of 8 minutes) and 8% on administrative tasks (the equivalent of 5 minutes). Teachers' reported self-efficacy is not independent of the use of class time. In most countries and economies that participate in TALIS, there is a significant inverse relationship between perceived self-efficacy in classroom management and class time spent on keeping order, although the direction of causality cannot be determined.

Some important trends in teachers' use of time are also observed, for various time units. Overall, during a typical week, teachers report teaching a higher number of hours in 2018 than in 2013 (in about half of the countries with available data). Concomitantly, the number of hours teachers spend on planning and preparing lessons has decreased. This may not be worrisome, as long as lesson preparation has become more effective. This is made possible, for example, through the use of technology, ageing of the teacher population (lesson preparation time is typically longer for novice teachers than for more experienced teachers) or efficiencies in content (such as reusing lesson materials for different classes).

A more worrying trend is that, within single lessons, there has been an overall decline in classroom time spent on actual teaching and learning since 2008 (observed in around half of the countries). In other words, the overall proportion of lesson time efficiently used for teaching and learning has decreased over the past decade.

Policy pointer 1: Rethink teachers' schedules

Designing and implementing effective pedagogical practices require time to prepare lessons and to try out, revise and improve specific practices. Thus, it is important for policy makers and other stakeholders to reflect on how the people, time, space and technology in education can be used most productively. This includes ensuring that teachers have enough time for activities that maximise student learning (such as lesson preparation, professional collaboration, meeting with students and parents, and participating in professional development).

Goal: Promote the use of effective teaching practices

The frequent and widespread use of high-leverage pedagogies and teaching practices is another important element of teaching quality. Among the wide range of instructional practices used by teachers in class, those aimed at enhancing classroom management and clarity of instruction are widely applied across the OECD countries and economies participating in TALIS, with at least three-fifths of teachers using them frequently. Practices involving cognitive activation (instructional activities that require students to evaluate, integrate and apply knowledge within the context of problem solving) are less widespread, with about half of teachers using most of these methods frequently across the OECD. Past OECD studies provide repeated evidence that cognitive activation practices are positively related to student learning and achievement (Echazarra et al., 2016[7]; Le Donné, Fraser and Bousquet, 2016[8]). Indeed, these practices can challenge and motivate students, and stimulate higher-order skills, such as critical thinking, problem solving and decision making. Teachers implementing these practices not only encourage students to find creative and alternative ways to solve problems, but also enable them to communicate their thinking processes and results to their peers and teachers.

Turning to a more subjective indicator of teaching quality, teachers' reported self-efficacy, TALIS findings show that more than 80% of teachers feel confident in their capacity to teach and manage their classroom, on average across OECD countries and economies participating in TALIS. However, TALIS reveals findings corroborating a stronger difficulty for teachers in actively engaging students in learning than in managing their classroom as, for example, over 30% of teachers report low self-efficacy in motivating student learning, particularly when it comes to turning around a situation where a student shows low interest in school work.

With respect to effective use of classroom time as a third measure of teaching quality, TALIS data show that teachers tend to spend less classroom time on actual teaching and learning when teaching larger classes. Whether this suggests that resources be prioritised to better prepare and support teachers with classroom management, or to decrease class sizes, cannot be discerned from these data. Also, while TALIS data show that smaller classes tend to go along with more actual teaching and learning time, class size is no predictor for other quality indicators of teaching processes captured by TALIS, such as the use of cognitive activation practices and teachers' reported self-efficacy in teaching.

Teachers' practices also differ depending on the composition of the classroom they teach. In most countries and economies, when the share of gifted students in a classroom is larger and/or the proportion of low achievers is smaller, all three quality indicators of teaching processes examined (the use of cognitive activation practices, self-efficacy and the time spent on actual teaching) tend to be more prevalent, even after controlling for teachers' characteristics.

Policy pointer 2: Support teachers in the use of effective teaching practices

Initial and continuous teacher learning that emphasises effective teaching practices could foster the use of pedagogies related to cognitive activation. Clinical experiences, where teachers can explore such strategies, could also facilitate their acquisition of related skills (Cheng, Cheng and Tang, 2010[9]). Teachers should be trained in the use of these practices, be aware of their importance, feel able to use them and enjoy the conditions to actually implement them.

Policy pointer 3: Promote small-group instruction to optimise classroom time

Education systems, as well as school leaders, should strive to give teachers greater flexibility in designing effective learning environments that optimise classroom time.

The opportunity cost of class size reductions are high and OECD education data show no evidence that reducing class size across the board has led to general improvements in outcomes. Still, there seems room for more creative solutions. For example, teachers should be encouraged and supported to set up their classroom space in a way that is conducive to more individualised and active learning approaches, splitting the room into different areas and groups, with adequate materials for students to complete tasks. Past research found that student attitudes about group-based learning improve with comfort and physical ease of communication within groups, such as small tables facing one another and facilities for easy mobility in the room (Espey, 2008[10]).

School leaders could also be given increased discretion to use human resources in more flexible ways at the school level, to enable teachers to work with smaller groups at least part of the time. An additional advantage of such an approach could be to provide an opportunity to trial new ways of working in teams with other teachers and support staff to assess the impact of such arrangements on students and teachers.

Goal: Foster openness towards innovation and effective use of ICT in teaching

The 2014 OECD report *Measuring Innovation in Education: A New Perspective* states that educational innovation can add value in four main areas:

1. improving learning outcomes and the quality of education
2. enhancing equity in access to and use of education, as well as equality
3. improving efficiency, minimising costs and maximising the "bang for the buck"
4. introducing the changes necessary to adapt to rapid changes in society (OECD, 2014, p. 21[11]).

A perspective of interest with regard to innovation concerns the general uptake of innovative practices by teachers and schools as core actors in educational processes. On average across the OECD countries and economies participating in TALIS, about 70% to 80% of teachers and more than 80% of school leaders view their colleagues as open to change and their schools as places that have the capacity to adopt innovative practices. However, this viewpoint is less common among young and novice teachers than among more experienced teachers. It is also less common in European countries than in other parts of the globe.

While asking teachers and school leaders about innovation-responsiveness among the staff of their school, TALIS allowed an open interpretation of the meaning of innovation. However, TALIS also collects information on the use of information and communication technology (ICT) in classrooms and schools, which can be considered an expression of innovation. ICT is also an example of innovation for which use is generally easier to monitor and measure, including through a survey like TALIS. Figure I.1.1 provides a snapshot of the use of ICT for teaching and the development of and need for related skills. The frequency with which teachers have students use ICT for projects or class work has risen in almost all countries since 2013, to a point where 53% of teachers across the OECD report frequently or always using this practice. In line with this, participation rates in professional development activities including ICT skills for teaching have increased in many countries since 2013. The rise in the use of ICT for projects or class work is not surprising, given the recognised digitalisation and spread of ICT tools in social and work activities. This rise can be explained by the dissemination of these technologies in all spheres of society and also by the renewal of the teacher workforce, with younger teachers being more familiar with these technologies.

However, TALIS data suggest that there is limited preparation and support available for teachers that could enable them to implement innovative practices in their instruction. Only 56% of teachers across the OECD received training in the use of ICT for teaching as part of their formal education or training, and only 43% of teachers felt well or very well prepared for this element when they completed their initial education or training. Moreover, about 18% of teachers across the OECD still express a high need for professional development in ICT skills for teaching. Finally, with 25% of school leaders reporting a shortage and inadequacy of digital technology for instruction as a hindrance to providing quality instruction, TALIS data suggest that teachers may be limited in their use of ICT.

Policy pointer 4: Tailor support for integrating ICT in teaching and dissemination of good practices

International surveys and studies conducted in international and national contexts highlight the importance of how ICT is used in the classroom (Fraillon et al., 2014[12]; OECD, 2015[13]). A study conducted on the TALIS 2013 dataset of Spain showed that teachers' use of ICT in the classroom is mainly dependent not only on teacher training in ICT but also on teachers' collaboration with other teachers and teachers' perceived self-efficacy and beliefs about teaching, as well as (although to a lesser extent) the availability of educational software or school infrastructure (Gil-Flores, Rodríguez-Santero and Torres-Gordillo, 2017[14]).

Figure I.1.1 **ICT for teaching**

Countries/economies where the indicator is **above** the OECD average
Countries/economies where the indicator is **not statistically different** from the OECD average
Countries/economies where the indicator is **below** the OECD average

	Percentage of teachers for whom the "use of ICT for teaching" has been included in their formal education or training	Percentage of teachers who felt "well prepared" or "very well prepared" for the use of ICT for teaching	Percentage of teachers for whom "use of ICT for teaching" has been included in their recent professional development activities	Percentage of teachers reporting a high level of need for professional development in ICT skills for teaching	Percentage of teachers who "frequently" or "always" let students use ICT for projects or class work	Percentage of principals reporting shortage or inadequacy of digital technology for instruction
	Chapter 4	Chapter 4	Chapter 5	Chapter 5	Chapter 2	Chapter 3
Alberta (Canada)	71	42	56	8	66	12
Australia*	65	39	67	11	78	12
Austria	40	20	46	15	33	18
Belgium	51	28	40	18	29	29
Flemish Comm. (Belgium)	56	34	45	9	38	16
Brazil	64	64	52	27	42	59
Bulgaria	58	50	63	23	44	26
CABA (Argentina)	53	50	61	20	64	39
Chile	77	67	51	17	63	13
Colombia	75	59	78	34	71	64
Croatia	47	36	73	26	46	25
Czech Republic	45	28	41	13	35	24
Denmark	47	40	47	11	90	13
England (UK)	75	51	40	5	41	15
Estonia	54	30	74	19	46	12
Finland	56	21	74	19	51	20
France	51	29	50	23	36	30
Georgia	45	47	67	33	53	29
Hungary	51	66	69	20	48	36
Iceland	46	26	63	21	54	5
Israel	58	47	69	29	52	40
Italy	52	36	68	17	47	31
Japan	60	28	53	39	18	34
Kazakhstan	75	69	90	30	66	45
Korea	59	48	61	21	30	24
Latvia	55	48	77	23	48	41
Lithuania	45	57	69	24	62	30
Malta	70	49	48	14	48	6
Mexico	77	80	64	16	69	44
Netherlands	49	29	61	16	51	16
New Zealand	59	34	73	14	80	18
Norway	46	36	58	22	m	11
Portugal	47	40	47	12	57	55
Romania	70	70	52	21	56	50
Russian Federation	69	72	75	15	69	32
Saudi Arabia	73	72	76	28	49	61
Shanghai (China)	79	63	77	30	24	10
Singapore	88	60	75	14	43	2
Slovak Republic	62	45	60	17	47	25
Slovenia	53	67	59	8	37	4
South Africa	62	54	53	32	38	65
Spain	38	36	68	15	51	21
Sweden	37	37	67	22	63	10
Turkey	74	71	61	7	67	22
United Arab Emirates	86	86	85	10	77	31
United States	63	45	60	10	60	19
Viet Nam	97	80	93	55	43	82
OECD average-31	**56**	**43**	**60**	**18**	**53**	**25**

* Participation rate of principals is too low to ensure comparability for principals' reports and country estimates are not included in the OECD average.

Source: OECD, TALIS 2018 Database, Tables I.4.13, I.4.13, I.5.18, I.5.21, I.2.1 and I.3.63.

StatLink http://dx.doi.org/10.1787/888933931791

In particular, teacher professional learning opportunities should move forward from just acquiring the skills to master certain technological competencies to finding ways to tailor technology to specific subjects and specific activities within those subjects. Rather than narrowly focusing on the tools, training on ICT skills for teaching should reflect how technology can amplify great teaching and empower teachers to become better instructors. These opportunities should focus on building teachers' competence in dealing with technology use in the classroom.

Furthermore, the scope of ICT skills can be quite broad, encompassing issues as diverse as the mastery of online search engines, managing social media, learning coding scripts, creating multimedia platforms and building awareness of the importance of digital responsibility. As teachers access more and more training, they will be more curious and will engage in exploring new areas of technology to implement in their instruction. However, teachers' training and motivation may not be enough to ensure effective implementation of ICT in the classroom. That also requires education systems to provide systematic and sustainable support in providing the essential resources necessary to achieve better digital competence (Krumsvik, 2008[15]).

Policy pointer 5: Build and promote professional learning communities to disseminate innovative practices

Past OECD research (Kools and Stoll, 2016[16]; Vieluf et al., 2012[17]) has pointed out the value that professional learning communities offer by constantly providing feedback to teachers, thus supporting incremental change and positively affecting instructional quality and student achievement (Bolam et al., 2005[18]; Louis and Marks, 1998[19]). This suggests that the establishment of professional learning communities could facilitate spreading and fostering the use of innovative practices. Indeed, theoretical models on the effective implementation of digital technologies have acknowledged the importance of cultivating a school community based on "sharing and caring" practices leading to digital competencies (Krumsvik, 2008[15]).

The fact that school leaders report higher levels of openness towards innovation than teachers suggests that school leaders face an important challenge in fostering a school environment open to new ideas. School leaders can help to develop a spirit of innovation-responsiveness among their staff. This can be achieved not only by encouraging staff to readily accept new ideas, but also by working with them in school-based professional learning communities to proactively identify needs for change, and by making assistance available to support teachers in the process of change.

Goal: Build the capacity of teachers and school leaders to meet the needs of diverse classrooms and schools

TALIS results show that learning environments are diverse in terms of the ethnic and cultural composition of the student body, its socio-economic diversity and student composition in terms of special needs. Reflecting on the state of classroom diversity research, a recent OECD working paper noted that: "… the debate has centred on formal education settings with researchers analysing the processes and problems related to cultural, ethnic, linguistic, religious or national diversity at school. In turn, researchers and practitioners search for solutions, frequently focusing on desired teacher qualities and competencies." However, in relation to finding solutions, the same paper also noted that: "From [a] reflective standpoint teachers can treat diversity as an asset and a source of growth rather than a hindrance to student performance." (Forghani-Arani, Cerna and Bannon, 2019, p. 14[20]).

TALIS 2018 pays particular attention to multicultural diversity. The integration of world economies, large-scale migration and surges in refugee flows have all contributed to forming more ethnically, culturally and linguistically diverse learning environments than in the past in the countries that have been most exposed to these phenomena. Therefore, ensuring high-quality learning experiences for this diverse student body is of particular policy priority. On average across the OECD, 17% to 30% of teachers teach in schools with a culturally or linguistically diverse student composition, depending on the criterion considered (the proportion of refugee students, of students whose first language is different from the language of instruction, or of students with a migrant background). And, as some schools are affected by only one kind of diversity, the total proportion of teachers actually working in schools with at least one element of cultural or linguistic diversity is likely higher.

However, not many teachers are trained in teaching in such culturally or linguistically diverse classrooms. Thirty-five percent of teachers report that teaching in multicultural and multilingual settings was included in their formal teacher education or training, and 22% of teachers said it was included in their professional development activities in the 12 months prior to the survey. Furthermore, teachers who have previously taught in a classroom with students from different cultures report that they do not all feel confident in their ability to cater to the needs of diverse classrooms. When teachers completed their formal teacher education or training, only 26% of them felt well or very well prepared for teaching in a multicultural or multilingual setting. At the time of survey completion, 33% of teachers still do not feel able to cope with the challenges of a multicultural classroom, on average across the OECD. Teaching in a multicultural or multilingual setting is one of the professional development activities with the highest proportion of teachers reporting a high need for it (15%). While a high percentage of teachers (almost 70%) report high levels of self-efficacy with respect to promoting positive relationships and interactions between students from different backgrounds, fewer teachers (59%) feel able to adapt their teaching to the cultural diversity of students. This result signals that more efforts can be made by teacher education systems, but also by teachers themselves, to make use of relevant instructional tools and strategies to adapt their lessons.

Figure I.1.2 **Teaching in multicultural or multilingual settings**

Countries/economies where the indicator is **above** the OECD average
Countries/economies where the indicator is **not statistically different** from the OECD average
Countries/economies where the indicator is **below** the OECD average

	Percentage of teachers teaching in classes with more than 10% of students whose first language is different from the language of instruction	Percentage of teachers for whom "teaching in a multicultural or multilingual setting" was included in their formal education or training	Percentage of teachers who felt "well prepared" or "very well prepared" for teaching in a multicultural or multilingual setting	Percentage of teachers for whom "teaching in a multicultural or multilingual setting" was included in their recent professional development activities	Percentage of teachers reporting a high level of need for professional development in teaching in a multicultural or multilingual setting	Percentage of teachers who feel they can cope with the challenges of a multicultural classroom "quite a bit" or "a lot" in teaching a culturally diverse class[1]
	Chapter 3	Chapter 4	Chapter 4	Chapter 5	Chapter 5	Chapter 3
Alberta (Canada)	45	63	38	41	10	67
Australia	27	59	27	23	7	70
Austria	42	31	15	18	14	74
Belgium	35	31	16	13	9	81
Flemish Comm. (Belgium)	39	34	17	18	8	77
Brazil	4	42	44	27	44	81
Bulgaria	40	27	26	31	21	82
CABA (Argentina)	9	35	34	19	25	70
Chile	5	42	37	21	34	57
Colombia	5	47	30	29	45	90
Croatia	8	25	20	19	14	81
Czech Republic	3	16	10	14	6	65
Denmark	21	37	26	14	11	85
England (UK)	27	68	43	19	5	72
Estonia	13	28	16	25	11	70
Finland	15	29	14	20	7	69
France	16	12	8	6	17	66
Georgia	9	30	33	35	12	71
Hungary	2	19	28	15	13	84
Iceland	24	27	13	23	19	62
Israel	17	34	33	21	17	63
Italy	17	26	19	28	14	80
Japan	2	27	11	13	15	17
Kazakhstan	33	48	43	37	13	68
Korea	4	29	24	31	14	31
Latvia	23	33	32	28	11	89
Lithuania	6	23	35	18	10	67
Malta	29	38	23	27	20	65
Mexico	4	27	26	16	46	59
Netherlands	15	30	17	10	4	68
New Zealand	27	78	45	46	7	74
Norway	23	29	15	15	13	59
Portugal	8	21	19	14	22	94
Romania	8	37	43	22	27	72
Russian Federation	12	31	32	24	13	83
Saudi Arabia	11	36	43	40	26	77
Shanghai (China)	3	63	52	43	22	45
Singapore	58	72	61	25	5	65
Slovak Republic	11	26	21	14	9	64
Slovenia	16	12	27	18	14	58
South Africa	62	75	67	54	20	81
Spain	22	29	26	32	18	52
Sweden	41	41	32	24	15	68
Turkey	18	33	39	27	22	55
United Arab Emirates	50	76	80	65	10	90
United States	25	70	48	42	6	66
Viet Nam	20	44	31	41	19	46
OECD average-31	**18**	**35**	**26**	**22**	**15**	**67**

1. The sample is restricted to teachers reporting that they have already taught a classroom with students from different cultures.

Source: OECD, TALIS 2018 Database, Tables I.3.28, I.4.13, I.4.20, I.5.18, I.5.21 and I.3.38.

StatLink http://dx.doi.org/10.1787/888933931810

Indeed, TALIS shows that, overall, teachers who were trained in the area of teaching in multicultural and multilingual settings in their initial and/or in-service training also report higher levels of self-efficacy in teaching in such settings. Figure I.1.2 provides a snapshot of teaching in multicultural and multilingual settings and the development of and needs for related skills.

Some countries experienced a rise in the concentrations of students whose first language is not the language of instruction at school, of students from socio-economically disadvantaged homes and of students with special needs. A global trend is also evident in teachers' reported needs for training in dealing with student diversity. Between 2013 and 2018, there has been a global increase in the share of teachers expressing a high need for training in teaching in a multicultural or multilingual setting, suggesting that teachers see this as a phenomenon likely to rise in importance in the future, if it is not already a pressing issue for them.

While countries differ with regard to the extent and nature of multicultural diversity, one issue that is of universal relevance relates to the inclusion of students with special needs in regular learning environments. In TALIS, special needs students are defined as "those for whom a special learning need has been formally identified because they are mentally, physically, or emotionally disadvantaged". On average across the OECD, 27% of teachers work in schools with at least 10% of students with special needs. In some education systems, more than 50% of teachers work in schools with at least 10% of students with special needs.

TALIS does not ask teachers about the training they received in teaching special needs students as part of their initial teacher education or training. TALIS only asks whether teachers were trained in teaching in a mixed-ability setting. Although this aspect is broader and does not necessarily include teaching students with special needs, it provides some indication of whether teachers received at least some preparation in dealing with classrooms with students with diverse ability levels and, therefore, diverse learning paces and needs.

In this respect, TALIS shows that, on average across the OECD, 62% of teachers were trained as part of their formal teacher education or training to teach in mixed-ability settings, but only 44% of teachers, on average, felt prepared to teach in such settings when they finished their studies. Furthermore, although 43% of teachers, on average, participated in professional development activities including teaching students with special needs, training in teaching special needs students is the professional development topic with the highest percentage of teachers reporting a high need for it (22%). While participation in professional development on this topic has experienced one of the highest increases between 2013 and 2018, the percentage of teachers reporting a high need for it has also experienced one of the highest increases in the same period.

Finally, on average across the OECD, 32% of school principals report that delivery of quality instruction in their school is hindered by a shortage of teachers with competence in teaching students with special needs. This shortage ranks among the most frequent resource issues reported by school principals. Figure I.1.3 provides a snapshot of teaching special needs students as well as of the development of and need for related skills.

Policy pointer 6: Incorporate teaching strategies for diverse settings in the curricula of initial and continuous teacher training

Teachers need to prepare for teaching multicultural, multilingual and mixed-ability classrooms. Education systems need to have a systemic framework to prepare and support the teaching workforce to teach in diverse settings, including in diverse multicultural environments. To do so, they need to include this issue in the vision, planning and curricular design of initial training and in-service professional development.

Training systems could also offer opportunities for student teachers to study abroad as part of their formal teacher education or training. This would allow future teachers to develop intercultural and interpersonal skills useful for teaching culturally diverse classes, as indicated by past research (Rundstrom Williams, 2005[21]). One research study suggested that longer duration of study abroad had a greater impact on students than a short summer programme or a semester, in the areas of continued language use, academic attainment measures, intercultural and personal development and career choices (Dwyer, 2004[22]). A number of countries in Europe have adopted policies to hire teachers from diverse backgrounds and short-term preparation programmes for migrant teachers joining the workforce so that the teaching workforce can be more heterogeneous and reflect the diversity of the student body (Cerna et al., 2019[23]). These fast-track programmes can enable newly arrived teachers to learn about the pedagogical practices specific to the host countries, such as teacher-student interactions, classroom routines and traditions, etc. Teacher training programmes for diverse classrooms should include pedagogical approaches for second-language learning and support strategies to help students become socially integrated in diverse settings (Cerna et al., 2019[23]). These learning opportunities have been introduced by many countries in the form of elective courses and modules in their initial teacher education programmes. Opportunities that are particularly strong include practical training, such as cultural immersion programmes, to allow teachers to build intercultural competencies (Cerna et al., 2019[23]).

Figure I.1.3 **Teaching students with diverse ability levels and needs**

Countries/economies where the indicator is **above** the OECD average
Countries/economies where the indicator is **not statistically different** from the OECD average
Countries/economies where the indicator is **below** the OECD average

	Percentage of teachers teaching in classes with more than 10% of special needs students	Percentage of teachers for whom "teaching in a mixed-ability setting" has been included in their formal education or training	Percentage of teachers who felt "well prepared" or "very well prepared" for teaching in a mixed-ability setting	Percentage of teachers for whom "teaching students with special needs" was included in their recent professional development activities	Percentage of teachers reporting a high level of need for professional development in teaching students with special needs	Percentage of principals reporting a shortage of teachers with competence in teaching students with special needs
	Chapter 3	Chapter 4	Chapter 4	Chapter 5	Chapter 5	Chapter 3
Alberta (Canada)	32	77	44	47	11	14
Australia*	29	74	38	58	12	18
Austria	23	52	27	23	16	14
Belgium	52	66	37	35	18	56
Flemish Comm. (Belgium)	53	70	41	38	13	39
Brazil	11	73	71	40	58	60
Bulgaria	8	42	37	39	27	18
CABA (Argentina)	3	57	51	23	36	18
Chile	55	76	68	55	38	27
Colombia	9	70	54	42	55	68
Croatia	10	47	28	67	36	25
Czech Republic	24	34	18	53	15	30
Denmark	33	67	45	29	19	33
England (UK)	41	90	69	57	6	23
Estonia	14	51	24	57	26	47
Finland	26	73	35	30	12	15
France	40	49	25	30	34	70
Georgia	4	35	39	51	22	14
Hungary	21	71	76	45	22	35
Iceland	40	55	26	30	17	13
Israel	27	73	59	33	25	41
Italy	37	57	37	74	15	48
Japan	21	64	26	56	46	44
Kazakhstan	5	76	67	32	14	17
Korea	6	64	50	25	13	20
Latvia	9	50	42	50	20	26
Lithuania	11	45	52	53	21	20
Malta	23	64	36	31	20	29
Mexico	8	71	72	28	53	34
Netherlands	46	44	27	42	12	21
New Zealand	17	83	49	32	15	24
Norway	35	60	25	31	18	18
Portugal	19	45	39	30	27	48
Romania	12	80	77	33	35	45
Russian Federation	5	73	72	55	15	11
Saudi Arabia	9	77	70	26	29	52
Shanghai (China)	8	80	69	46	25	20
Singapore	19	79	54	35	20	17
Slovak Republic	22	57	36	37	26	30
Slovenia	31	46	57	54	23	28
South Africa	29	76	67	34	39	53
Spain	19	35	28	37	28	25
Sweden	40	73	61	46	18	30
Turkey	11	66	65	52	16	37
United Arab Emirates	16	87	88	69	18	42
United States	51	81	56	56	9	28
Viet Nam	7	88	72	50	26	58
OECD average-31	**27**	**62**	**44**	**43**	**22**	**32**

* Participation rate of principals is too low to ensure comparability for principals' reports and country estimates are not included in the OECD average.

Source: OECD, TALIS 2018 Database, Tables I.3.28, I.4.13, I.4.20, I.5.18, I.5.21 and I.3.63.

StatLink http://dx.doi.org/10.1787/888933931829

Going beyond training opportunities, school communities should also play an active role in preparing teachers to work in diverse environments. Schools should take into account teachers' abilities and preparedness to teach in diverse environments when allocating teachers to specific classrooms and should team up teachers with more and less experience in this area to learn from one another.

Policy pointer 7: Implement school policies and practices to make the most of diversity

Countries and economies also need to equip school leaders and grant them enough autonomy to design and implement school-level policies and practices capable of supporting the learning of all students, irrespective of their abilities, learning needs, and social or cultural origins. These policies and practices can include information sessions for students about ethnic and cultural discrimination and how to deal with it, as well as meetings with teachers to discuss how to integrate global issues throughout the curriculum. For countries and economies with a stronger tradition of promoting multiculturalism, school leaders can consider organising multicultural events or supporting activities that encourage students to express diverse cultural identities and celebrate the richness of diversity.

Policy pointer 8: Reinforce the provision, support and training for teaching special needs students

Education systems should develop strategic policy actions to improve the quality and number of teachers equipped to teach special needs students, as they are increasingly enrolled in regular schools and classes.

As a first step, it would be important for education systems to invest in the detection and diagnosis of special needs students. What teachers perceive as behavioural issues (e.g. misbehaviour, low performance) could have other explanations (e.g. undiagnosed special needs). Misdiagnosis is costly for students, teachers and education systems as a whole. So an increased emphasis on training teachers to detect students who need to be directed to specialists for proper diagnosis would be desirable. In addition, education systems need to ensure that all students have access to professional diagnosis. This can be achieved by developing professional capacity for diagnosis and detection within schools or, in systems where private providers are responsible for such diagnosis, by ensuring that financial constraints do not impede the diagnosis of socio-economically disadvantaged students.

A recent *OECD Education Working Paper* analysed professional development needs in special education, using TALIS 2013 data. It suggested that education systems may need to pursue several means to address the shortage of teachers with skills for teaching special needs students. These include recruiting more teachers with the skills to teach special needs students, targeting training in this area and addressing over-reliance on part-time, non-permanent positions for teachers who work with higher shares of student with special needs. Such measures are a way to build continuity in instruction for special needs students and increased capacity for their teachers (Cooc, 2018[24]).

High-quality teacher training for special needs education should be provided to all teacher candidates as well as to in-service teachers. To encourage teachers to participate, specific competencies related to teaching in inclusive classrooms should be included in national standards frameworks. However, as education systems may not make such training available for all immediately, priority should be given to teachers teaching higher shares of special needs students, with a view to maximising impact in the short term (Cooc, 2018[24]).

The high need for training reported by teachers as observed in TALIS could also signal that these teachers' schools do not have the necessary resources in terms of infrastructure or educational resources to support teachers serving special needs students. A special financial subsidy for mainstream schools that serve special needs students (e.g. for recruiting teacher aides) could improve the situation of both human and educational resources.

Goal: Foster a school and classroom climate conducive to student learning and well-being

An important issue for policy makers, principals, teachers and parents alike is to ensure that schools are safe environments, that classroom climate is conducive to student learning, and that relationships among students and with school staff are conducive to their development and well-being. Fortunately, on average across the OECD, schools in 2018 are, for the most part, immune from weekly or daily school safety incidents and, thus, provide students with safe learning environments.

However, one issue stands out in the reports of school principals on school safety. Reports of regular incidents related to intimidation or bullying among students are significantly higher than for the other school safety incidents, occurring at least weekly in 14% of schools, on average across the OECD. In TALIS 2018, a new item asks principals about the frequency of a student or parent/guardian reporting the posting of hurtful information on the Internet about students (akin to cyberbullying). In 2013, those types of incidents would likely have been included under the bullying item. Therefore, change in bullying over time needs to be interpreted cautiously, taking into account not only bullying, but also posting of hurtful information about students on the Internet (in 2018). Contrasting daily or weekly incidents of bullying (in 2013) with daily or weekly incidents of either bullying or the posting of hurtful information on the Internet (in 2018) reveals that seven countries and economies have experienced a reduction in the frequency of this phenomenon, as reported by principals. But in five education systems, their frequency has increased, according to principals. This calls for close monitoring and specific action.

Figure I.1.4 **Student behaviour and classroom management**

Countries/economies where the indicator is **above** the OECD average
Countries/economies where the indicator is **not statistically different** from the OECD average
Countries/economies where the indicator is **below** the OECD average

	Percentage of teachers for whom "student behaviour and classroom management" was included in their formal education or training	Percentage of teachers who felt "well prepared" or "very well prepared" for student behaviour and classroom management	Percentage of teachers for whom "student behaviour and classroom management" was included in their recent professional development activities	Percentage of teachers reporting a high level of need for professional development in student behaviour and classroom management	Percentage of teachers who feel that they can control disruptive behaviour in the classroom	Percentage of teachers who "agree" or "strongly agree" that they lose quite a lot of time because of students interrupting the lesson
	Chapter 4	Chapter 4	Chapter 5	Chapter 5	Chapter 2	Chapter 3
Alberta (Canada)	87	56	45	4	87	26
Australia	84	45	44	5	82	29
Austria	54	21	36	17	88	27
Belgium	73	37	40	10	85	42
Flemish Comm. (Belgium)	77	43	46	8	93	41
Brazil	75	83	64	19	91	50
Bulgaria	50	46	57	22	85	32
CABA (Argentina)	66	65	40	9	90	35
Chile	76	66	52	17	86	40
Colombia	84	77	70	21	98	22
Croatia	54	38	54	23	82	17
Czech Republic	54	30	45	17	83	18
Denmark	63	53	33	6	97	22
England (UK)	94	68	47	3	86	27
Estonia	79	44	59	17	81	17
Finland	71	29	30	9	83	32
France	55	22	24	13	73	40
Georgia	80	80	84	21	86	7
Hungary	76	81	59	13	93	23
Iceland	58	28	37	19	88	41
Israel	74	59	56	22	84	29
Italy	58	48	65	16	93	24
Japan	81	39	48	43	60	8
Kazakhstan	88	84	83	21	75	10
Korea	66	56	76	28	82	39
Latvia	81	67	66	20	86	21
Lithuania	71	72	69	21	89	16
Malta	83	49	46	11	83	35
Mexico	84	90	62	12	88	20
Netherlands	85	57	58	9	94	33
New Zealand	90	57	47	5	85	31
Norway	74	50	52	11	79	25
Portugal	62	47	42	18	98	43
Romania	85	82	61	17	90	18
Russian Federation	82	82	77	14	m	10
Saudi Arabia	87	81	74	16	91	26
Shanghai (China)	89	76	80	31	92	10
Singapore	91	65	54	9	80	33
Slovak Republic	62	46	33	19	79	31
Slovenia	37	62	46	16	85	30
South Africa	93	82	79	16	88	41
Spain	40	35	48	14	79	45
Sweden	70	55	41	8	81	27
Turkey	92	88	61	6	90	33
United Arab Emirates	92	92	80	8	92	23
United States	85	61	56	5	84	26
Viet Nam	99	95	94	68	94	12
OECD average-31	**72**	**53**	**50**	**14**	**85**	**29**

Source: OECD, TALIS 2018 Database, Tables I.4.13, I.4.20, I.5.18, I.5.21, I.2.20 and I.3.50.

StatLink http://dx.doi.org/10.1787/888933931848

At the classroom level, TALIS 2018 results suggest that teachers perceive relations between themselves and their students as very positive. On average across OECD countries and economies participating in TALIS, 95% of teachers concur that teachers and students usually get on well with one another – up from the percentage reported in 2008 for most countries with available data.[1] Change in student-teacher relations over time also reveals that teachers' beliefs in the importance of student well-being has progressed in the vast majority of countries since 2008.

However, quite a few teachers face classroom disciplinary issues. More specifically, 29% of teachers, on average across the OECD, report that they "lose quite a lot of time because of students interrupting the lesson", and a significant share of teachers do not feel they can resolve this situation. TALIS data makes it possible to examine the extent to which teachers are supported in this aspect of teaching. With regard to formal education and training, 72% of teachers, on average across the OECD, report having received initial training in student behaviour and classroom management. That is low compared to the share of teachers having received training in subject content, pedagogy and classroom practice. In addition, only 53% of teachers report that they felt prepared for this aspect of their work when they completed their initial education or training.

Across the OECD, 50% of teachers report that they received training in student behaviour and classroom management as a part of their recent professional development activities. While 85% of teachers feel that they can control disruptive behaviour in the classroom, a significant share of teachers across the OECD (14%) express a high need for professional development in student behaviour and classroom management. The problem of managing disciplinary issues is particularly pressing and an impediment to instructional quality in schools. Figure I.1.4 provides a snapshot of teachers' training, self-efficacy and challenges with regard to student behaviour and classroom management.

Policy pointer 9: Implement system and school-level policies and practices to combat all forms of bullying

Teachers and school staff can play a crucial role in preventing bullying by working closely with students to build strong and healthy interpersonal relationships. A review of 21 studies on the effectiveness of policy intervention for school bullying found that such policies might be effective at reducing bullying if their content is based on evidence and sound theory and if they are implemented with a high level of fidelity (Hall, 2017[25]). School-level disciplinary policies could focus on monitoring and supervision of all students, communication and partnership among teachers, parent-teacher meetings and classroom management. Furthermore, information sharing and supportive communication is important in helping students cope with the harmful effects of being bullied. School programmes should educate students on measures to take when witnessing bullying. This can help schools to promptly identify incidents of bullying and develop suitable responses. Finally, the inclusion of social-emotional learning in regular classroom hours can improve the interpersonal and intrapersonal skills of students and build an overall healthy environment in the school.

As part of an education system's role in providing welcoming, respectful and safe learning environments, system-level policies could establish a code of conduct for students to combat bullying as a national priority and also develop monitoring frameworks. This can ensure that all schools are held accountable for implementing measures against bullying and can encourage viewing this issue as a shared responsibility.

Policy pointer 10: Reinforce the awareness of teachers and school leaders of student well-being for effective learning

Training programmes for teachers and school leaders should be updated with the most recent trends in bullying incidents to better prepare schools for the emerging challenges related to student safety. Training programmes and other professional learning opportunities, such as coaching activities and professional networks, should allow educators to communicate with one another and focus on the different contexts and situations where bullying incidents take place, both within and outside the school environment, in the real world and on line. Support from behavioural experts can help teachers to identify victims of bullying and intimidation, and training from counsellors can enable teachers to be better prepared to intervene and support all students who are victims of bullying.

Goal: Make the most of school leaders' time to foster instructional leadership

The quality of conditions for teaching and learning also hinges on the time and efforts school leaders dedicate to supporting teachers and providing instructional leadership and related activities in their school. A research study on use of time by school leaders in an American school district (Miami-Dade County Public Schools) found that time spent by school leaders on instructional programme activities is positively associated with the staff's perceptions of the school's educational environment and teachers' satisfaction with teaching in general (Horng, Klasik and Loeb, 2010[26]). The same study suggested that organisational management activities are also central to instructional leadership defined broadly. Another research study based on longitudinal data found that, while principals' time spent broadly on instructional functions does not lead to increased student achievement, time spent on specific instructional investments, such as teacher coaching, evaluation and developing the school's educational programme, positively influence learning gains (Grissom, Loeb and Master, 2013[27]). Neither of the two studies found positive effects related to the time spent by school leaders on classroom visits and observations.

Despite the benefits of instructional leadership and related activities emerging from research, TALIS findings suggest that school leaders are limited in the time and resources needed to express instructional leadership. On average across the OECD, school principals spend 16% of their working time on curriculum and teaching-related tasks and meetings (e.g. developing a school curriculum, teaching, observing their teachers' classes, mentoring teachers, designing and organising professional development activities for teachers or being involved in student evaluation). This makes it the third most time-consuming task of principals, after administrative tasks and meetings (30% of principals' working time) and leadership tasks and meetings (21%). Yet, this is not enough in the views of school leaders themselves. One of the most common resource issues hindering quality instruction reported by school leaders in participating countries and economies is the shortage or inadequacy of time for instructional leadership.

Fortunately, to the extent that solutions can be found to alleviate their administrative workload, school leaders do seem willing to engage more in instructional leadership activities. Principals report a great interest in improving both their school organisation and the practices of their teachers, with more than 70% of them attending training to become an instructional and/or pedagogical leader. Furthermore, the areas in which large shares of principals report a high need for professional development are in developing collaboration among teachers (26% of principals across the OECD) and training in using data to improve the quality of the school (24%).

Policy pointer 11: Rethink the role, responsibilities and schedules of school leaders

Education systems need to find ways to strengthen instructional leadership in the field of curriculum and teaching within schools. There are several possible avenues for this, each with different implications for the role, responsibilities and schedules of school leaders.

One approach is to strengthen school leaders in their role as instructional leaders. To achieve this, an important precondition is to ensure that school leaders have adequate time and support to develop their leadership in the field of curriculum and teaching.

Policy pointer 12: Encourage instructional leadership through clear professional standards for school leaders

A number of countries have introduced professional standards for teachers as a tool to make knowledge and competence requirements explicit. Likewise, defining and establishing clear professional standards for principals that stress the importance of and expectations for instructional leadership can be a powerful tool to stimulate a dialogue within the profession on the importance of this function, as well as an incentive for school leaders to engage more in these activities.

There is an additional advantage of professional standards and guidelines for instructional leadership. By articulating the base level of what school leaders need to know and the capacity they need to acquire, these instruments can also serve as a tool to guide school principals in the type of in-service training they need to lead their schools. This can also encourage them to reorganise their time to shift emphasis towards instructional leadership activities.

Policy pointer 13: Build capacity for instructional leadership and recruit instructional leaders among teachers

In light of the importance of instructional leadership to support the professional growth of teachers, training in instructional leadership should be viewed as a prerequisite for school leaders prior to taking up their duties. Furthermore, the training of school leaders in this area should be seen as an ongoing process, with principals also offered opportunities for professional development in instructional leadership after taking up their duties in order to consolidate and further develop these skills. Such professional development can take many forms, as discussed in the next section. Echoing the needs of teachers, school principals could also be given more opportunities to participate in communities of practice and collaborative enquiry with their peers from other schools in order to improve their instructional leadership.

But providing school leaders with pre-service and in-service training in instructional leadership is no guarantee that they will engage more in these activities. TALIS results show that time seems to be a constraint. To free up some time for school leaders to devote to tasks related to curriculum and teaching, one option could be for education systems or school management boards to create intermediate management roles or to devolve some management and administrative responsibilities to other teachers interested in building leadership capacity. For example, teachers showing exceptional leadership should find rewarding career tracks that allow them to pursue attractive careers, including school leadership paths, that foster their administrative and instructional leadership skills. Such an approach would allow school leaders more time to engage in curriculum and teaching activities, and it would also provide paths for teachers to grow and strengthen their professionalism.

SUPPORTING THE PROFESSIONAL GROWTH OF TEACHERS AND SCHOOL LEADERS THROUGHOUT THEIR CAREERS

Professional knowledge and skills are defined as a common set of knowledge and skills that are acknowledged through high-level qualifications and constitute the core elements of membership in the profession. Teachers and school leaders require advanced

or graduate-level education and specialised knowledge and skills that are typically acquired through participation in initial training programmes and continuous in-service professional development. As a result, the development of knowledge and skills takes place across diverse stages of the teachers' and school leaders' professional pathways (OECD, 2016[28]).

Goal: Provide high-quality initial education or training

To foster lifelong improvement of the knowledge and skills base of teachers and school leaders, it is imperative for education systems to provide pertinent training and facilitate access to it. Indeed, in relation to the attributes of professions, Ingersoll and Collins state that "... professional work involves highly complex sets of skills, intellectual functioning and knowledge that are not easily acquired and not widely held." and that "... the underlying and most important quality distinguishing professions from other kinds of occupations is the degree of expertise and complexity involved in the work itself." (Ingersoll and Collins, 2018, p. 202[6]).

In this context, an essential aspect of strengthening professionalism throughout the education system is to ensure that teachers and school leaders start off in their jobs with a solid knowledge base. To examine the importance of credentials in the jobs of teachers and school leaders, TALIS has developed a rich set of indicators to describe the type and content of their initial training. Figure I.1.5 provides a snapshot of lifelong training for teachers and school leaders that includes key indicators on initial training.

The typical level of education attained by teachers varies slightly across countries. On average across OECD countries and economies, 50% of teachers report a bachelor's degree or equivalent as their highest educational attainment. Another, smaller share of teachers (44%) report a master's degree or equivalent, including stronger specialisation and more complex content than a bachelor's degree, as their highest educational attainment. Across the countries and economies with available data, most teachers completed a regular concurrent (rather than consecutive) teacher education or training programme, which grants future teachers a single credential for studies in subject-matter content, pedagogy and other courses in education during the first period of post-secondary education. In some systems, a significant share of teachers did not complete any formal teacher education or only completed fast-track or specialised education or training programmes.

Policy pointer 14: Offer alternative paths into the profession while preserving quality training

Faced with teacher shortages and the prospect of mass retirements in some countries, education systems are increasingly required to provide multiple ways into the profession to satisfy the demand for teachers, including fast-track or alternative routes. In doing so, they need to establish mechanisms to ensure that all teachers start off their teaching career with adequate and quality training.

At the school-level, educational institutions and schools should ensure that, regardless of local circumstances, all teachers are equipped with sufficient training in the content and pedagogy of the subjects they teach.

At the system level, a recent OECD review of initial teacher preparation identified a series of system-level policies and initiatives to ensure quality of initial training. These include:

1. establishment of rigorous accreditation institutions monitoring the work of teacher education providers (possibly including "fast-track" providers)
2. teacher evaluation conducted at some point of the teachers' initial training (at entry, during the mid-years of training, and/or towards the end of their training programme)
3. establishing teaching standards that define precisely what is required and expected of teachers when they enter training and when they are ready to start teaching (OECD, 2019[29]).

Goal: Provide novice teachers with fulfilling working conditions and tailor-made support

Among all the steps of a teacher's career pathway, the early career years are those that deserve the greatest support and attention to ensure effectiveness and well-being. New teacher graduates mostly enter the profession with some degree of training through initial teacher education programmes (such as graduate degrees, certification courses or other pathways of entry), as well as some practical training opportunities. However, additional support activities and structures in the initial years of teaching can help teachers to cope with the challenges they face, as well as to maintain their motivation levels. Both are critical to making them competent and effective, and also to convincing them to remain in the profession (OECD, 2019[29]). Given the impact of teachers on student learning, the effectiveness of teachers new to the profession is an important policy issue. An effective education system requires all teachers, including new teachers, to provide high-quality instruction to students (Jensen et al., 2012[30]).

TALIS 2018 data shows that teachers in their early career years tend to work in more challenging schools that have higher concentrations of students from socio-economically disadvantaged homes and students with a migrant background. In addition, on average across the OECD, 22% of novice teachers report that they would like to change to another school if that were possible.

Figure I.1.5 **Initial and continuous training**

Countries/economies where the indicator is **above** the OECD average
Countries/economies where the indicator is **not statistically different** from the OECD average
Countries/economies where the indicator is **below** the OECD average

	Percentage of teachers for whom content, pedagogy and classroom practice in some or all subjects taught were included in their initial formal education or training	Percentage of principals for whom school administration or principal training programmes or course elements were never included in their initial formal education or training	Percentage of principals who have never received any instructional leadership training	Percentage of teachers who did not take part in formal or informal induction activities at the current school	Percentage of novice teachers who have an assigned mentor at the current school	Percentage of teachers who participated in at least one professional development activity in the 12 months prior to the survey	Percentage of principals who participated in at least one professional development activity in the 12 months prior to the survey
	Chapter 4	Chapter 4	Chapter 4	Chapter 4	Chapter 4	Chapter 5	Chapter 5
Alberta (Canada)	80	32	29	55	25	99	99
Australia*	82	31	30	28	37	99	100
Austria	87	w	w	77	11	99	100
Belgium	80	10	17	57	25	94	99
Flemish Comm. (Belgium)	86	17	24	52	40	97	100
Brazil	83	13	17	61	33	87	94
Bulgaria	90	14	29	62	18	96	100
CABA (Argentina)	82	21	34	76	6	92	99
Chile	84	14	12	66	7	87	99
Colombia	84	15	12	46	22	91	96
Croatia	84	58	48	45	13	98	100
Czech Republic	62	5	37	43	26	97	100
Denmark	88	26	11	63	15	92	98
England (UK)	86	23	38	23	37	97	99
Estonia	81	4	8	69	17	98	100
Finland	87	0	17	43	10	93	99
France	66	3	m	83	17	83	94
Georgia	81	5	3	85	15	94	99
Hungary	86	5	3	70	27	95	100
Iceland	65	25	16	66	18	96	98
Israel	79	11	31	59	47	96	99
Italy	64	13	34	75	5	93	100
Japan	82	2	5	81	40	89	99
Kazakhstan	85	8	18	33	59	98	100
Korea	90	1	2	74	16	98	99
Latvia	85	11	7	56	16	99	100
Lithuania	82	36	33	79	9	99	100
Malta	82	17	7	50	23	91	100
Mexico	80	13	10	60	17	89	99
Netherlands	88	5	12	35	41	98	100
New Zealand	89	18	21	26	56	98	100
Norway	75	15	14	65	18	94	99
Portugal	75	13	23	60	14	88	98
Romania	91	2	9	63	22	89	97
Russian Federation	90	4	11	65	27	98	100
Saudi Arabia	72	22	18	63	19	86	95
Shanghai (China)	89	1	1	50	67	99	100
Singapore	89	5	3	15	54	98	100
Slovak Republic	77	5	16	40	22	92	99
Slovenia	83	7	7	48	5	98	100
South Africa	81	10	6	31	50	91	96
Spain	48	15	26	74	10	92	100
Sweden	85	6	19	70	17	95	100
Turkey	76	32	23	76	15	94	96
United Arab Emirates	85	6	4	32	43	98	99
United States	84	13	4	39	39	98	100
Viet Nam	99	0	0	55	30	96	100
OECD average-31	**79**	**13**	**17**	**58**	**22**	**94**	**99**

* Participation rate of principals is too low to ensure comparability for principals' reports and country estimates are not included in the OECD average.

Source: OECD, TALIS 2018 Database, Tables I.4.14, I.4.28, I.4.39, I.4.64, I.5.2 and I.5.10.

StatLink http://dx.doi.org/10.1787/888933931867

Furthermore, novice teachers feel less confident in their ability to teach, particularly in their classroom management skills and their capacity to use a wide range of effective instructional practices. This result could be linked to the amount of time they have available for planning and teaching their classes, as novice teachers spend less time in actual teaching than more experienced teachers. With regard to workload, after adjusting for full-time or part-time work, novice teachers work as many hours per week in total as teachers with more than five years of experience, on average across the OECD. These findings highlight the importance of providing adequate mechanisms to support novice teachers.

Induction to teaching is a key component of the teaching profession. According to Ingersoll and Collins (Ingersoll and Collins, 2018[6]), the objective of induction is to "...aid new practitioners in adjusting to the environment, to familiarize them with the concrete realities of their jobs, to socialize them to professional norms, and also to provide a second opportunity to filter out those with substandard levels of skill and knowledge." (p. 203[6]). TALIS has developed a large set of indicators describing the support received by novice teachers, school provisions in terms of induction and mentoring programmes and the actual participation of new teachers in these programmes.

Despite empirical evidence showing that teachers' participation in induction and mentoring is beneficial to student learning (Glazerman et al., 2010[31]; Helms-Lorenz, Slof and van de Grift, 2013[32]; Rockoff, 2008[33]), these programmes and activities cannot be considered commonplace in TALIS countries and economies. On average across the OECD, 58% of teachers report not having participated in any formal or informal induction activity at their current school (Figure I.1.5). Novice teachers are more likely to participate in both formal and informal induction activities at their current school than more experienced teachers. While school principals generally consider mentoring to be important for teachers' work and students' performance, only 22% of novice teachers have an assigned mentor, on average across the OECD (Figure I.1.5).

Policy pointer 15: Review the distribution of novice teachers to schools

Teacher shortage is one of the most pressing problems faced by current education systems. Although there are many reasons for teacher shortages, one of the most salient factors is attrition in the early years of teaching. For example, in Australia, 30% to 50% of all teachers leave the profession in the first five years. In the United Kingdom, attrition rates are even higher, with 50% of teachers leaving the profession within five years after graduation (den Brok, Wubbels and van Tartwijk, 2017[34]).

TALIS data show that teachers in their early career years tend to work in more challenging schools. One solution to reduce attrition in the early years is, thus, to review how novice teachers are distributed across schools, with a view to assigning them to less challenging working environments in their first placements, and to encourage more experienced teachers to work in disadvantaged schools, to reduce the need to staff them with less experienced teachers. An additional advantage of such an approach would be potential effects in fostering equity, as students in challenging schools would be taught by more experienced teachers. Indeed, evidence has shown that students coming from a disadvantaged background benefit the most under effective teachers. This reduces the achievement gap with students from more privileged backgrounds (Sanders and Rivers, 1996[35]).

In countries with more centralised teacher allocation and compensation mechanisms, a possibility would be to create a fixed-term first assignment for recent graduates of initial teacher education programmes, using a separate algorithm that would only assign them to a subset of schools considered less challenging. A complementary approach would be to create salary incentives for experienced teachers who are working in less challenging schools to accept teaching positions in more challenging schools. This would encourage applications from experienced teachers and reduce the need to fill these positions with novice teachers. The goal of this approach would be to change mindsets, so that teaching in more difficult schools would be seen as a prestigious stage in a teacher's professional growth and career trajectory rather than a necessary first ordeal, and would be recognised accordingly in financial terms. However, several education systems have introduced financial incentives to attract teachers into schools with more challenging circumstances, with mixed results and little evidence of the effect of such measures on teacher allocation across schools (OECD, 2018[3]). One possible explanation for this could be that financial incentives have to be significant to be effective.

Funding mechanisms that consider the socio-economic context of students and schools and, in the case of more decentralised systems, greater school autonomy and increased budgets for selecting and managing teachers, could help attract effective teachers to schools with higher concentrations of socio-economically disadvantaged students (OECD, 2018[3]). But financial and non-financial incentives might also be needed to better align teaching resources with needs.

When assignment of novice teachers to a challenging school is unavoidable, school leaders have a role to play in easing the transition of recent graduates to the profession, e.g. providing the induction and coaching they need, allocating them to less challenging classes, making sure that their teaching assignments allow some degree of efficiency gain in lesson preparation (e.g. having several groups of the same grade) or pairing them with more experienced teachers in joint teaching arrangements.

Policy pointer 16: Design effective context-based induction and mentoring activities

Induction programmes should be designed to aid new practitioners, or practitioners who are new in their roles, to adjust to their working environment and become acquainted with the realities of their jobs, as well as to avoid early attrition from the profession. A crucial element in planning induction opportunities for teachers is to allow mentors to reduce their teaching load, so that they can balance their working time between lesson preparation and actual teaching and can meet the demands of participating in induction. A possible approach could be to provide financial support to schools (in decentralised systems) or additional teacher allocations (in centralised systems) to enable recruitment of novice teachers on a full-time basis but with a reduced teaching load that would increase incrementally over the first years in the profession as they gain experience.

Policy pointer 17: Give school leaders an active role in the development and promotion of induction and mentoring opportunities

It would also be important for the extent and intensity of induction support developed by school leaders for new teachers to be tailored to their school's context and student composition. Induction programmes could include team-teaching opportunities, as they can foster greater collaboration among teachers within schools and help new teachers to learn from experienced teachers who are more familiar with the specific school context.

At the same time, school leaders need to encourage and support teachers to take an active part in induction and mentoring activities. To guarantee participation in induction, it could be useful to allocate a certain number of hours of paid non-teaching time dedicated to induction or mentoring activities within teachers' weekly or monthly schedules. School leaders could identify which teachers are best suited to act as mentors for the new teachers at their school and whether they should be selected on the basis of the subject they teach, their years of experience in the school or their experience in the profession. Finally, education systems could design and establish career paths encouraging teachers to become mentors, through incentives such as salary bonuses or promotion to a mentor-teacher role, recognising their expertise and contribution.

Goal: Link initial teacher education with continuous professional development

A crucial component of professionalism among teachers and schools leaders is their participation in ongoing in-service professional development (Guerriero, 2017[5]). "The assumption is that achieving a professional-level mastery of complex skills and knowledge is a prolonged and continuous process and, moreover, that professionals must continually update their skills, as the body of technology, skill, and knowledge advances." (Ingersoll and Collins, 2018, p. 205[6]). Under this approach, teachers and school leaders are considered lifelong learners, with different needs for training throughout their career path. Education systems and training institutions, at both national and local levels, need to accurately identify these needs and secure access to relevant training for teachers and school leaders.

First and foremost, TALIS findings support the idea that receiving pre-service training and/or in-service training in a given area is associated with a higher perceived level of self-efficacy in this area by teachers, and/or a higher propensity to use related practices.

In light of the value of pre-service and in-service training for teachers' perceived self-efficacy and use of teaching practices, a key task when considering teachers as lifelong learners is to ensure adequate linkages between the content of teachers' initial training and that of their continuous professional development. In this way, all aspects of a teacher's work will covered at some point and consolidated and expanded upon over time (OECD, 2019[29]).

Across the OECD, about 80% of teachers report that their formal education or training included content, pedagogy and classroom practice in some or all of the subjects they teach (Figure I.1.5). Similarly, training in subject matter knowledge and understanding of the subject field and pedagogical competencies are the most frequent types of professional development attended by teachers. Other elements often included in teachers' formal education and in their continuous professional development relate to student behaviour and classroom management (across OECD countries and economies, 72% of teachers had such content covered for their initial training and 50% for continuous professional development [Figure I.1.4]); teaching cross-curricular skills (65% for initial training and 48% for professional development [Tables I.4.13 and I.5.18]); and use of ICT for teaching (56% for initial training and 60% for professional development [(Figure I.1.1]).

These results reflect that there are certain areas that still emerge as very common topics for in-service training, despite being covered in the formal teacher education or training of a majority of countries and economies participating in TALIS. Conversely, teaching in multicultural or multilingual settings is more rarely included in both initial training (35% of teachers across the OECD) and continuous professional development (22%) (Figure I.1.2). However, it is important to acknowledge that there is large cross-country variation with respect to training and professional development on teaching in multicultural or multilingual settings. For initial training, 12% to 78% of teachers report inclusion of this topic in their initial training, while it ranges from 6% to 65% of teachers for continuous professional development.

TALIS findings show that school leaders have attained, on average, a higher level of education than teachers. However, just a little more than half of school leaders actually completed a programme preparing them for their job before they took up duties. Indeed, 63% of school leaders hold a master's degree or equivalent, on average across the OECD (Table I.4.24). But only 54% of them had completed a programme or course in school administration or principal training before taking up their position as principal, with the same share having completed an instructional leadership training programme or course (Table I.4.28). In contrast, across the OECD, 99% of principals participated in at least one type of professional development activity in the 12 months prior to the survey (Figure I.1.5). Principals also tend to participate in more diverse training formats than teachers. On average across the OECD, 73% of principals report participating in a course/seminar on instructional leadership in the 12 months prior to the survey (Table I.5.10). These findings suggest that principals may compensate for a possible lack of initial training on leadership-specific skills with more intensive participation in continuous professional development activities after taking up their duties.

Policy pointer 18: Ensure links between the content of initial teacher education and professional development training

Countries and economies need to ensure that the curricula of initial education and in-service professional development are consistent, well-connected and complementary. This is not always easy. The first reason for this is the limited feedback loops between schools and initial teacher education (OECD, 2019[29]). But it is also a result of the "stickiness (resilience) of the implicit know-how of teachers" (Moreno, 2007[36]), whereby teachers may consider what they have learned as part of their initial education and during their first years of experience as a fixed or set reference.

Continuous professional development activities need to take into account and build upon the knowledge and skills that teachers and school leaders acquired as part of their initial education or training. Thus, curricula need to be designed in a concerted manner for pre-service and in-service training.[2] The major challenge for establishing this continuum between initial teacher education and in-service training is articulating each stage in a cohesive manner. This may require systematic alignment across each education system, establishing consultations, feedback loops and, if these responsibilities are shared across several entities, collaboration between the different actors and stakeholders of initial teacher preparation and professional development systems.

Policy pointer 19: Foster pre-service preparation of school leaders

There is considerable room to improve the professionalism of school leaders by creating pre-service programmes that help them develop the leadership skills they need to effectively engage in the various practices associated with school success. These include developing and conveying a shared vision, cultivating shared practices, leading teams towards school goals, instructional improvement, developing organisational capacity, and managing change (Darling-Hammond et al., 2007[37]). TALIS results show that participation in professional development is the most common route principals use to develop their skills.

Education systems could provide prospective school leaders with more opportunities to develop leadership skills prior to their appointment as school principals. This could be done either through specific training modules that prospective school principals would need to undertake or validate ahead of taking up leadership duties (e.g. by making such training a prerequisite for any appointment to a leadership position) or through the creation of intermediate leadership roles for experienced teachers interested in growing into leadership roles (e.g. based on Australia's department faculty head model).[3]

Policy pointer 20: Develop mentoring programmes for school leaders

Besides pre-service preparation, education systems could also provide school leaders with other relevant opportunities for in-service training upon appointment. A possible way to achieve this would be to create professional networks of principals. In such networks, more experienced principals mentor those who are newly appointed, and school leaders can learn from one another and share good practices to address common challenges. Several studies have reported on the advantages and disadvantages of mentoring for new school principals. These are helpful to guide the design of such programmes (Daresh, 2004[38]; Southworth, 1995[39]). If mentors are well paired to mentees and have good knowledge of the needs of new school leaders, mentoring for new school principals should, indeed, facilitate peer support and enable newcomers to make the necessary role and occupational identity changes. Such programmes would benefit mentors as well as mentees, provided both engage in the learning process. The process should be particularly beneficial if it encourages reflective practice rather than passing on outdated role assumptions.

Goal: Provide high-quality continuous professional development

Looking at TALIS 2018 data, it is clear that annual participation in professional development is almost universal among both teachers and school leaders. This is evidence of the level of professionalisation of their jobs. On average across the OECD, 94% of teachers and nearly 100% of principals participated in at least one type of professional development in the 12 months prior to the survey (Figure I.1.5).

TALIS data shows that teachers attended about four different types of continuous professional development activity in the 12 months prior to the survey. The most attended forms of professional development are courses or seminars attended in person (76% of teachers across the OECD) and reading professional literature (72%) (Table I.5.7). However, participation is lower for more collaborative forms of professional development: only 44% of teachers participated in training based on peer/selfobservation and coaching, learning and networking. Overall, on average across the OECD, 82% of teachers report that the professional development activities they participated in had an impact on their work (Table I.5.15), while regression results show that a positive impact of the training is highly correlated with higher levels of job satisfaction and/or self-efficacy in most TALIS countries and economies (Tables I.5.19 and I.5.14).

With respect to the forms of professional development that are most useful, TALIS asked teachers to describe the characteristics of the training they deemed impactful. While they were not directly asked why this training was impactful, teachers' descriptions of impactful professional development can provide insights on the characteristics and design features of training that has spurred changes in teachers' practice. This information, combined with insights from research, can feed into the design of these programmes. According to teachers' reports, impactful professional development programmes are based on strong subject and curriculum content and involve collaborative approaches to instruction, as well as the incorporation of active learning. Evidence from the previous cycle of TALIS indicates that teachers who had positive views of their self-efficacy and job satisfaction are more likely to engage in more school-embedded professional development activities (Opfer, 2016[40]).

Research evidence is, to a large extent, consistent with TALIS findings. It has shown that even though traditional training in the form of courses or seminars can be an effective tool (Hoban and Erickson, 2004[41]), school-embedded professional development, such as peer-learning opportunities, tends to have a larger impact on teaching practices[4] and can significantly reduce the cost of training (Kraft, Blazar and Hogan, 2018[42]; Opfer, 2016[40]). In particular, a recent meta-analysis review of 60 studies that employed causal research designs, found that teacher coaching (i.e. a school-embedded approach to in-service training) had a positive impact on both teachers' instruction and students' achievement (Kraft, Blazar and Hogan, 2018[42]).[5] It is also noteworthy that the findings of Opfer (2016[40]) are based on TALIS 2013 data.

Policy pointer 21: Promote school-based, collaborative and active professional development responding to local needs and adapted to school-specific contexts

TALIS data and research findings concur to suggest that school-based and collaborative professional development could have the potential for more impactful effects on teaching practices and student achievement (Borko, 2004[43]; Opfer, 2016[40]). Yet, TALIS 2018 data also show a comparatively low percentage of teachers participating in collaborative training activities, such as peer/self-observation and coaching-based learning, suggesting that this is an area where there is room for improvement.

System and school-level policies for teachers' professional development could promote school-based and collaborative forms of in-service training. Indeed, approaches in which the design and implementation of effective professional development is led by local initiatives at the school level would ensure that the focus of the training is responding to locally-identified needs and takes account of the school-specific context. This would make professional development more relevant to the daily jobs of participants. In addition to the relevance of content, there are other advantages to school-based professional development. It could help achieve efficiency gains and cost savings that could be reallocated to other priority areas and could also enhance collaboration among teachers within the school and initiate or strengthen collective reflection on teaching practice and school improvement.

For instance, school leaders and teachers could allocate part of their monthly or weekly working hours to discussing issues involving instruction in their classroom, exchanging ideas and reflecting on their practices. Furthermore, each school could create a system of collective professional development based on peer-observation of classroom instruction, inspired by the Japanese lesson study model, where teachers can have the opportunity to observe new pedagogical methods, assess the instruction of their peers, and provide valuable feedback to foster reflective practice and improvement (Avalos, 2011[44]).

Goal: Lift barriers to participation in professional development

On average across the OECD, around half of teachers (54%) and principals (48%) report that participation in professional development is actually restricted by schedule conflicts (Tables I.5.36 and I.5.40). The next two most important barriers reported by teachers and, to a lesser extent by school leaders, are lack of incentives to engage in these activities and participation costs. Today, teachers' participation in professional development programmes is mainly supported by mechanisms such as releasing them from teaching duties for activities during regular working hours, providing them with materials needed for activities and reimbursing them for participation costs.

Policy pointer 22: Allow time to participate in professional development

While access to and participation in professional development programmes are both very high in the countries and economies participating in TALIS, the high percentage of teachers and school leaders reporting concrete barriers to participation suggests

that more can still be done to support continuous training. The most successful education systems can provide inspiration on how to achieve this. They have embedded professional development as an integral part of the work of teachers and do what it takes to facilitate participation, as illustrated by the entitlement of teachers in Singapore to 100 hours of professional development per year (Bautista, Wong and Gopinathan, 2015[45]).

Indeed, an efficient manner to address scheduling conflicts as barriers to in-service training is to ingrain professional development in the day-to-day work of teachers and school leaders (Darling-Hammond, 2017[2]). A good example is the case of Victoria (Australia), where teachers adopt a professional-learning-community approach by collectively gathering evidence on students' learning, identifying students' needs and targeting their professional learning to address these issues (Darling-Hammond, 2017, p. 304[2]).

Policy pointer 23: Create or foster incentives to participate in professional development

A number of countries have already put in place mechanisms and incentives to incentivise participation in professional development. So, depending on the specific contexts of education systems, the issue might be more one of creating, fostering or adjusting incentives to participate in professional development. The notion of incentives to encourage professional development is directly linked with the question of what motivates teachers and school leaders to engage in further training.

Teachers and school leaders seek to improve or know more about particular areas of their work. Consequently, one of the main incentives to encourage participation in professional development is to develop a training offer that matches their needs. However, more often than not, the needs of teachers and schools leaders do not align with the training offer put in place by schools or national education systems (Opfer and Pedder, 2011[46]). An efficient way to identify and respond to the needs of teachers is to adopt a school-embedded approach to teacher training. As discussed above, developing school-embedded forms of professional development could allow expansion of professional development opportunities at limited extra cost while, at the same time, allowing teachers and school leaders to participate in the design or selection of professional development better suited to their needs. In decentralised systems, earmarked funds could be allocated to schools to invest in professional development activities for teachers and school leaders. A number of systems have already adopted such funding schemes. This approach enables school leaders and school management staff to take a leading role in human resource management and the professional development of staff in their schools. This would require consulting with their teachers and inspectors on the areas where the teachers most need training. Training at the school could be grounded in peer work, collaborative work and other tools that involve all teachers with leaders within their school.

Another crucial incentive for professional development is recognition. Participation in professional development needs more recognition as an essential attribute of the work of teachers and school leaders, as well as a stepping stone for professional growth and career evolution. Ideally, development of knowledge and skills through participation in training should lead teachers and school leaders to take on more responsibilities in their school and become recognised as experts and resources for other teachers. The validation of certain competencies through participation in professional development could be considered in career progression and also be taken into account in recruitment or school assignments. Korea offers a good example of the recognition of professional development. After three years of service, Korean teachers are eligible for 180 hours of professional development to obtain an advanced certificate, which can lead to a salary increase and eligibility for promotion (Darling-Hammond et al., 2009[47]).

ATTRACTING QUALITY TEACHERS AND SCHOOL LEADERS AND MONITORING WORKFORCE DYNAMICS

Goal: Build a motivated and efficient teacher and principal workforce through fulfilling working conditions

According to the OECD's 2005 report, *Teachers Matter: Attracting, Developing and Retaining Effective Teachers*, "If school systems are to ensure a quality teaching workforce, not only will they need to attract able people to the teaching profession they will also need to retain and further develop the teachers currently employed in schools." (OECD, 2005, p. 170[4]). Education systems have the challenge not only of attracting and selecting those displaying an adequate mastery of the knowledge and skills needed for the teaching profession, but also of retaining the teachers and school leaders who have been able to further expand this knowledge, given their experience and/or training.

Exploring individuals' motivations to become teachers helps to shed light on the aspects of the job that make the teaching profession attractive. For the first time, TALIS 2018 asks teachers how important certain factors were in their motivation to become a teacher. The most important motivations reported by teachers pertain to a sense of self-fulfilment through public service. Across the OECD, around 90% of in-service teachers consider the opportunity to influence children's development and contribute to society a major motivation to join the profession (Table I.4.1). Furthermore, on average across the OECD, 67% of teachers reported that teaching was their first choice as a career (Table I.4.4). However, the factors pertaining to the economic characteristics and working conditions of the profession were reported less often: about 60% to 70% of teachers report that the financial package and working conditions of the teaching profession were important to them, well below the share of teachers reporting social-utility motivations.

Interestingly, the share of teachers reporting that the financial package and working conditions of the teaching profession were important motivations to them is higher in countries where teachers feel highly valued in society (OECD, 2014[48]). These countries and economies also are among the top-performing systems in the OECD Programme for International Student Assessment (PISA). One possible explanation for this pattern could be that, in systems where the profession is highly valued, the economic characteristics and working conditions of teachers are objectively better, making these aspects of the job more attractive to prospective candidates. However, another explanation could be that, when teachers perceive their profession as undervalued by society, they are more apologetic and less likely to report personal-utility motivations. Whatever the explanation, this pattern suggests that strengthening professionalism may initiate a virtuous cycle, whereby enhanced professionalism could be perceived as linked to better student outcomes, thereby raising the societal value of the profession and the economic rewards of the job. These, in turn, act as a magnet attracting the next generation of quality candidates to the profession.

OECD teacher policy reviews have shown that working conditions are crucial for the attractiveness of the teaching profession, as well as for retaining quality teachers (OECD, 2005[4]). With this in mind, TALIS wants to learn directly from teachers how their working conditions and the teaching-learning nexus could be improved. More specifically, for the first time, TALIS 2018 asks teachers what they think should be the priority areas for intervention and additional spending in education, if the education budget were to increase. As frontline actors of education systems, teachers are particularly well positioned to report on resources issues that directly affect their daily work. Two of the top four priorities identified by teachers are related to recruiting more staff: either more *teachers* ("reducing class sizes by recruiting more staff" is rated "of high importance" by 65% of teachers across the OECD) or more *support staff* ("reducing teachers' administration load by recruiting more support staff" is rated "of high importance" by 55% of teachers), both with a view to helping teachers to focus more on the ultimate goal of their work, student learning (Table I.3.66). School leaders' views are consistent with those of teachers. They also strongly consider the "shortage of support personnel" and the "shortage of teachers with competence in teaching students with special needs" to be the two main resource shortage issues hindering the delivery of quality instruction in their schools (reported by one-third of principals across the OECD).

With respect to the economic characteristics and financial package of the job, according spending priority to "improving teacher salaries" is also rated highly by teachers in a majority of participating countries and economies. But this is not the case everywhere. In fact, the lower the level of teachers' statutory salaries in a country (expressed in purchasing power parities) or the lower teacher salaries are compared to those of similarly-educated workers, the more teachers consider their salaries a priority of high importance. Regression results also support the notion that, in a number of countries, teachers working in cities (where housing prices and the cost of living are typically higher than in rural areas) display a higher propensity to report salary increases as "highly important" than their peers working in rural areas. And teachers who valued the economic characteristics and the working conditions of the job when they became teachers are also logically more prone to seeking salary increases. Thus, TALIS findings suggest that teachers' demands for salary increases display fairly rational behavioural patterns, and that teachers likely consider a range of factors in forming their priorities. These include the purchasing power and standard of living that their salary levels grant, as well as how these compare to those of their peers with similar education and how they compare internationally. Teachers seem more likely to prioritise salary increases when their standard of living is lower by international standards.

Policy pointer 24: Engage in a dialogue with the profession to improve the financial package and working conditions of teachers over time

The high percentage of teachers with a social-utility motivation to enter the profession (i.e. teachers motivated by the public-service and social-impact elements of the career) shows that education systems have an in-service workforce that is highly committed to the public service and social value of the profession. This is a strong asset to engage the profession in a virtuous spiral of positive change and enhanced professionalism.

Still, education systems need to offer attractive financial packages and working conditions to prospective candidates and in-service teachers. Policy makers and education leaders responsible for human resources need to carefully determine their overall education budget envelope in terms of human resources and methodically decide how to best allocate it between recruitment efforts and salary increases, promoting the teaching profession as intellectually rewarding through high-quality training and opportunities for career progression.

However, the reality of public policy is that education budgets typically compete with a range of other public policy priorities and are unlikely to increase over short periods of time in most countries. In this context, it would seem particularly fruitful for policy makers to engage in a constructive dialogue with the profession on how best to allocate limited resources to improve the financial package and working conditions of the teaching profession over time, in line with progress in professionalism and greater productivity.

It is acknowledged that such a process will involve complex trade-offs and choices, as teachers' views on spending priorities and school leaders' views on resources shortages hindering quality education both point to the need to recruit more staff (teachers and administrative support) and to raise salaries in a number of countries. Thus, resolving this equation might involve a broader reflection and rethinking of teaching models and the way space, people and time are organised and deployed within the system, as well as where efficiency gains could free up resources to make the profession more attractive, both intellectually and financially.

Goal: Support a dynamic workforce

The socio-demographic characteristics of teachers and principals are also a crucial factor to consider when examining the best policies for attracting and selecting candidates. Examining the ageing process of the teaching workforce provides an estimation of the number of teachers who will be retiring in upcoming years. Trends over time in the age and experience profiles of teachers and school leaders provide valuable information on the dynamics of human resources in education.

Global trends in age and experience profiles are mixed, but many education systems are facing the ageing of the teacher population. This may translate into a challenge for the renewal of this population and would necessitate the training and support of large proportions of reasonably junior teachers. Seniorisation can be considered a strength, given the positive effects found by many research studies of school leaders' influence on teachers' work and of teachers' influence on student learning (Dhuey and Smith, 2018[49]; Kini and Podolsky, 2016[50]). But it can also signal a lack of alternative options for teachers. Whatever the cause, the ageing of the workforce needs to be monitored alongside projections on student numbers, so that recruitment needs can be carefully planned for education systems to avoid future shortages.

Figure I.1.6 provides a snapshot of the socio-demographic and experience profiles of teachers and school leaders in each participating country/economy. Teachers are, on average, about 44 years old, both across the OECD and across all countries and economies participating in TALIS, ranging from age 36 in Turkey to age 50 in Georgia (Table I.3.1). Furthermore, 34% of teachers are over age 50, on average across the OECD. Since the average pension age across the OECD is 64.3 for men and 63.7 for women, this means that education systems will have to renew at least one-third of their teaching workforce in the next 15 years, assuming student numbers to be stable (OECD, 2017, p. 93[51]).

As expected, on average across the OECD, principals are generally older than teachers, with the average age for a principal being 52, eight years older than the average teacher (Table I.3.5). This is not surprising, as principals are usually recruited from among the ranks of teachers and their positions often require higher academic credentials and more years of experience. These age patterns mean that policy makers will also face the challenge of renewing the principal workforce and preparing a new generation of school leaders over the next decade or so.

TALIS 2018 data show that, on average across the OECD, 68% of all teachers are female, and women make up more than half of the teaching workforce in all participating countries and economies, with the exception of Japan. Joining the teaching profession as a first option happens more frequently among women than men. However, differences regarding whether teaching was the first choice of vocation may reflect not only gender differences, but also institutional differences in the selection and certification processes of teacher candidates, with more selective and lengthy systems leading to higher shares of first vocations. They could also result from cultural differences in national job markets and in how individuals view their working life.

Only 47% of principals are women, compared to 68% of teachers. This suggests significant gender imbalances in the scope for career progression of female teachers from teaching to leadership roles, whether the cause is endogenous (a lesser propensity of women to apply for leadership positions) or exogenous (a lesser propensity for women to be selected for leadership roles). Irrespective of the underlying cause, this pattern runs counter to the objective of enhancing professionalism, due to the limited scope for career progression of more than half of the teaching workforce.

Policy pointer 25: Take action to prepare for the renewal of the teaching and principal workforce

Recruitment challenges will inevitably emerge if the workforce is ageing and the number of students is steady or growing (or even declining at a lower rate than the number of teachers and principals). Education systems facing an ageing of their teacher or principal populations need to carefully review their staffing needs and plans for the next 10 to 15 years, taking into consideration the socio-demographic changes of both their workforce and their student population.

Education systems also need to carefully design plans to attract and prepare large cohorts of new teachers and school leaders, and to adequately support them to maximise retention in the profession. Indeed, shortages may also result from in-service teachers and school leaders leaving the profession prematurely, due to dissatisfaction, lack of recognition or burnout.

Figure I.1.6 **Socio-demographic and experience profiles of teachers and school leaders**

Countries/economies where the indicator is **above** the OECD average
Countries/economies where the indicator is **not statistically different** from the OECD average
Countries/economies where the indicator is **below** the OECD average

	Percentage of female teachers	Percentage of female principals	Percentage of teachers age 50 and above	Percentage of principals age 60 and above	Teachers' years of work experience (as a teacher)	Principals' years of work experience (as a principal)
	Chapter 3	Chapter 3	Chapter 3	Chapter 3	Chapter 3	Chapter 3
Alberta (Canada)	63	30	20	19	13	13
Australia*	62	40	30	19	15	7
Austria	70	50	44	30	18	8
Belgium	69	44	22	7	15	7
Flemish Comm. (Belgium)	70	40	22	6	16	8
Brazil	69	77	23	10	16	8
Bulgaria	80	73	51	16	22	13
CABA (Argentina)	69	61	36	6	16	8
Chile	65	50	27	20	14	10
Colombia	55	37	34	33	17	13
Croatia	78	53	24	18	15	10
Czech Republic	76	52	37	20	18	12
Denmark	60	35	33	18	15	9
England (UK)	64	41	18	6	13	6
Estonia	84	57	54	21	23	14
Finland	70	46	35	10	16	12
France	65	41	27	19	17	10
Georgia	83	60	53	22	24	11
Hungary	79	63	48	11	21	10
Iceland	73	60	38	18	15	10
Israel	76	50	27	10	16	9
Italy	78	69	48	32	18	10
Japan	42	7	33	22	17	5
Kazakhstan	76	53	27	5	17	9
Korea	67	20	34	44	16	3
Latvia	89	84	51	25	24	14
Lithuania	85	57	57	29	25	16
Malta	70	46	12	8	13	7
Mexico	57	35	25	21	15	10
Netherlands	53	38	32	29	16	12
New Zealand	65	54	35	14	16	8
Norway	64	54	30	16	15	8
Portugal	74	43	47	23	23	11
Romania	73	61	26	9	17	8
Russian Federation	85	69	42	15	21	11
Saudi Arabia	52	51	5	0	13	8
Shanghai (China)	74	45	15	5	17	10
Singapore	64	47	12	5	12	9
Slovak Republic	82	66	33	24	18	10
Slovenia	79	63	39	20	20	10
South Africa	60	22	32	6	15	8
Spain	62	49	36	9	17	7
Sweden	66	69	36	24	16	9
Turkey	56	7	6	7	11	7
United Arab Emirates	62	51	13	11	13	10
United States	66	48	31	17	15	9
Viet Nam	66	29	13	6	16	10
OECD average-31	**68**	**47**	**34**	**20**	**17**	**10**

* Participation rate of principals is too low to ensure comparability for principals' reports and country estimates are not included in the OECD average.

Source: OECD, TALIS 2018 Database, Tables I.3.17, I.3.21, I.3.1, I.3.5, I.3.9 and I.3.13.

StatLink http://dx.doi.org/10.1787/888933931886

Raising the status and prestige of the profession is an overarching goal to attract candidates and ensure the continuous renewal of the teaching profession as teachers retire, but also to retain current teachers in the profession. In working out possible policy levers, trade-offs are inevitable. Many education systems, for example, will face a trade-off between the student-teacher ratio and average teacher salary (OECD, 2005[4]). Thus, education systems will need to assess what would be the most appropriate levers to improve the attractiveness of the profession in their specific circumstances. Factors for systems to consider include their institutional framework, their labour market for tertiary graduates, the profile of their teachers (in terms of personal motivations versus social-utility motivations) and their budget constraints. For example, systems with a relative over-supply of teachers may find it more meaningful to improve working conditions (e.g. student-teacher ratio, support staff, hours for planning) than to make teachers' salaries more competitive. In some systems, aspects related to work organisation (e.g. opportunities for high-quality professional development, collaboration, autonomy and accountability requirements) may also be more powerful than financial elements to enhance the intellectual attractiveness of the profession. In systems with flat career structures, introducing some degree of career differentiation might allow teachers to see greater scope for continued professional growth after 15 or 20 years on the job.

Other possible avenues for renewing the teaching profession entail expanding the supply pool of potential teachers and creating more diverse pathways into teaching (OECD, 2005[4]). However, implementation of such measures needs to mitigate the risk of lowering standards for the profession. Thus, it is important to have institutions that monitor the quality of both initial teacher preparation and the individuals who are certified as teachers (OECD, 2019[29]).

Policy pointer 26: Design effective recruitment campaigns encouraging both men and women to join the ranks of teachers and school leaders

Recruitment campaigns should portray teachers and school leaders as key contributors to society and the development of future generations. Such campaigns should not remain silent about the financial packages and working conditions of these jobs and should praise the rewarding aspects. In addition to intellectual and social fulfilment, these include the possibility to continually learn on the job, benefit from job security and reconcile the demands of personal and professional life.

Countries and economies should also engage in research to better understand the factors underlying differential recruitment of male and female candidates into teaching. Research on the differential progression of male and female teachers towards leadership roles is also warranted, as well as policies to overcome any barriers identified to career progression for female teachers. In particular, designing recruitment campaigns that are not gender blind may be considered, depending on the type of job targeted, emphasising that men can achieve professional growth as teachers and women as school leaders.

Every country and economy facing particularly strong gender imbalances will need to engage in a more thorough examination of the underlying factors. A possible path of action is to conduct research on salary competiveness for males in jobs requiring similar years of education. Research could also tackle certain cultural norms or expectations regarding gender roles that may be deterring male candidates from entering the profession.

Whenever the limited progression of female teachers to leadership roles is due to a lack of interest by female teachers in such positions, education systems may consider further differentiating teaching careers to offer promotion tracks within teaching roles as a way to strengthen the professional attributes of teaching careers. This could foster the intellectual fulfilment and job satisfaction of female teachers and, ultimately, their retention in the profession.

Notes

1. However, it is interesting to note that student reports from PISA 2015 showed that about 20% of 15-year-olds feel unfairly treated by their teachers (OECD, 2017[52]). Additional insight about the classroom environment could be gained by contrasting teachers' and students' reports from the same school. The 2013 TALIS-PISA link study already provided some interesting results on this aspect regarding the implementation of quality practices in the classroom, such as active learning and cognitive activation (Le Donné, Fraser and Bousquet, 2016[8]).
2. For example, professional autonomy and agency are a key component of the Finnish teacher curricula. Efforts are made to preserve this component across initial teacher education and in-service training (Niemi, 2015[53]). Initial teacher education with a research-based orientation prepares Finnish teachers to be autonomous decision makers in their classrooms. In-service training, through induction activities and short courses, inculcates professional learning communities, which foster innovation and school-based projects.
3. In Australia, faculty heads for specific departments (English, Maths, Sciences, History, etc.) in high school or secondary college are responsible for leading subject-specific teams of teachers, while maintaining teaching duties (for a maximum 16 hours a week) and status. They are typically part of the school executive team, and these positions are often a stepping stone into school administration leadership roles.
4. It is possible that this pattern could also be showing the shortage of teachers in schools and the lack of incentives to work in a collaborative environment.
5. The meta-analysis consisted of a review of 60 studies that employ causal research designs of the effect of coaching programmes on teachers' instructional practice and students' academic achievement. Combining results across these 60 studies, the researchers find pooled effect sizes of 0.49 standard deviations (SD) on instruction and 0.18 SD on achievement. Much of this evidence came from literacy coaching programmes for pre-kindergarten and elementary school teachers in the United States (Kraft, Blazar and Hogan, 2018[42]).

References

Avalos, B. (2011), "Teacher professional development in Teaching and Teacher Education over ten years", *Teaching and Teacher Education*, Vol. 27/1, pp. 10-20, http://dx.doi.org/10.1016/j.tate.2010.08.007. [44]

Barber, M. and **M. Mourshed** (2009), *Shaping the Future: How Good Education Systems Can Become Great in the Decade Ahead*, Report on the International Education Roundtable, 7 July 2009, Singapore, McKinsey & Company, London. [1]

Bautista, A., J. Wong and **S. Gopinathan** (2015), "Teacher professional development in Singapore: Depicting the landscape", *Psychology, Society, & Education*, Vol. 7/3, pp. 311-326, http://dx.doi.org/10.25115/psye.v7i3.523. [45]

Bolam, R. et al. (2005), "Creating and Sustaining Effective Professional Learning Communities", *DfES Research Report*, No. 637, University of Bristol, Bristol, http://dera.ioe.ac.uk/5622/1/RR637.pdf. [18]

Borko, H. (2004), "Professional development and teacher learning: Mapping the terrain", *Educational Researcher*, Vol. 33/8, pp. 3-15, http://dx.doi.org/10.3102/0013189X033008003. [43]

Cerna, L. et al. (2019), "Strength through diversity's Spotlight Report for Sweden", *OECD Education Working Papers*, No. 194, OECD Publishing, Paris, https://dx.doi.org/10.1787/059ce467-en. [23]

Cheng, M., A. Cheng and **S. Tang** (2010), "Closing the gap between the theory and practice of teaching: Implications for teacher education programmes in Hong Kong", *Journal of Education for Teaching*, Vol. 36/1, pp. 91-104, http://dx.doi.org/10.1080/02607470903462222. [9]

Cooc, N. (2018), "Who Needs Special Education Professional Development?: International Trends from TALIS 2013", *OECD Education Working Papers*, No. 181, OECD Publishing, Paris, https://dx.doi.org/10.1787/042c26c4-en. [24]

Daresh, J. (2004), "Mentoring school leaders: Professional promise or predictable problems?", *Educational Administration Quarterly*, Vol. 40/4, pp. 495-517, http://dx.doi.org/10.1177/0013161X04267114. [38]

Darling-Hammond, L. (2017), "Teacher education around the world: What can we learn from international practice?", *European Journal of Teacher Education*, Vol. 40/3, pp. 291-309, http://dx.doi.org/10.1080/02619768.2017.1315399. [2]

Darling-Hammond, L. et al. (2009), *Professional Learning in the Learning Profession: A Status Report on Teacher Development in the United States and Abroad*, National Staff Development Council, Dallas, TX and and The School Redesign Network at Stanford University, https://learningforward.org/docs/default-source/pdf/nsdcstudy2009.pdf. [47]

Darling-Hammond, L. et al. (2007), *Preparing School Leaders for a Changing World: Lessons from Exemplary Leadership Development Programs*, Stanford University, Stanford Educational Leadership Institute, Stanford, CA, https://edpolicy.stanford.edu/sites/default/files/publications/preparing-school-leaders-changing-world-lessons-exemplary-leadership-development-programs_1.pdf. [37]

den Brok, P., T. Wubbels and **J. van Tartwijk** (2017), "Exploring beginning teachers' attrition in the Netherlands", *Teachers and Teaching: Theory and Practice*, Vol. 23/8, pp. 881-895, https://doi.org/10.1080/13540602.2017.1360859. [34]

Dhuey, E. and **J. Smith** (2018), "How school principals influence student learning", *Empirical Economics*, Vol. 54/2, pp. 851-882, http://dx.doi.org/10.1007/s00181-017-1259-9. [49]

Dwyer, M. (2004), "More is better: The impact of study abroad program duration", *Frontiers: The Interdisciplinary Journal of Study Abroad*, Vol. 10/Fall, pp. 151-163, https://frontiersjournal.org/wp-content/uploads/2015/09/DWYER-FrontiersX-MoreIsBetter.pdf. [22]

Echazarra, A. et al. (2016), "How teachers teach and students learn: Successful strategies for school", *OECD Education Working Papers*, No. 130, OECD Publishing, Paris, https://dx.doi.org/10.1787/5jm29kpt0xxx-en. [7]

Espey, M. (2008), "Does space matter? Classroom design and team-based learning", *Review of Agricultural Economics*, Vol. 30/4, pp. 764-775, http://dx.doi.org/10.1111/j.1467-9353.2008.00445.x. [10]

Forghani-Arani, N., L. Cerna and **M. Bannon** (2019), "The lives of teachers in diverse classrooms", *OECD Education Working Papers*, No. 198, OECD Publishing, Paris, https://dx.doi.org/10.1787/8c26fee5-en. [20]

Fraillon, J. et al. (2014), *Preparing for Life in a Digital Age: The IEA International Computer and Information Literacy Study International Report*, Springer International Publishing, Heidelberg, www.iea.nl/fileadmin/user_upload/Publications/Electronic_versions/ICILS_2013_International_Report.pdf. [12]

Gil-Flores, J., J. Rodríguez-Santero and **J. Torres-Gordillo** (2017), "Factors that explain the use of ICT in secondary-education classrooms: The role of teacher characteristics and school infrastructure", *Computers in Human Behavior*, Vol. 68, pp. 441-449, http://dx.doi.org/10.1016/J.CHB.2016.11.057. [14]

Glazerman, S. et al. (2010), *Impacts of Comprehensive Teacher Induction: Final Results from a Randomized Controlled Study*, (NCEE 2010-4027), National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S., Washington, DC, https://ies.ed.gov/ncee/pubs/20104027/pdf/20104027.pdf. [31]

Grissom, J., S. Loeb and **B. Master** (2013), "Effective instructional time use for school leaders: Longitudinal evidence from observations of principals", *Educational Researcher*, Vol. 42/8, pp. 433-444, http://dx.doi.org/10.3102/0013189X13510020. [27]

Guerriero, S. (ed.) (2017), *Pedagogical Knowledge and the Changing Nature of the Teaching Profession*, Educational Research and Innovation, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264270695-en. [5]

Hall, W. (2017), "The effectiveness of policy interventions for school bullying: A systematic review", *Journal of the Society for Social Work and Research*, Vol. 8/1, pp. 45-69, http://dx.doi.org/10.1086/690565. [25]

Helms-Lorenz, M., B. Slof and **W. van de Grift** (2013), "First year effects of induction arrangements on beginning teachers' psychological processes", *European Journal of Psychology of Education*, Vol. 28/4, pp. 1265-1287, http://dx.doi.org/10.1007/s10212-012-0165-y. [32]

Hoban, G. and **G. Erickson** (2004), "Dimensions of learning for long-term professional development: Comparing approaches from education, business and medical contexts", *Journal of In-Service Education*, Vol. 30/2, pp. 301-324, www.tandfonline.com/doi/pdf/10.1080/13674580400200247. [41]

Horng, E., D. Klasik and **S. Loeb** (2010), "Principal's Time Use and School Effectiveness", *American Journal of Education*, Vol. 116/4, pp. 491-523, http://dx.doi.org/10.1086/653625. [26]

Ingersoll, R. and **G. Collins** (2018), "The status of teaching as a profession", in Ballantine, J., J. Spade and J. Stuber (eds.), *Schools and Society: A Sociological Approach to Education*, Pine Forge Press/Sage Publications, Thousand Oaks, CA, https://repository.upenn.edu/gse_pubs/221. [6]

Jensen, B. et al. (2012), *The Experience of New Teachers: Results from TALIS 2008*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264120952-en. [30]

Kini, T. and **A. Podolsky** (2016), *Does Teaching Experience Increase Teacher Effectiveness? A Review of the Research*, Learning Policy Institute, Palo Alto, CA, https://learningpolicyinstitute.org/product/does-teaching-experience-increase-teacher-effectiveness-review-research. [50]

Kools, M. and **L. Stoll** (2016), "What Makes a School a Learning Organisation?", *OECD Education Working Papers*, No. 137, OECD Publishing, Paris, https://dx.doi.org/10.1787/5jlwm62b3bvh-en. [16]

Kraft, M., D. Blazar and **D. Hogan** (2018), "The effect of teacher coaching on instruction and achievement: A meta-analysis of the causal evidence", *Review of Educational Research*, Vol. 88/4, pp. 547-588, https://doi.org/10.3102/0034654318759268. [42]

Krumsvik, R. (2008), "Situated learning and teachers' digital competence", *Education and Information Technologies*, Vol. 13/4, pp. 279-290, http://dx.doi.org/10.1007/s10639-008-9069-5. [15]

Le Donné, N., P. Fraser and **G. Bousquet** (2016), "Teaching Strategies for Instructional Quality: Insights from the TALIS-PISA Link Data", *OECD Education Working Papers*, No. 148, OECD Publishing, Paris, https://dx.doi.org/10.1787/5jln1hlsr0lr-en. [8]

Louis, K. and **H. Marks** (1998), "Does professional community affect the classroom? Teachers' work and student experiences in restructuring schools", *American Journal of Education*, Vol. 106/4, pp. 532-575, https://doi.org/10.1086/444197. [19]

Moreno, J. (2007), "Do the initial and the continuous teachers' professional development sufficiently prepare teachers to understand and cope with the complexities of today and tomorrow's education?", *Journal of Educational Change*, Vol. 8/2, pp. 169-173, http://dx.doi.org/10.1007/s10833-007-9027-9. [36]

Niemi, H. (2015), "Teacher professional development in Finland: Towards a more holistic approach", *Psychology, Society & Education*, Vol. 7/3, pp. 279-294, http://ojs.ual.es/ojs/index.php/psye/article/view/519. [53]

OECD (2019), *A Flying Start: Improving Initial Teacher Preparation Systems*, OECD Publishing, Paris, https://dx.doi.org/10.1787/cf74e549-en. [29]

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

OECD (2017), *Pensions at a Glance 2017: OECD and G20 Indicators*, OECD Publishing, Paris, https://dx.doi.org/10.1787/pension_glance-2017-en. [51]

OECD (2017), *PISA 2015 Results (Volume III): Students' Well-Being*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264273856-en. [52]

OECD (2016), *Supporting Teacher Professionalism: Insights from TALIS 2013*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264248601-en. [28]

OECD (2015), *Students, Computers and Learning: Making the Connection*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264239555-en. [13]

OECD (2014), *Measuring Innovation in Education: A New Perspective*, Educational Research and Innovation, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264215696-en. [11]

OECD (2014), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264196261-en. [48]

OECD (2005), *Teachers Matter: Attracting, Developing and Retaining Effective Teachers*, Education and Training Policy, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264018044-en. [4]

Opfer, D. (2016), "Conditions and Practices Associated with Teacher Professional Development and Its Impact on Instruction in TALIS 2013", *OECD Education Working Papers*, No. 138, OECD Publishing, Paris, https://dx.doi.org/10.1787/5jlss4r0lrg5-en. [40]

Opfer, V. and **D. Pedder** (2011), "Conceptualizing Teacher Professional Learning", *Review of Educational Research*, Vol. 81/3, pp. 376-407, http://dx.doi.org/10.3102/0034654311413609. [46]

Rockoff, J. (2008), "Does Mentoring Reduce Turnover and Improve Skills of New Employees? Evidence from Teachers in New York City", *NBER Working Paper Series*, No. 13868, National Bureau of Economic Research, Cambridge, MA, http://dx.doi.org/10.3386/w13868. [33]

Rundstrom Williams, T. (2005), "Exploring the impact of study abroad on students' intercultural communication skills: Adaptability and sensitivity", *Journal of Studies in International Education*, Vol. 9/4, pp. 356-371, http://dx.doi.org/10.1177/1028315305277681. [21]

Sanders, W. and **J. Rivers** (1996), *Cumulative and Residual Effects of Teachers on Future Student Academic Achievement*, University of Tennessee Value-Added Research and Assessment Center, Knoxville, TN, www.beteronderwijsnederland.nl/files/cumulative%20and%20residual%20effects%20of%20teachers.pdf. [35]

Southworth, G. (1995), "Reflections on mentoring for new school leaders", *Journal of Educational Administration*, Vol. 33/5, pp. 17-28, http://dx.doi.org/10.1108/09578239510098509. [39]

Vieluf, S. et al. (2012), *Teaching Practices and Pedagogical Innovations: Evidence from TALIS*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264123540-en. [17]

2

Teaching and learning for the future

Reviewing and analysing a rich set of subjective and more fact-based indicators, this chapter describes what teachers do in their classrooms and how teaching has changed over the past five to ten years. It also examines the extent to which teachers and school leaders engage in related activities to support student learning. Finally, it describes the extent to which teachers and schools are able to innovate in their methods of teaching and working together.

A note regarding Israel

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.

Highlights

- Among the wide range of instructional practices used by teachers in class, those aimed at enhancing classroom management and clarity of instruction are widely applied across the OECD countries and economies participating in the Teaching and Learning International Survey (TALIS), with at least two-thirds of teachers using them frequently. Practices involving student cognitive activation are less widespread, with about half of teachers using these methods.
- In many countries and economies participating in TALIS, more teachers frequently provide written feedback on student work in addition to a mark in 2018 than they did in 2013, while there is a mixed global trend regarding actively involving students in their own self-assessment or providing immediate feedback to them.
- On average across OECD countries and economies participating in TALIS, more than 80% of teachers feel confident in their capacity to teach and manage their classroom, while over 30% of teachers report difficulties in motivating student learning, particularly when it comes to turning around a situation where a student shows low interest in school work.
- During a typical lesson, teachers spend only 78% of their classroom time on actual teaching and learning, on average across OECD countries and economies participating in TALIS. This share is even lower in schools with a high concentration of students from socio-economically disadvantaged homes and in classrooms taught by young and beginning teachers. In the past five to ten years, classroom time spent on actual teaching and learning has decreased in about half of the countries and economies participating in TALIS.
- In almost half of the countries and economies participating in TALIS, during a typical workweek, teachers teach a higher number of hours than five years ago, while the total number of hours spent on planning and preparing lessons as well as general administrative work has decreased.
- Overall, a vast majority of teachers and school leaders view their colleagues as open to change and their schools as places that have the capacity to adopt innovative practices. However, this viewpoint is less common in European countries than in other parts of the globe.

INTRODUCTION

As the recent OECD report, *Teaching for the Future: Effective Classroom Practices To Transform Education* (OECD, 2018[1]) states in its foreword: "Teaching now is more dynamic, challenging and demanding than ever before. Teachers and school leaders are expected to continuously innovate, adapt, and develop their teaching practices to equip all students with the skills and knowledge they will need to succeed in life and work." (p. 3). Teachers are the most important school-related influence on student learning. They inspire students to innovate, think and reflect deeply, and work in collaboration with others. It is, therefore, very important to understand how teachers achieve these objectives in their classrooms and how school leaders support and guide them with these tasks.

The goal of this chapter is to consider teachers and school leaders as experts and specialists of education. Given the importance of these notions – expertise and specialisation – to professions (Ingersoll and Collins, 2018[2]), TALIS has aimed to measure whether and how teachers and school leaders make use of specialised knowledge, skills and practices in their jobs, based on their own opinions, and whether they see room for further development and improvement.

WHAT TEACHERS DO IN THEIR CLASSROOM AND HOW THEY FEEL ABOUT IT

Available research evidence points to teacher quality as the most important school variable in determining the success of an educational system (Hattie, 2009[3]; OECD, 2005[4]). As stated in the recent OECD report, *Teaching for the Future: Effective Classroom Practices To Transform Education*, an education system is effective when its teachers use teaching practices that improve student performance and develop the full potential of all students, regardless of their socio-economic background, native language or migrant status. However, it has proven difficult to understand what makes teaching "good" or "effective". While most people can clearly remember the joy of learning from a good teacher and the occasional frustration with poor teaching, it would be hard for many to pinpoint the precise factors that make good teaching good and poor teaching less so. But while teaching quality is a difficult concept to measure, it can be inferred, based on observable indicators, such as the demonstration of improved motivation or learning gains by students, the implementation of quality processes or teachers' perception of self-efficacy (OECD, 2018, p. 54[1]).

Using teachers' self-reports to measure instructional quality is particularly challenging, because these reports frequently reflect responses that the teachers consider socially desirable (Little, Goe and Bell, 2009[5]; van de Vijver and He, 2014[6]). This measurement issue often occurs when respondents are asked to report their level of agreement or disagreement on the importance they attribute to each instructional practice. Also, teachers find it very difficult to talk about their pedagogies, methods and practices (Pollard, 2010[7]). Indeed, many teachers act both consciously and unconsciously in their classroom as a response to the community of practice they are immersed in, making it complicated to recall their practices as their own practices. And, past analyses of the TALIS-PISA link data showed that teachers from the same school tend to share a more similar approach to teaching than two teachers working in two different schools. This suggests that teaching strategies are part of a "teaching culture" within the school (Le Donné, Fraser and Bousquet, 2016[8]).

Faced with these challenges, TALIS has developed a rich set of complementary indicators aiming to measure what teachers do in their classrooms. TALIS asks teachers to identify a particular class chosen at random from their teaching schedule[1] (hereafter, "the target class") and then respond to a series of questions about this target class and how they teach the students. TALIS then uses fact-based questions about the frequency with which teachers use various practices and how much time they spend on different activities in their classroom. To complement these factual indicators, TALIS also asks teachers their opinions on how well they feel they are able to implement certain practices and achieve certain goals.[2]

Effective teaching strategies

Teachers' classroom practices are central to any study of teaching and learning, because what teachers do is the strongest direct school-based influence on student learning outcomes (Hattie, 2009[3]). Most other school factors influence student learning mainly because they influence teachers' practices and, thereby, have a transmitted influence on student learning. Teachers' classroom practices embrace a number of aspects, some of which are highly important for students' learning outcomes, such as motivation to learn and achievement in subject areas (i.e. mathematics and first-language learning) (Baumert et al., 2010[9]; Creemers and Kyriakides, 2008[10]; Hattie, 2009[3]; Isac et al., 2015[11]; Kunter et al., 2013[12]; Nilsen and Gustafsson, 2016[13]; O'Dwyer, Wang and Shields, 2015[14]).

While this chapter deliberately adopts a teacher-oriented perspective on student learning, it also acknowledges that students bring their own family values, personal ability, motivation, well-being and school trajectory to the classroom. These all have a powerful influence on the way students acquire new skills, knowledge, values and attitudes, which may also influence the way teachers teach them. This chapter adopts a positive concept of humankind, considering that all students, regardless of their social or cultural background or gender, are able to learn, provided their learning is supported by appropriate teaching approaches.

Instructional quality is understood differently across the field of education, but there is a consensus that the concept is multidimensional (Fauth et al., 2014[15]; Kane and Cantrell, 2010[16]; Kunter and Voss, 2013[17]; Wagner et al., 2013[18]). A considerable body of research exists on the impact of teaching practices on students' learning outcomes (Lavy, 2016[19]; Rjosk et al., 2014[20]). More specifically, TALIS asks teachers about the use of effective instructional practices (i.e. practices that have proven to be positively associated with students' learning outcomes). These effective practices can be grouped into four strategies: classroom management; clarity of instruction; cognitive activation; and enhanced activities (Figure I.2.1). TALIS inquires about the frequency with which teachers use each practice in their target class, asking them to mark one choice among four options: "never or almost never"; "occasionally"; "frequently"; or "always".

Classroom management is often described as the actions teachers take to ensure an orderly environment and effective use of time during lessons (van Tartwijk and Hammerness, 2011[21]). Numerous studies have identified classroom management as an important contributor to student learning and a strong predictor of student achievement – see, for instance, Baumert et al., (2010[9]); Klusmann et al., (2008[22]); van Tartwijk and Hammerness, (2011[21]). Large-scale international assessments of student achievement have found a positive relationship in several countries between an orderly environment (as reported by teachers) and student achievement (Le Donné, Fraser and Bousquet, 2016[8]; Martin et al., 2013[23]; Wang and Degol, 2016[24]).

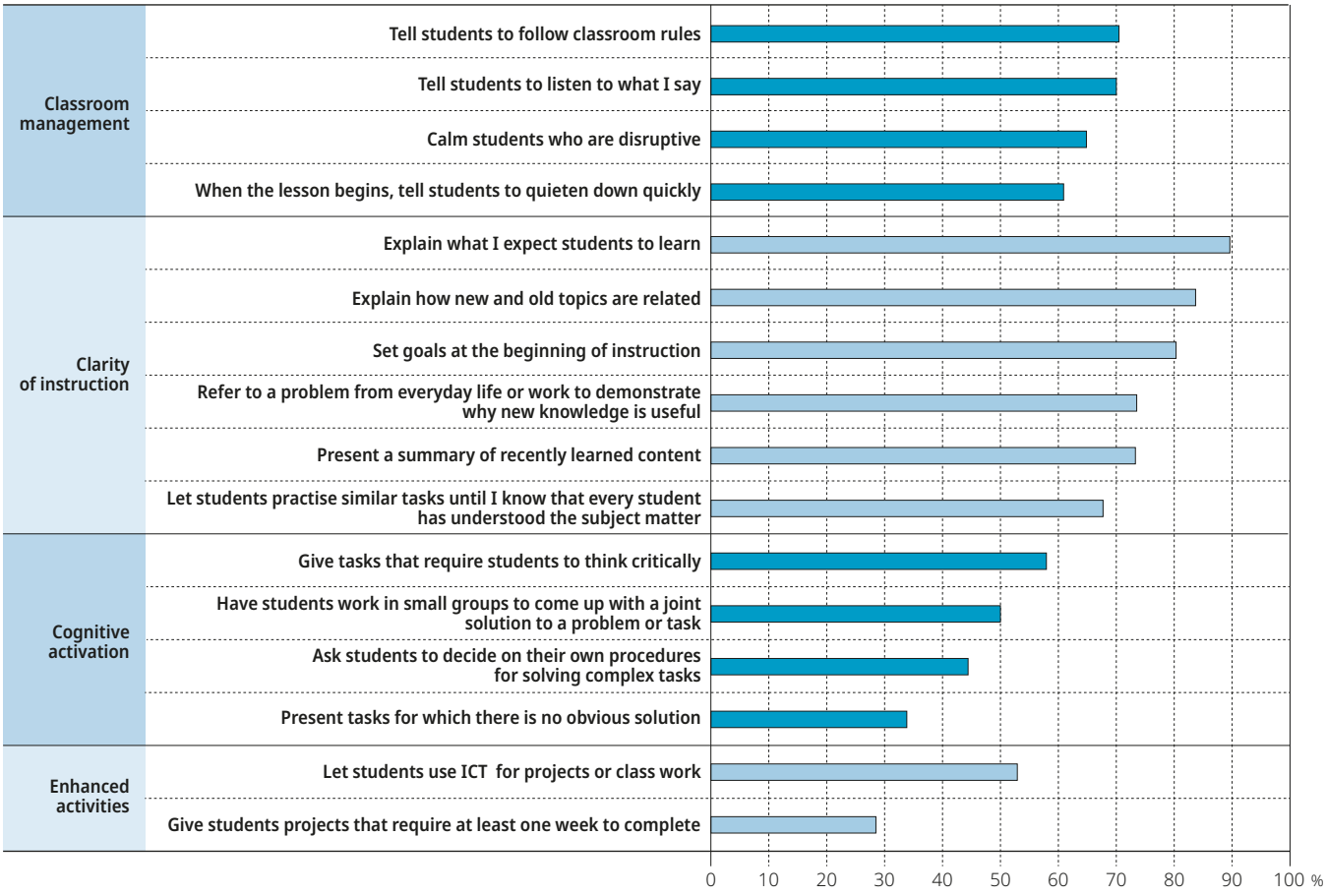
TALIS provides insights on the things teachers do to maintain order that may already exist in the classroom or to re-establish order. In 2018, on average across OECD countries and economies that participate in TALIS,[3] more than 60% of teachers report that they frequently or always engage in practices that aim to maintain an orderly classroom, such as telling students to follow classroom rules (71%) and listening to what they say (70%). Slightly fewer teachers report that they frequently or always take measures to react to disruptions from students in the classroom, such as calming students who are disruptive (65%), as well as asking students to quieten down quickly (61%) (Figure I.2.1, Table I.2.1). If quite a few teachers rarely engage in these classroom management practices, it may be because they do not need to, either because their students take care to create a pleasant learning atmosphere or because the teachers have succeeded in establishing a classroom environment where it is not necessary to keep repeating classroom rules to students.

Researchers have also identified clarity of instruction as an important influence on student learning (Kyriakides, Campbell and Gagatsis, 2000[25]; Scherer and Gustafsson, 2015[26]; Seidel, Rimmele and Prenzel, 2005[27]). In 2018, on average across OECD countries and economies, almost all teachers frequently use practices pertaining to clarity of instruction: 90% of teachers report that they frequently or always explain to students what they expect them to learn; 84% explain how new and old topics are related; 81% set goals at the beginning of instruction; 74% refer to a problem from everyday life or work to demonstrate why new knowledge is useful or present a summary of recently learned content; and 68% let students practice similar tasks until they know that every student has understood the subject matter (Figure I.2.1, Table I.2.1).

Cognitive activation practices seem to be less widespread than practices pertaining to clarity of instruction. Cognitive activation consists of instructional activities that require students to evaluate, integrate and apply knowledge within the context of problem solving (Lipowsky et al., 2009[28]). These activities are commonly associated with group work on complicated problems. In 2018, on average across OECD countries and economies: 58% of teachers report that they frequently or always give tasks that require students to think critically; 50% have students work in small groups to come up with a joint solution to a problem or task; 45% ask students to decide on their own procedures for solving complex tasks; and only 34% present tasks for which there is no obvious solution (Figure I.2.1, Table I.2.1). Cognitive activation practices are perhaps the most demanding and complex of the teaching strategies, possibly because they are more closely connected to subject domain than the other three strategies[4] (Baumert et al., 2010[9]; Hiebert and Grouws, 2007[29]; Klieme, Pauli and Reusser, 2009[30]). Box I.2.4 discusses the example of a nationwide curriculum reform in Mexico that prioritises the use of cognitive activation practices for achieving holistic student learning outcomes.

Figure I.2.1 **Teaching practices**

Percentage of lower secondary teachers who "frequently" or "always" use the following practices in their class[1]
(OECD average-31)



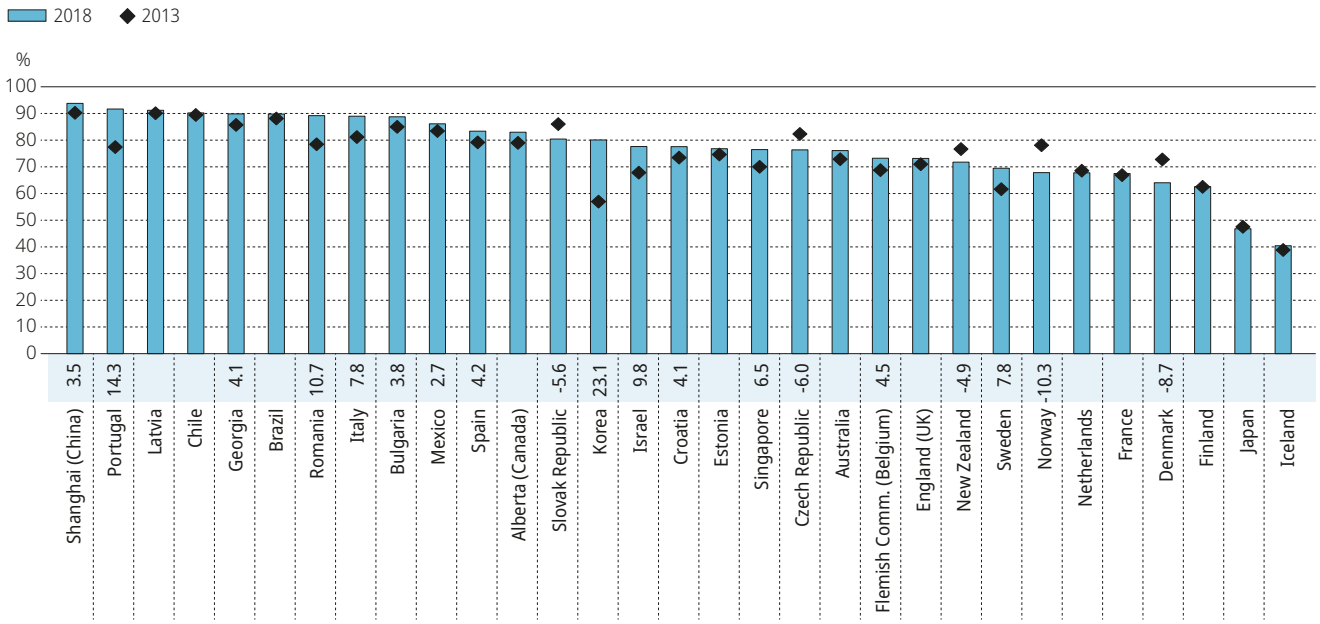
1. These data are reported by teachers and refer to a randomly chosen class they currently teach from their weekly timetable.
Note: ICT: Information and communication technology.
Values are grouped by teaching strategy and ranked in descending order of the use of teaching practices within the respective teaching strategy.
Source: OECD, TALIS 2018 Database, Table I.2.1.
StatLink http://dx.doi.org/10.1787/888933931905

Finally, TALIS also asks teachers about the frequency with which they use what can be referred to as "enhanced activities", which encompass practices that give students the chance to work independently, using some specific tools, such as information and communication technology (ICT), or over a longer period of time (Vieluf et al., 2012[31]). On average across the OECD, about 53% of teachers report that they frequently or always let students use ICT for projects or class work, while only 29% give students projects that require at least one week to complete (Figure I.2.1, Table I.2.1). Enhanced activities are not as widespread as other teaching strategies, potentially because they require additional resources and command of them (access to and skills to use ICT) and/or more sophisticated planning. They also require that students be ready for such activity, as it demands higher responsibility and planning skills from them.

Of the 16 teaching practices on which teachers were questioned in 2018, 6 were also included in the teacher questionnaire in 2013, 3 pertaining to clarity of instruction, 1 to cognitive activation and 2 to enhanced activities. It is, therefore, possible to compare teachers' responses over time (Table I.2.4). Between 2013 and 2018, there seems to be an increase in the reported use of the three practices pertaining to clarity of instruction (presenting a summary of recently learned content; referring to a problem from everyday life or work to demonstrate why new knowledge is useful; and letting students practice similar tasks until the teacher knows that every student has understood the subject matter) (Figure I.2.2, Table I.2.5).

Figure I.2.2 **Change in the use of teaching practices pertaining to clarity of instruction from 2013 to 2018**

Percentage of lower secondary teachers who "frequently" or "always" use teaching practices pertaining to clarity of instruction in a typical class[1, 2]



1. This percentage is calculated based on the average frequency with which teachers report using practices pertaining to clarity of instruction, which are "Presenting a summary of recently learned content", "Refering to a problem from everyday life or work to demonstrate why new knowledge is useful" and "Letting students practise similar tasks until I know that every student has understood the subject matter" (see Annex B).

2. These data are reported by teachers and refer to a randomly chosen class they currently teach from their weekly timetable.

Notes: Only countries and economies with available data for 2013 and 2018 are shown.

Statistically significant changes between 2013 and 2018 (TALIS 2018 – TALIS 2013) are found next to the category and the country/economy name (see Annex B).

Countries and economies are ranked in descending order of the percentage of teaching practices pertaining to clarity of instruction in 2018.

Source: OECD, TALIS 2013 and 2018 Database, Table I.2.5.

StatLink http://dx.doi.org/10.1787/888933931924

A rise in the reported use of the three "clarity-of-instruction" practices is also observed in 14 of these 31 countries and economies. Notable examples of sharper increases in clarity of instruction practices are in Korea (+23 percentage points), Portugal (+14 percentage points) and Romania (+11 percentage points). PISA data show that teacher-directed instruction that aims at providing a well-structured, clear and informative lesson on a topic, is more frequently used than other types of instructional

practices, by both mathematics and science teachers. These strategies are typically less time-consuming (i.e. more efficient) and easier to implement (more convenient) than other teaching strategies (OECD, 2016, p. 65[32]). It is possible that teachers now use them more often because they face increasing demands to cover a long(er) curriculum or to teach (more) diverse classrooms (OECD, 2018[1]).

As expected, given the digitalisation of many activities in the recent decades, there is a significant increase in the use of ICT for projects or class work observed in 28 of the 31 countries and economies with comparable data (Table I.2.4). The largest changes are observed in Finland, Israel, Romania and Sweden, where the percentage of teachers reporting that they frequently or always let students use ICT for projects or class work has increased by 30 percentage points or more.

International surveys and studies conducted in international and national contexts highlight the importance of how ICT is used in the classroom to be effective (Fraillon et al., 2014[33]; OECD, 2015[34]). An OECD report based on PISA 2012 data showed that, in countries where mathematics lessons focus on formulating and solving real-world problems (in engineering, biology, finance or any problem that arises in everyday life and work), students report that their teachers use computers to a greater extent in instruction (OECD, 2015[34]). As stated in this report, "… among all teachers, those who are more inclined and better prepared for student-oriented teaching practices, such as group work, individualised learning, and project work, are more likely to use digital resources, according to students." (p.16). The report also states that PISA results suggest that while "… limited use of computers at school may be better than not using computers at all, using them more intensively than the current OECD average tends to be associated with significantly poorer student performance." (p.16). Another PISA-based report showed that using ICT in mathematics lessons and exposing students to applied mathematics problems, for example, were positively associated with students' self-reported use of elaboration strategies (i.e. strategies consisting of making connections between the task at hand, prior knowledge, other topics and real-life experience) (Echazarra et al., 2016[35]).

In Italy, Comi et al. (2017[36]) find that the effectiveness of ICT at school depends on the actual practice that teachers make of it and on their ability to integrate ICT into their teaching process. A study conducted on the TALIS 2013 dataset of Spain also showed that teachers' use of ICT in the classroom is mainly dependent on teacher training in ICT, teachers' collaboration with other teachers and teachers' perceived self-efficacy and beliefs about teaching, as well as (although to a lesser extent) the availability of educational software or school infrastructure (Gil-Flores, Rodríguez-Santero and Torres-Gordillo, 2017[37]). Box I.2.1 sheds light on how Chile and Israel have been building capacity and readiness among teachers to integrate the use of ICT in their teaching practices.

Box I.2.1 **Integrating ICT in classrooms: Examples from Chile and Israel**

Chile

Enlaces began as a division of the Chilean Ministry of Education, evolving out of a nationwide programme to connect schools to the Internet in the early 1990s. The goal of Enlaces was twofold: to develop skills in ICT for teachers and to build attitudes conducive to the use of ICT in classrooms. The programme starts with more in-person training opportunities and gradually moves on to distance learning tools making use of ICT, so that teachers are also able to see and experience the potential of the use of ICT in learning processes. Enlaces identifies the use of ICT in learning environments as a "professional, pedagogical and organisational" advance for teachers and provides teachers with concrete examples of ICT use in different stages suited to the attitude of teachers and their openness to technology.

Enlaces also contains a special component to facilitate technology-enhanced learning for rural schools in Chile. The Rural Enlaces strategy recognises that the use of ICT needs to be specially tailored for rural schools, as they offer a distinct context and need, and training teachers in rural areas could be particularly expensive. The programme provides for training that is more concentrated at certain times of the year.

Recognising that the next stage of educational innovation has to go beyond the provision of infrastructure and basic training, Enlaces gave way in 2018 to a new Innovation Center at the Ministry of Education. Building on the mission of Enlaces, the Innovation Center broadens it to include educational innovations where technology is only part of the answer, helping explore new teaching methodologies, practices and school processes. At the moment, its flagship programmes are expanding the teaching of computer science in schools; developing an ecosystem that continuously learns from promising innovations developed by teachers and schools throughout the country; and advancing personalised learning opportunities in K12 made possible by the use of technology.

• • •

The ICT programme for education in Chile has grown from a pilot public-policy intervention to being integrated into traditional teaching and learning structures in Chile's education system. The Chilean approach has made its mark in two critical ways: expanding the digital infrastructure in schools and opening up attitudes to the use of technology in education.

Israel

The digital education policy is identified under the national Israeli programme, Adapting the Educational System for the 21st Century, which was first initiated in 2007. Curricular changes were made to reflect a close link between competency-based learning goals, innovative pedagogies to be used to build these competencies and the use of ICT in classrooms. A central element in this programme is the implementation of the SAMR (Substitution, Augmentation, Modification, and Redefinition) Model for integrating technology in order to guide more meaningful uses of technology in teaching. The resources provided to teachers include a classroom-mapping sheet to allow teachers to plan their use of ICT in the classroom. Training under the programme takes 28 to 56 hours. Upon successful completion, teachers earn credits that lead to wage improvement.

Another key component of the digital education policy is Educational Cloud, a nationally run website offering extensive digital content for both educators and students. The Educational Cloud allows teachers to create and upload digital content and collaborate with other teachers on teaching in their classrooms. Furthermore, the guidelines for establishing an ICT Competent School provide schools with concrete directions on how to use the resource material effectively and collaboratively. The topics covered in these guidelines include infographics as a tool for information structuring, technologies for cultivating higher-order thinking skills and guidance on how to lead pedagogical processes that are adequate for the 21st century.

Sources: Severin, E. (2016[38]), *Building and Sustaining National ICT/Education Agencies: Lessons from Chile*, https://openknowledge.worldbank.org/handle/10986/26264 and information provided by the Ministry of Education, Chile; Winer, D. (2018[39]), *Israel: Country Report on ICT in Education*, www.eun.org/documents/411753/839549/Israel_2018.pdf/c01cb526-a5d7-469b-b8b1-b67a494d294b.

Teachers' assessment practices

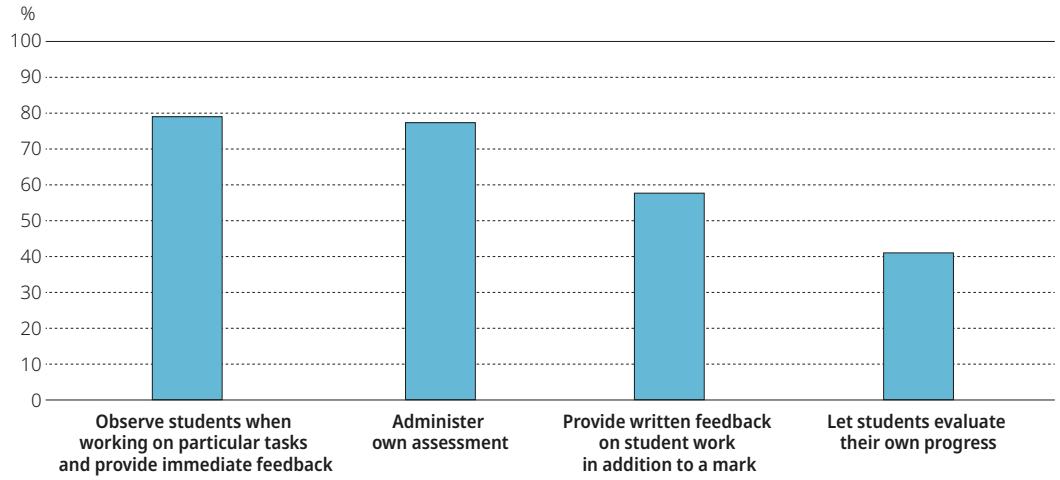
In addition to effectively employing the four teaching strategies mentioned above, teachers need to provide feedback to students about their learning progress in the form of both formative and summative assessment (Hattie and Timperley, 2007[40]; Kyriakides and Creemers, 2008[41]; Scheerens, 2016[42]). Formative assessment consists of providing feedback and information during the teaching process, while learning is taking place. Summative assessment typically takes place after the teaching process has been completed and provides information and feedback about learning outcomes. Research shows that effective teaching includes providing constructive feedback and that this type of feedback has positive implications for teaching and learning (Muijs and Reynolds, 2001[43]). TALIS asks teachers to report the frequency with which they use a set of four practices for assessing student learning in their target class. Among the four assessment practices, two are widespread: on average across the OECD, 79% of teachers report that they frequently or always observe students and provide immediate feedback; and 77% of teachers report that they frequently or always administer their own assessment to students. Fewer teachers (58% on average across the OECD) report that they provide written feedback on student work in addition to a mark. Less than half of teachers across the OECD (41%) report that they let students evaluate their own progress, suggesting a smaller prevalence of formative assessment practices (Figure I.2.3) (See Box I.2.2 for an example of how teachers in Australia are guided to use different types of formative assessment methods in their practice). However, there are large cross-country variations in the frequency with which teachers assess student learning. Regardless of the assessment practice used, a greater proportion of teachers in Latin American and English-speaking countries generally report assessing students frequently, compared to teachers in other areas of the globe (Table I.2.6).

Overall, more teachers tend to report frequently using student assessment practices in 2018 than in 2013 (Table I.2.9). In particular, teachers resort more frequently to the assessment practice consisting of providing written feedback on student work in addition to a mark (Figure I.2.4). This holds true for 19 of the 32 countries and economies with comparable TALIS data in 2013 and 2018. The largest increases (more than 10 percentage points) in the share of teachers frequently using this assessment practice are observed in Brazil, Finland, Iceland, Korea and Spain. Portugal is the only country showing a decline in the share of teachers who frequently provide written feedback on student work in addition to a mark. TALIS data also suggest that, in 21 out of 32 countries and economies with comparable data, more teachers report administering their own assessment in 2018 than they did in 2013. But these changes need to be interpreted with caution as, in 2013, teachers were asked about the frequency with which they "develop and administer" their own assessment, which suggests more engagement

in the assessment practice from the teacher than what was asked in 2018 (how often they "administer" their own assessment). Despite the more lenient wording used in 2018, two countries actually show a significant decline in the administration of teachers' own assessments: Chile and the Czech Republic. However, in 2018 in Chile, 89% of teachers report administering their own assessment often, which is still a much higher share than the OECD average of 77%.

Figure I.2.3 **Teachers' assessment practices**

Percentage of lower secondary teachers who "frequently" or "always" use the following assessment methods in their class[1] (OECD average-31)



1. These data refer to a randomly chosen class teachers currently teach from their weekly timetable.
Values are ranked in descending order of the use of teachers' assessment practices.
Source: OECD, TALIS 2018 Database, Table I.2.6.
StatLink http://dx.doi.org/10.1787/888933931943

Box I.2.2 **Teachers' Guide to Assessment in Australia**

The Teachers' Guide to Assessment is a best-practice reference handbook for teachers in the Australian Capital Territory that focuses on the idea of learning-oriented assessments. The guide stands out because of its relevance, alignment to the Australian curriculum and evidence-based grounding. According to the Australian National Frameworks for Schools and Teachers, assessments are inherently linked to a teacher's responsibility to provide feedback in addition to reporting on student learning. In addition, the Australian curriculum requires teachers to assess their students based on a variety of tasks that are completed over a specific period of time. The latest version of the guide (2016) reflects the contemporary focus in Australian education. It stresses new methods of assessment that have emerged as a response to the need to develop ways to assess 21st century competencies.

Thus, the guide advocates three tenets of assessment: thinking, metrics and technologies. For thinking, the document underlines the purpose and perspective of assessments to enhance student learning and improve students' selfawareness about their areas of growth. The term metrics refers here to assessing a broader set of skills and competencies of students beyond traditional subject knowledge. Finally, technologies refer to the potential of conducting personalised, interactive and intelligent ways of assessing and providing feedback using ICT. As an example, the guide suggests that teachers think of their students' progress and learning as a whole by conducting collaborative assessments (i.e. by discussing and comparing student work with other teachers). Including sections such as the principles of quality and useful feedback or of self-assessment, the document outlines different types of formative assessments, examples of what each assessment could look like and the rationale for using each of these formats. The wide range of assessment formats also allows teachers to assess the learning processes of students with diverse learning styles and areas of strength.

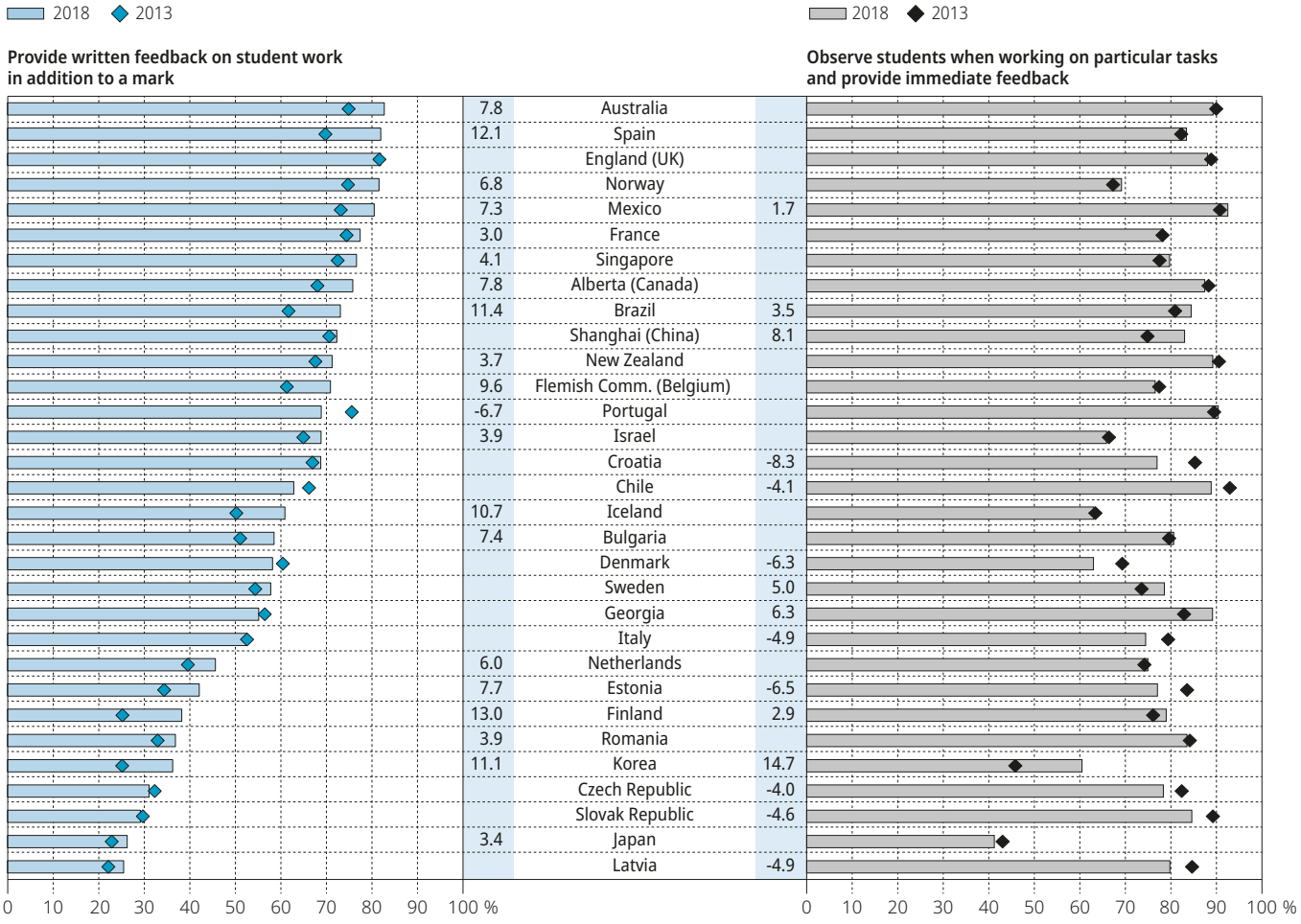
Source: ACT Government: Education (2016[44]), *Teachers' Guide to Assessment*, www.education.act.gov.au/__data/assets/pdf_file/0011/297182/Teachers-Guide-To-Assessment.pdf.

Simultaneously, there is mixed evidence regarding a global trend for the two other assessment practices that can be considered, in essence, more formative. With regard to observing students when they work on particular tasks and providing immediate feedback, eight countries and economies show a decline in this practice, and seven countries show a rise (particularly sharp in Korea) (Figure I.2.4). Concerning actively involving students in their self-assessment ("I let students evaluate their own progress"), seven countries and economies show a decline in this practice (particularly sharp in Chile), while ten others show a rise (particularly sharp in Australia, Finland, Korea, the Netherlands and Norway) (Table I.2.9).

TALIS findings on changes in teachers' assessment practices complement those established from four cycles of the Trends in International Mathematics and Science Study (TIMSS) of the International Association for the Evaluation of Educational Achievement (IEA). TIMSS data from 1995 to 2007 revealed a slight tendency towards increased use of assessment practices, such as using a quiz or a test, in the 8th grade on an international scale, comprising 18 education systems (Rožman and Klieme, 2017[45]). TALIS results from 2013 and 2018 also support the notion of a continued slight tendency towards increased use of some kind of assessment, especially of written assessment, but does not support the notion of an increased use of immediate feedback or student self-assessment.

Figure I.2.4 **Change in teachers' assessment practices from 2013 to 2018**

Percentage of lower secondary teachers who report that they "frequently" or "always" use the following methods of assessing student learning in their class[1]



1. These data are reported by teachers and refer to a randomly chosen class they currently teach from their weekly timetable.

Note: Only countries and economies with available data for 2013 and 2018 are shown.

Statistically significant changes between 2013 and 2018 (TALIS 2018 - TALIS 2013) are found next to the category and the country/economy name (see Annex B).

Countries and economies are ranked in descending order of the percentage of lower secondary teachers reporting having provided written feedback on student work in addition to a mark in 2018.

Source: OECD, TALIS 2018 Database, Table I.2.9.

StatLink http://dx.doi.org/10.1787/888933931962

Teachers' use of classroom time

All around the world, students enrolled in compulsory lower secondary education spend a considerable amount of time in the classroom – 913 hours per year on average in the OECD countries – see Table D1.1 in OECD (2018[46]). TALIS data makes it possible to know, based on teachers' reports, how much of actual teaching and learning takes place during these lessons. More specifically, TALIS asks teachers to report how much time they spend during a lesson with their target class on three types of activities: actual teaching and learning; administrative tasks (e.g. recording attendance, handing out school information or forms); and keeping order in the classroom (maintaining discipline). On average across the OECD, teachers report spending 78% of classroom time on actual teaching and learning, with the remaining classroom time spent on keeping order (13%) and administrative tasks (8%). Teachers report that they spend at least 85% of classroom time on actual teaching and learning in Estonia, the Russian Federation, Shanghai (China) and Viet Nam, but only 65% to 70% in Brazil, Chile, Saudi Arabia and South Africa (Figure I.2.5, Table I.2.10).

The time teachers spend on actual teaching and learning during a lesson is positively related to teacher experience and age (Figure I.2.5, Table I.2.13). On average across OECD countries and economies and in almost all countries and economies participating in TALIS, teachers with more than five years of teaching experience spend more time on actual teaching and learning (the equivalent of 3 additional minutes per 60-minute lesson on average across OECD countries and economies) than teachers with five years of teaching experience or less. A significant difference in favour of more experienced teachers is found in almost all countries and economies participating in TALIS, with the exception of Portugal, Saudi Arabia, South Africa and Viet Nam. Similarly, teachers aged 50 or above, often with more than 20 years of teaching experience, spend the equivalent of almost 5 more minutes on actual teaching and learning per 60-minute lesson than teachers aged 30 or below. These differences likely result from the fact that teaching experience but also, potentially, maturity and/or other work experiences lead more senior teachers to adopt efficient classroom routines that reduce the amount of time they need to spend on administrative tasks or on keeping order in the classroom. But these gaps also partly stem from the fact that senior teachers tend to work in less challenging schools, where it is easier to teach – see Chapter 4 and Table I.4.32, as well as Chapter 3 of *Effective Teacher Policies* (OECD, 2018[47]).

There are also important variations across schools in actual time spent on teaching and learning. On average across the OECD, teachers working in privately managed schools report spending significantly more time on actual teaching and learning than their counterparts in publicly managed schools. Classroom time spent on actual teaching and learning is also significantly lower in schools with high concentrations of students from socio-economically disadvantaged homes, students with special needs and immigrant students (Figure I.2.5, Table I.2.14). Differences in teaching time between schools with low and high concentrations of students from socio-economically disadvantaged homes are particularly pronounced in Alberta (Canada), Australia, Austria, England (United Kingdom), the Flemish Community of Belgium, France, Saudi Arabia, South Africa and the United States, where they exceed 5 percentage points, the equivalent of 3 minutes of actual teaching and learning per 60-minute hour.

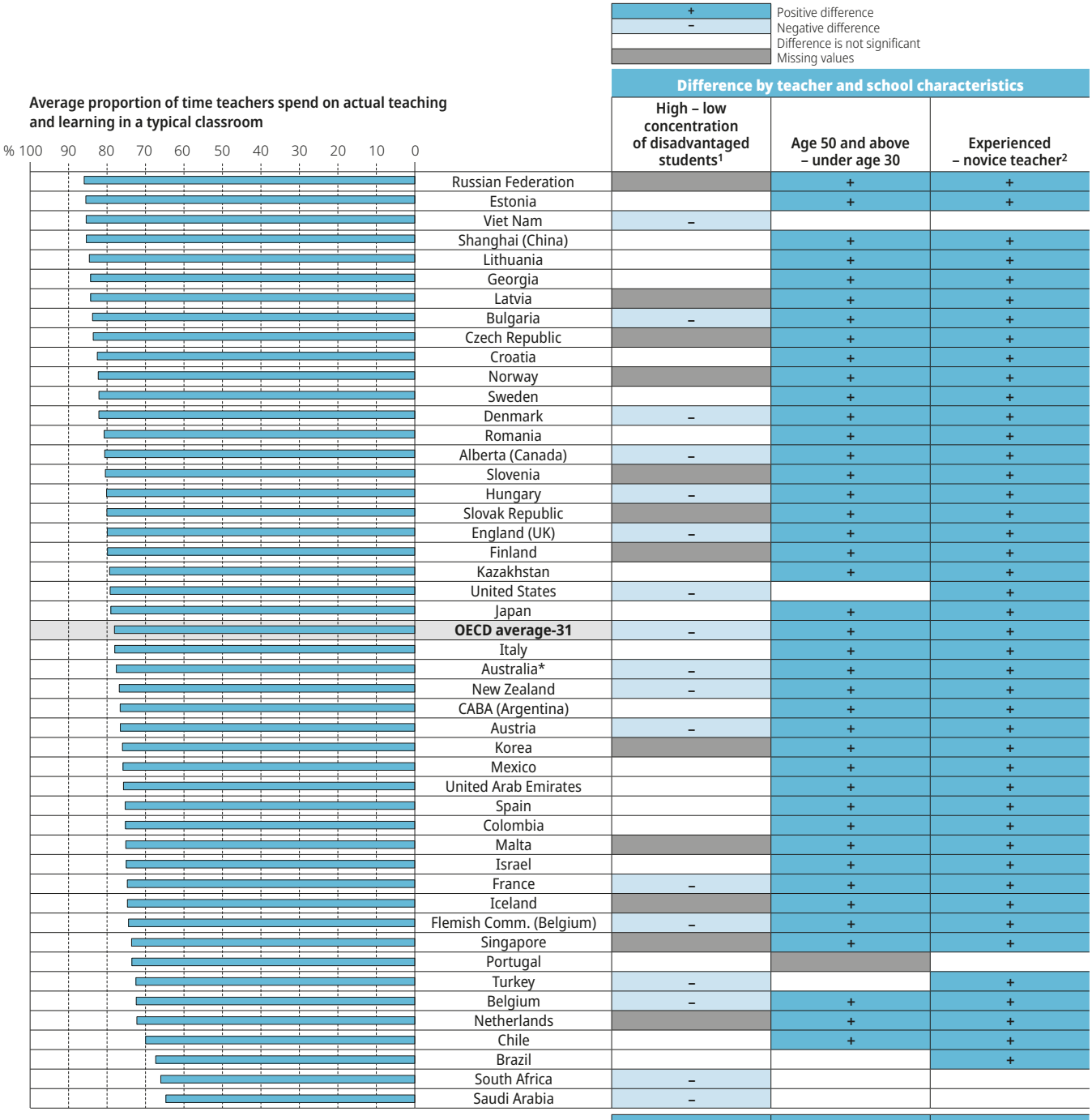
To examine the assumption that experienced teachers spend more time on actual teaching and learning partly because they teach less challenging classrooms, regression analyses were conducted. The proportion of class time spent on actual teaching and learning is regressed on teachers' years of teaching experience, controlling for other teachers' characteristics (gender, age, employment status). As expected, a significant positive relationship between teachers' experience and time spent on actual teaching and learning is found in many countries and economies (26 in total) (Table I.2.15). In a second step, classroom characteristics (class size, concentrations of academically gifted students, low achievers and special needs students) are introduced in the regression model (Table I.2.16). Results of this second regression show that the relation between teaching experience and time spent on actual learning and teaching is still significantly positive in 25 countries (as well as on average cross-nationally) but that the strength of the relationship diminishes in almost all countries (the size of the regression coefficient is lower) (Table I.2.16). This suggests that part of the positive relationship between teaching experience and time spent on actual teaching and learning is attributable to the characteristics of the students teachers teach in their classroom.

TALIS asked teachers about the distribution of their classroom time in the first two cycles of TALIS, allowing trends comparison since 2008. Classroom time that teachers report spending on actual teaching and learning during a typical lesson has decreased in 12 of the 20 countries and economies with comparable data from 2008 to 2018, with the largest reductions (3 percentage points or more or the equivalent of 2 minutes or more per 60-minute hour) observed for Bulgaria, the Flemish Community of Belgium, Hungary and Turkey. A significant increase is found in only 5 countries: Australia, Italy, Lithuania, Mexico and Norway. For these countries, the change seems to be concentrated during the period from 2008 to 2013, as no significant change is observed between 2013 and 2018 (Figure I.2.6, Table I.2.17).

The most substantial decline in actual teaching time since 2013 is observed in New Zealand (4 percentage points, or the equivalent of 3 minutes or more per 60-minute hour). The loss in reported actual teaching time is directly concurrent with an increase in classroom time spent on both keeping order in the classroom (Table I.2.18) and carrying out administrative tasks (Table I.2.19).

Figure I.2.5 **Time spent on actual teaching and learning, by teacher and school characteristics**

Results based on responses of lower secondary teachers and principals



	Difference by teacher and school characteristics		
	High – low concentration of disadvantaged students[1]	Age 50 and above – under age 30	Experienced – novice teacher[2]
Russian Federation		+	+
Estonia		+	+
Viet Nam	–		
Shanghai (China)		+	+
Lithuania		+	+
Georgia		+	+
Latvia		+	+
Bulgaria	–	+	+
Czech Republic		+	+
Croatia		+	+
Norway		+	+
Sweden		+	+
Denmark	–	+	+
Romania		+	+
Alberta (Canada)	–	+	+
Slovenia		+	+
Hungary	–	+	+
Slovak Republic		+	+
England (UK)	–	+	+
Finland		+	+
Kazakhstan		+	+
United States	–		+
Japan		+	+
OECD average-31	–	+	+
Italy		+	+
Australia*	–	+	+
New Zealand	–	+	+
CABA (Argentina)		+	+
Austria	–	+	+
Korea		+	+
Mexico		+	+
United Arab Emirates		+	+
Spain		+	+
Colombia		+	+
Malta		+	+
Israel		+	+
France	–	+	+
Iceland		+	+
Flemish Comm. (Belgium)	–	+	+
Singapore		+	+
Portugal			
Turkey	–		+
Belgium	–	+	+
Netherlands		+	+
Chile		+	+
Brazil			+
South Africa	–		
Saudi Arabia	–		
Education systems with a positive difference	**0**	**40**	**43**
Education systems with no difference	**19**	**6**	**4**
Education systems with negative difference	**16**	**0**	**0**

* For this country, estimates for sub-groups and estimated differences between sub-groups need to be interpreted with great care. See Annex A for more information.

1. High concentration of disadvantaged students refer to schools with more than 30% of students from socio-economically disadvantaged homes.

2. Experienced teachers are teachers with more than 5 years of teaching experience.

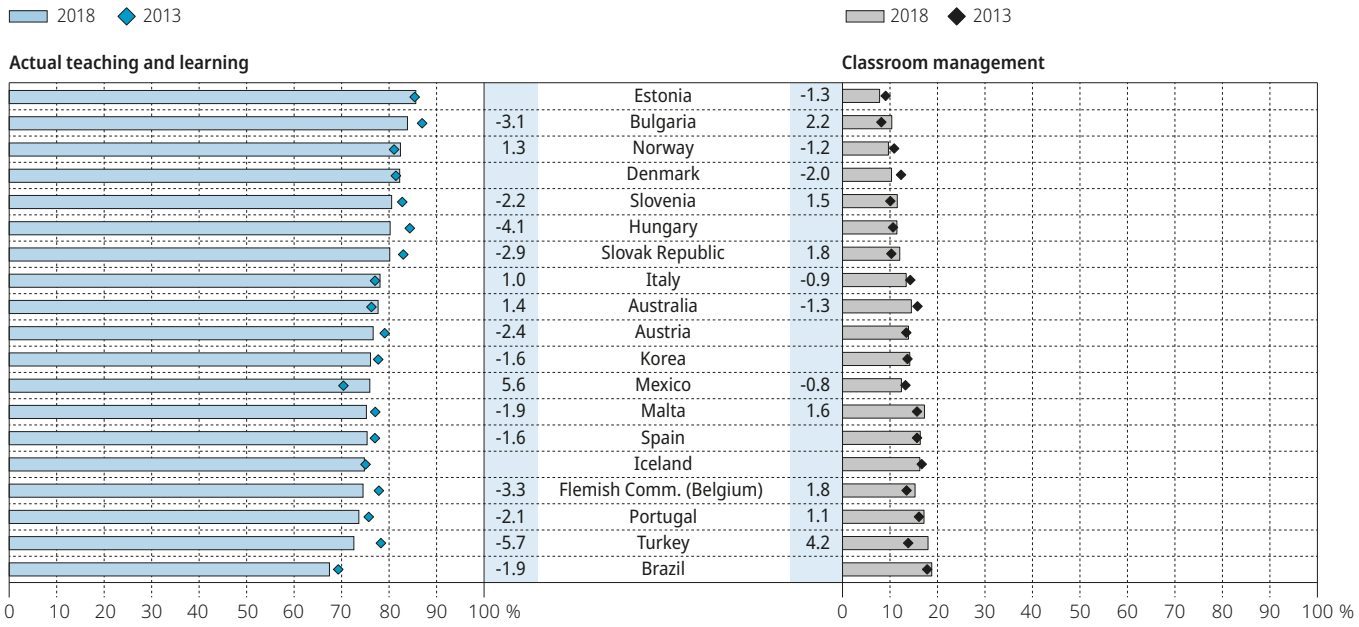
Countries and economies are ranked in descending order of the average proportion of time teachers report on spending on actual learning and teaching.

Source: OECD, TALIS 2018 Database, Tables I.2.13 and I.2.14.

StatLink http://dx.doi.org/10.1787/888933931981

Figure I.2.6 **Change in the use of class time from 2008 to 2018**

Percentage of time spent on various activities in a typical lesson as reported by lower secondary teachers[1, 2]



1. These data refer to a randomly chosen class teachers currently teach from their weekly timetable.
2. The sum of time spent in an average lesson may not add up to 100% for each TALIS cycle because some answers that did not add up to 100% were accepted.

Notes: Only countries and economies with available data for 2008 and 2018 are shown.
Statistically significant changes between 2008 and 2018 (TALIS 2018 - TALIS 2013) are found next to the category and the country/economy name (see Annex B).
Countries and economies are ranked in descending order of the percentage of time teachers spent on actual teaching and learning in 2018.
Source: OECD, TALIS 2018 Database, Tables I.2.17 and I.2.18.
StatLink http://dx.doi.org/10.1787/888933932000

Box I.2.3 **Teachers' use of classroom time and classroom practices from primary to upper secondary education**

Teachers' time use during a typical lesson

Teachers spend more and more classroom time on actual teaching and learning as the level of education they teach increases (Tables I.2.10, I.2.11 and I.2.12). In most of the 13 countries and economies with available data for ISCED 1 and 2, the typical primary teacher spends less than 80% of classroom time on actual teaching and learning. In 6 countries and economies, teachers at the primary level spend less time on actual teaching and learning than teachers at the lower secondary level. In the other countries, actual teaching and learning time is similar across both education levels, except in the Flemish Community of Belgium (1.9 percentage points) (Table I.2.11). A further increase in time spent on actual teaching and learning is observed when moving to the upper secondary level in 7 out of 11 countries and economies with available data for ISCED 2 and 3 (Table I.2.12).

The increase in teaching time by level of education is concurrent to the decrease in time for keeping order in the classroom. In 8 countries and economies, primary teachers spend more time on keeping order in the classroom than lower secondary teachers (Table I.2.11), with the largest difference in Denmark (6.6 percentage points). The same tendency is observed when comparing teachers' use of classroom time at the upper secondary level with that at the lower secondary level, which is marked by a significant decrease in 9 out of 11 countries and economies with available data for ISCED 2 and 3 (Table I.2.12). The decrease in time for keeping order in the classroom as the level of education rises may stem from the fact that the attention span of children and adolescents increases with age, saving time on keeping order in the classroom that can then be spent on actual teaching and learning (Case, 1985[48]).

The time teachers spend on administrative tasks is less than 10% of classroom time in most of the 13 countries and economies with available data for ISCED 1 and 2 and most of the 11 countries and economies with available data for ISCED 2 and 3 and within a country tends to be similar across all three levels of education (Tables I.2.10, I.2.11 and I.2.12). Primary teachers spend slightly less time on administrative tasks than lower secondary teachers (at most 1.4 percentage points in France and Korea), and the differences between upper secondary and lower secondary teachers are even smaller. In the few countries where differences between the time spent on administrative tasks by upper and lower secondary teachers are significant, they go in different directions (Tables I.2.11 and I.2.12).

Teaching practices

As the level of education increases (i.e. moving from primary up to upper secondary education), teachers tend to use classroom management practices less and less often, and this tendency is concurrent to a decrease in time spent on keeping order in the classroom. For instance, in 13 countries and economies with available data for ISCED 1 and 2, the percentage of teachers reporting that they frequently or always tell students to follow classroom rules is higher among primary teachers (in most countries above 80%) than among lower secondary teachers (in most countries below 80%), with the largest differences in Denmark (20 percentage points) and Japan (13 percentage points) (Table I.2.2). When moving on to the upper secondary level, in all countries and economies with available data for ISCED 2 and 3, teachers use classroom management practices less often than their peers at the lower secondary level. The largest differences are found in Denmark and Sweden, with a difference of more than 15 percentage points for most of the classroom management practices (Table I.2.3).

Teaching practices pertaining to clarity of instruction are the most commonly used across levels of education, but no unique pattern arises in the use of different practices across levels of education. For example, in 9 out of 13 countries with available data for ISCED 1 and 2, teachers tend to present a summary of recently learned content as frequently at the primary level as at the lower secondary level, while primary teachers in four countries tend to set goals more often at the beginning of instruction than lower secondary teachers (Table I.2.2). In the 11 countries with available data for ISCED 2 and 3, upper secondary teachers tend to implement strategies for delivering clear instruction similar to those implemented by lower secondary teachers (Table I.2.3).

Primary teachers tend to use cognitive activation techniques more often than lower secondary teachers. In 8 to 9 countries of the 13 countries and economies with available data for ISCED 1 and 2 (depending on the practice considered), primary teachers tend to use the following practices more often: having students work in small groups to come up with a joint solution to a problem or task; and asking students to decide on their own procedures for solving complex tasks (Table I.2.2). With regard to upper secondary teachers, in the 11 countries and economies with available data for ISCED 2 and 3, they tend to use cognitive activation practices as frequently as lower secondary teachers (Table I.2.3).

Teaching practices pertaining to "enhanced activities", such as giving students projects that require at least one week to complete or letting students use ICT for projects or class work, are less commonly used than other teaching practices (with only 29% of teachers frequently giving week-long projects and 53% of teachers frequently letting students use ICT for projects or class work at the lower secondary level, on average in the OECD) (Table I.2.1). Primary teachers implement enhanced activities even less in 8 to 10 out of 13 countries and economies with available data for ISCED 1 and 2, depending on the practice considered (Table I.2.2). The largest difference (32 percentage points) in the use of ICT for projects or class work is found in Denmark, where 58% of primary teachers and 90% of lower secondary teachers let students use ICT, but these are both among the highest shares across countries. At upper secondary level, the use of ICT increases further in 8 out of 11 countries and economies with available data for ISCED 2 and 3, while differences in the frequency of giving students long-term projects between education levels vary greatly across countries (Table I.2.3).

Teacher self-efficacy

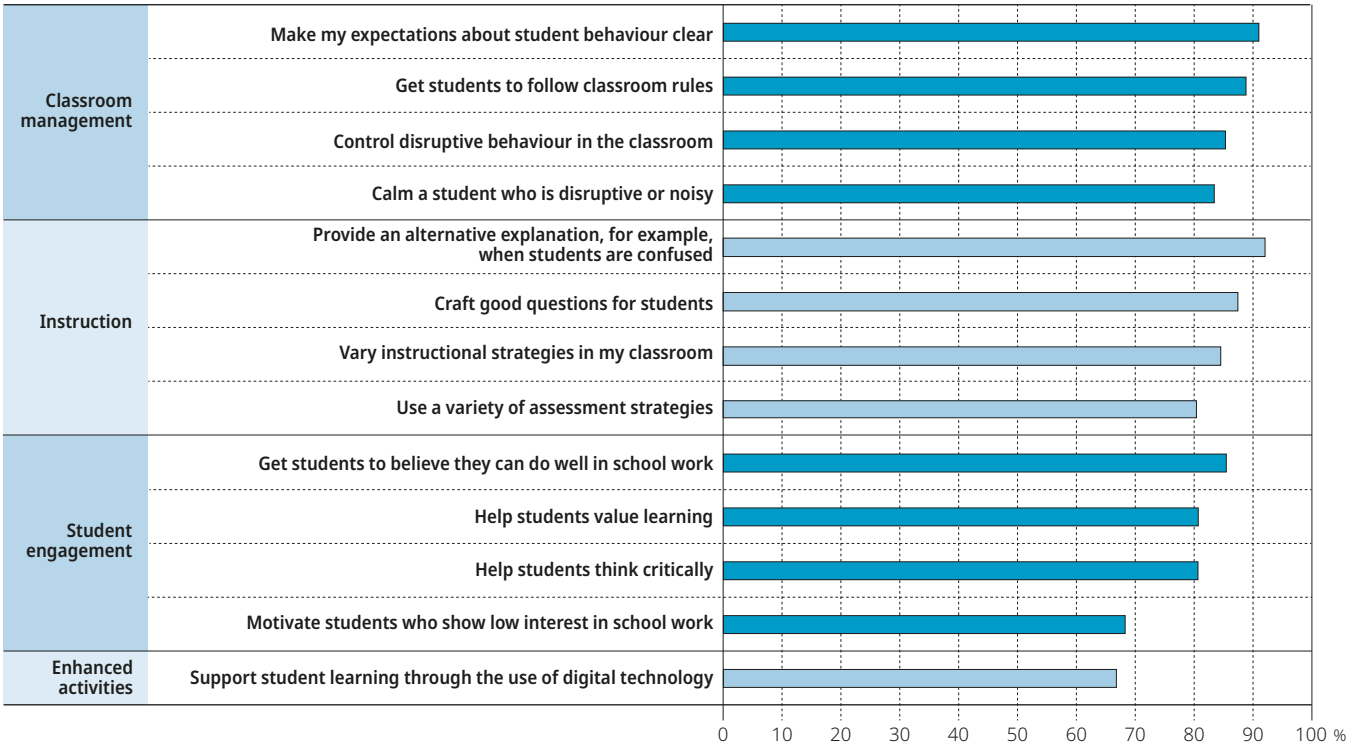
Today, the fields of teacher education and educational effectiveness are giving greater credence to the importance of teachers' self-confidence (Klassen et al., 2011[49]; Klassen and Tze, 2014[50]; Tschannen-Moran and Hoy, 2001[51]). Several factors may account for this increased attention. First, teacher self-efficacy is strongly associated with teachers' pedagogical practices and the quality of teachers' instruction (Holzberger, Philipp and Kunter, 2013[52]). Second, these teaching practices correlate, in turn, with student achievement and motivation, both of which are essential educational outcomes (Caprara et al., 2006[53]; Muijs and Reynolds, 2002[54]; Woolfolk Hoy and Davis, 2006[55]). Third, teachers with high self-efficacy show higher job satisfaction and commitment and are less likely to be affected by burnout, indicating the importance of the construct for their well-being (Avanzi et al., 2013[56]; Chesnut and Burley, 2015[57]; Klusmann et al., 2008[22]; Mostafa and Pál, 2018[58]; Skaalvik and Skaalvik, 2010[59]). Therefore, in addition to the factual indicators of teachers' classroom practice presented above (i.e. frequency of use of certain practices and time spent on various activities), TALIS also collects more subjective measures of teachers' perception of the quality of their own teaching.

In line with the assumption that teaching practices consist of several aspects, TALIS also considers teacher self-efficacy as multidimensional. TALIS inquires about the extent to which teachers can do a series of goal-oriented actions, asking them to mark one choice among four options: "not at all"; "to some extent"; "quite a bit"; "a lot". More specifically, TALIS distinguishes three core aspects of teacher self-efficacy: classroom management; instruction; and student engagement.

Teacher self-efficacy in classroom management refers to teachers' beliefs about their ability to establish an orderly learning environment and, therefore, effectively manage disruptive student behaviour (Brouwers and Tomic, 2000[60]). On average across the OECD, 83% to 91% of teachers report high levels of self-efficacy in classroom management: calming a student who is disruptive (83%); controlling disruptive behaviour in the classroom (85%); getting students to follow classroom rules (89%); and making their expectations about student behaviour clear (91%) (Figure I.2.7, Table I.2.20). However, in some countries and economies participating in TALIS, teachers report lower levels of efficacy in 2018 than in 2013 in at least two of the four different classroom management practices (Table I.2.23). These are Chile, the Flemish Community of Belgium, Finland, France, New Zealand, Norway, Romania, the Slovak Republic and Sweden. This trend, observed in some of the countries and economies participating in TALIS, is to be compared with the upward trend observed in the time spent on managing the classroom and, concomitantly, the downward trend in the time spent on actual teaching and learning in some of these countries. Teachers spend more time on classroom management, but they also feel less capable of doing this efficiently. Indeed, there are small but negative system-level correlations between the change in classroom management time and the change in self-efficacy in teaching (the linear correlation coefficient ranges from -0.27 to -0.40, depending on the aspect of self-efficacy in classroom management examined). In contrast, some other countries and economies show a positive change in the reported self-efficacy of teachers in classroom management between 2013 and 2018. These include the Czech Republic, Estonia, Georgia, Japan, Korea, Mexico, the Netherlands, Portugal and Singapore. For four of these countries – Estonia, Georgia, Korea and Portugal – this may be a consequence of demographic changes in the teacher workforce, as these countries have seen an ageing of their teacher population since 2013 (see Chapter 3 for more information) and experienced teachers tend to feel more confident in their classroom management skills.

Figure I.2.7 **Teachers' self-efficacy**

Percentage of lower secondary teachers who feel they can do the following "quite a bit" or "a lot" (OECD average-31)



Values are ranked in descending order of teachers' self-efficacy.

Source: OECD, TALIS 2018 Database, Table I.2.20.

StatLink http://dx.doi.org/10.1787/888933932019

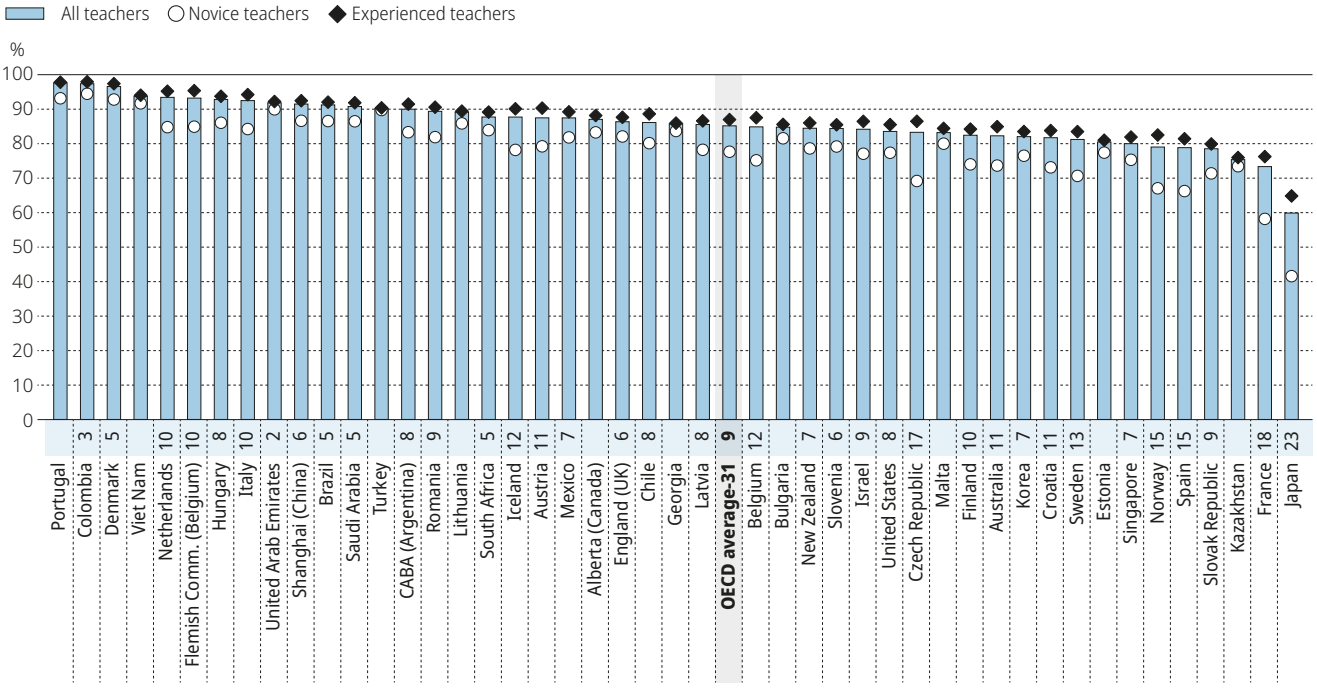
Teacher self-efficacy in instruction refers to teachers' beliefs about whether they feel confident in using a wide range of teaching practices and assessment strategies (OECD, 2014, pp. 182-185[61]). On average across the OECD, around 90% of teachers report that they feel able to provide an alternative explanation (e.g. when students are confused) and that they can craft good questions for their students. Fewer teachers (85%) feel that they can vary instructional strategies in their classroom, and even fewer (80%) feel that they can use a variety of assessment strategies (Table I.2.20). It seems that teachers have gained confidence in instruction, as there is an increase between 2013 and 2018 in the percentage of teachers who feel they can provide an alternative explanation in the event of confusion among students, in about a third of the countries and economies with comparable data (Table I.2.23). But a worrying decline is also seen in France[5] and the Slovak Republic (10 percentage points).

Teacher self-efficacy in student engagement addresses teachers' beliefs about the emotional and cognitive support they can give their students and about their ability to motivate student learning (OECD, 2014, pp. 182-185[61]). Among the three core factors of self-efficacy, teachers feel least confident in motivating student learning. On average across the OECD, only 68% of teachers report that they can motivate students who show low interest in school work, suggesting that teachers particularly struggle when they want to turn around a given situation. However, 81% of teachers feel that they can help students think critically and help students to value learning, and 86% feel that they can get students to believe they can do well in their school work (Table I.2.20).

On average, teachers report high levels of self-efficacy in the different domains of teaching, but novice teachers (those with five years of experience or less) are less likely to feel confident in their teaching skills than their more experienced colleagues. The practices for which the differences in self-efficacy between experienced and novice teachers are most pronounced pertain to classroom management and the use of a variety of practices.[6] On average across the OECD, 78% of novice teachers feel that they can control disruptive behaviour in their classroom, while 87% of experienced teachers report that they can do so.

Figure I.2.8 **Controlling disruptive behaviour, by teachers' teaching experience**

Percentage of lower secondary teachers who feel "quite a bit" or "a lot" that they can control disruptive behaviour in the classroom



Note: Statistically significant differences between experienced teachers (with more than 5 years of experience) and novice teachers (with less than or equal to 5 years of experience) is shown next to the country/economy name (see Annex B).

Countries and economies are ranked in descending order of the percentage of teachers who feel they can control disruptive behaviour in the classroom "quite a bit" or "a lot".

Source: OECD, TALIS 2018 Database, Table I.2.20.

StatLink http://dx.doi.org/10.1787/888933932038

The largest differences (15 or more percentage points) between novice and more experienced teachers in this self-reported capacity are found in the Czech Republic, France, Japan, Norway and Spain (Figure I.2.8, Table I.2.20). More experienced teachers also feel more confident in their ability to vary their assessment strategies. This holds true for the majority of

countries and economies participating in TALIS and, in particular, in Austria, Japan, Korea, the Netherlands and Viet Nam, where the difference between experienced and novice teachers is greater than 10 percentage points. In accordance with previous research, this supports the finding that experience more specifically helps teachers to develop skills and routines to manage their classroom better and to try out various strategies of teaching and assessing students (Chetty, Friedman and Rockoff, 2014[62]; Kane, Rockoff and Staiger, 2008[63]).

The one aspect of teaching in which novice teachers globally feel slightly more confident than their more experienced peers is supporting student learning using digital technology. This is likely related to a stronger command of ICT among novice teachers. Differences to the advantage of novice teachers are particularly marked in the Czech Republic, Israel, Japan, the Netherlands, New Zealand and Norway (greater than 5 percentage points). The opposite pattern, with experienced teachers reporting higher levels of self-efficacy than novice teachers, is found in England (United Kingdom), Shanghai (China), Turkey, the United States and Viet Nam (Table I.2.20).

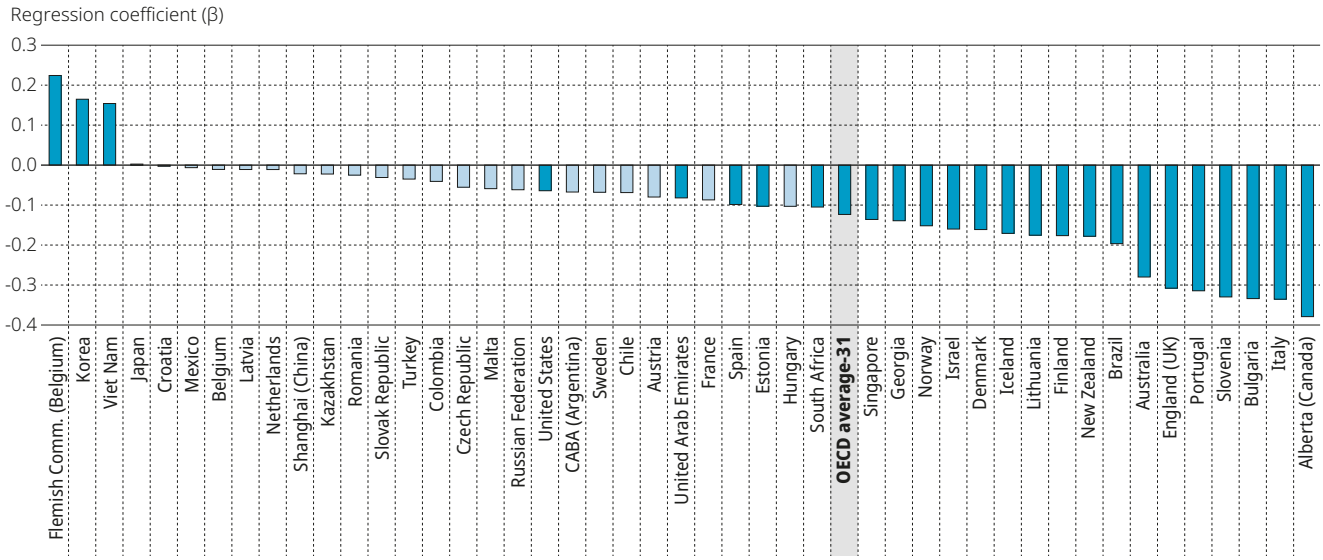
Relationship between teaching, classroom and teacher characteristics

Teachers tend to adapt their teaching to the students they teach (Le Donné, Fraser and Bousquet, 2016[8]). TALIS data make it possible to investigate how teachers modify their strategies depending on the characteristics of the class they teach. This section now seeks to analyse which classroom factors can enable the implementation of effective teaching processes by teachers in their classroom. This is a crucial policy endeavour, since it can guide the investment into those areas that are more likely to affect teaching practices. To this end, three indicators of quality teaching processes – the frequency with which teachers report using cognitive activation practices, the total class time teachers report spending on actual teaching and learning and teachers' reported level of self-efficacy – are analysed in relation to classroom size and composition, through the means of linear regressions.

Analyses show that, on average across OECD countries and economies, when teachers teach larger classes, they tend to spend less classroom time on actual teaching and learning (Figure I.2.9, Table I.2.16). This also holds true for about half of the countries and economies participating in TALIS, with the strongest negative relationships found in Alberta (Canada), Bulgaria, Italy and Slovenia.

Figure I.2.9 **Relationship between class time spent on actual teaching and learning and class size**

Change in the average proportion of time spent on teaching and learning associated with the number of students in the target class[1, 2]



1. Results of linear regression based on responses of lower secondary teachers.

2. Controlling for the following classroom characteristics: share of academically gifted students, share of low academic achievers and share of students with special needs; and for the following teacher characteristics: gender, age, years of experience as a teacher and working full-time.

Note: Statistically significant coefficients are marked in a darker tone (see Annex B).

Countries and economies are ranked in descending order of the change in the average proportion of time spent on teaching and learning associated with the number of students in the target class.

Source: OECD, TALIS 2018 Database, Table I.2.16.

StatLink http://dx.doi.org/10.1787/888933932057

All other classroom and teacher characteristics being equal, teachers teaching larger classes may need to spend more time on recording attendance or handing out school forms (as a simple result of a higher number of attendees) but also on keeping order in the classroom. Yet, the negative relationship that is found in many countries between class size and actual teaching and learning time does not hold for other indicators of teaching processes and quality, such as for the use of cognitive activation practices (Table I.2.24) and teachers' reported self-efficacy in teaching (Table I.2.25).

Teachers' teaching practices also differ depending on the composition of the classroom they teach. In most countries and economies, when the share of gifted students in a classroom is larger and/or the proportion of low achievers is smaller, all three quality indicators of teaching processes examined (the use of cognitive activation practices; self-efficacy; and the time spent on actual teaching) tend to be more prevalent (Tables I.2.24, I.2.25 and I.2.16). In other words, when teachers view their students as "easy-to-teach", they also report spending more class time on actual teaching and learning, using cognitive activation practices more frequently and being more confident in their ability to teach.

Teachers working in a class with a higher share of special needs students tend to spend less time on actual teaching but do not feel less confident in their teaching nor do they use cognitive activation practices less frequently (Tables I.2.16, I.2.25 and I.2.26). This suggests that catering for students with special needs requires teachers to spend more time setting up the classroom for actual learning to happen, but it may also encourage teachers to use a wider range of activities and practices to stimulate every student's learning.

Box I.2.4 **Providing 21st century learning to all students through curriculum reform in Mexico**

The manner in which national curricula include and define 21st century skills and competencies is the first step towards systemically enabling teaching and learning practices that actually build these skills among students in classrooms. Mexico's New Education Model (*Nuevo Modelo Educativo*, NME) was introduced in 2016 as a major curriculum reform to foster a skills and competency-based learning experience for all students in primary and secondary education. The reform stands out as a product of the massive three-year public consultation process with key stakeholders in education. A local survey of school communities in Mexico showed that the concept of 21st century skills is still unknown among many educators. However, respondents showed a positive attitude and openness towards the inclusion of the new content encompassing 21st century competencies. The goal of the NME is to prepare holistic student graduates who are confident and self-aware critical thinkers, problem solvers, team players and leaders. Therefore, this curriculum reform is characterised by three aspects of learning: academic knowledge, social and personal development and curricular autonomy for schools. Each of the components is defined in great detail under the implementation plan. It outlines domain-wise and grade-specific key learning outcomes and assessment practices and suggests pedagogical methods to guide teachers and schools. The curriculum was piloted in almost 1 000 schools in Mexico during the 2017/18 academic year.

The Mexican government also identified the need to effectively support teachers and schools in order to make the NME goals actionable. Therefore, it identified the "Schools at the Centre" strategy to give coherence at the school level with the priorities of the NME reform. This includes providing pedagogical support in the form of grade and subject-aligned learning outcomes based on the new curriculum, increasing instructional time for specific activities and strengthening the role of School Technical Councils.

The implementation of the NME reflects a large-scale reform emerging from building a collective consensus with key stakeholders in education and its coherence with a clearly defined vision and objectives for education.

Source: Gobierno de México (n.d.[64]), *Nuevo Modelo Educativo [New Educational Model]*, www.gob.mx/nuevomodeloeducativo, (accessed 25 February 2019); Cárdenas, S. (2016[65]), *Curriculum reform and twenty-first century skills in Mexico: Are standards and teacher training materials aligned?*

Actually, the regression analyses presented above also shed light on the fact that the three examined indicators – time spent on actual teaching and learning, use of cognitive activation practices and self-efficacy – provide complementary information on the teaching and learning process that takes place in the classrooms. Analyses show that these measures are not related by a simple relationship but by a complex one. Yet, other investigations regarding indicators of teachers' approaches to classroom management, particularly the indicators of time spent on keeping order in the classroom and self-efficacy in this domain, are connected in a more simple manner. Indeed, in most countries and economies that participate in TALIS, there is a significant inverse relationship between self-efficacy in classroom management and class time spent on keeping order. In other words, the more teachers believe in their classroom management capabilities, the less class time they spend on keeping order (Table I.2.26).

Teachers also tend to teach differently depending on their personal characteristics and experience. Past teaching experience is actually the teacher characteristic that matters most when it comes to teaching strategies. After controlling for classroom composition, more experienced teachers tend to report higher self-efficacy (Table I.2.25) and more time spent on teaching in most countries and economies participating in TALIS (Table I.2.16). Except in Japan, female teachers also tend to report higher overall self-efficacy than male teachers. Interestingly, Japan is also the only TALIS country where the teaching profession is more male than female. Moreover, in around half of the countries and economies participating in TALIS, being a full-time teacher is associated with higher self-efficacy compared to those teaching part-time.

WHAT TEACHERS AND SCHOOL LEADERS DO OUTSIDE THE CLASSROOM TO GET READY FOR TEACHING

Given the amount of time available, the work of teachers and school leaders is composed of a multitude of often competing tasks. The way they use their working time is crucial for the quality of the teaching delivered in their classroom and school and for student learning. Indeed, teachers and school leaders always have to set priorities to balance their most important goals with the resources available to achieve them. The quality of teachers' teaching in their classroom is likely to depend on the quality of the planning and preparation of their lessons (Hargreaves, 1992[66]). Similarly, the quality of teachers' teaching hinges on the measures taken by school leaders to support teaching and learning in their school (OECD, 2016[67]; Orphanos and Orr, 2014[68]). Although indicators of such aspects of quality are relatively complex to build, it is possible to examine how much time teachers and school principals devote to these activities.

Planning, preparing and marking

TALIS asks teachers how many 60-minute hours they spend working in total and on various tasks during the most recent complete calendar week prior to the survey (including tasks that took place during weekends, evenings or other out-of-class hours. On average across the OECD, teachers (including full-time and part-time teachers) spend 38.8 hours per week on all the tasks related to their job in their surveyed school, of which 20.6 hours are devoted to teaching (Table I.2.27)[7]. In other words, teachers spend slightly more than half (53%) of their working time teaching classes and this share is very similar for teachers working full-time and for those working part-time hours.[8] But the share of teaching hours varies greatly across countries. The lowest shares (between 31% and 40% of total teacher working hours) are mainly observed in Eastern countries (Japan, Kazakhstan, Singapore and Viet Nam), but also in Norway, while the highest shares (between 72% and 78%) are found in Brazil, Chile,[9] Georgia, Saudi Arabia, South Africa and Turkey. These differences result from the way teachers' hours are regulated, which varies among countries as well as from the country-specific school culture among other factors – see Indicator D4 in *Education at a Glance* (OECD, 2018[46]). In Japan, while teachers spend a low share of their working time on teaching (32%), they are also highly engaged in extracurricular activities (13% of their working time, compared to 4% on average in the OECD), which actually involves teaching extra lessons in "school clubs" for the teachers. Similarly, yet to a lesser extent, teachers in Singapore engage in what is referred to as "co-curricular activities" (2.7 hours per week on average or the equivalent of 6% of their total working hours) and teach students important social-emotional competencies and other 21st century competencies through these activities.

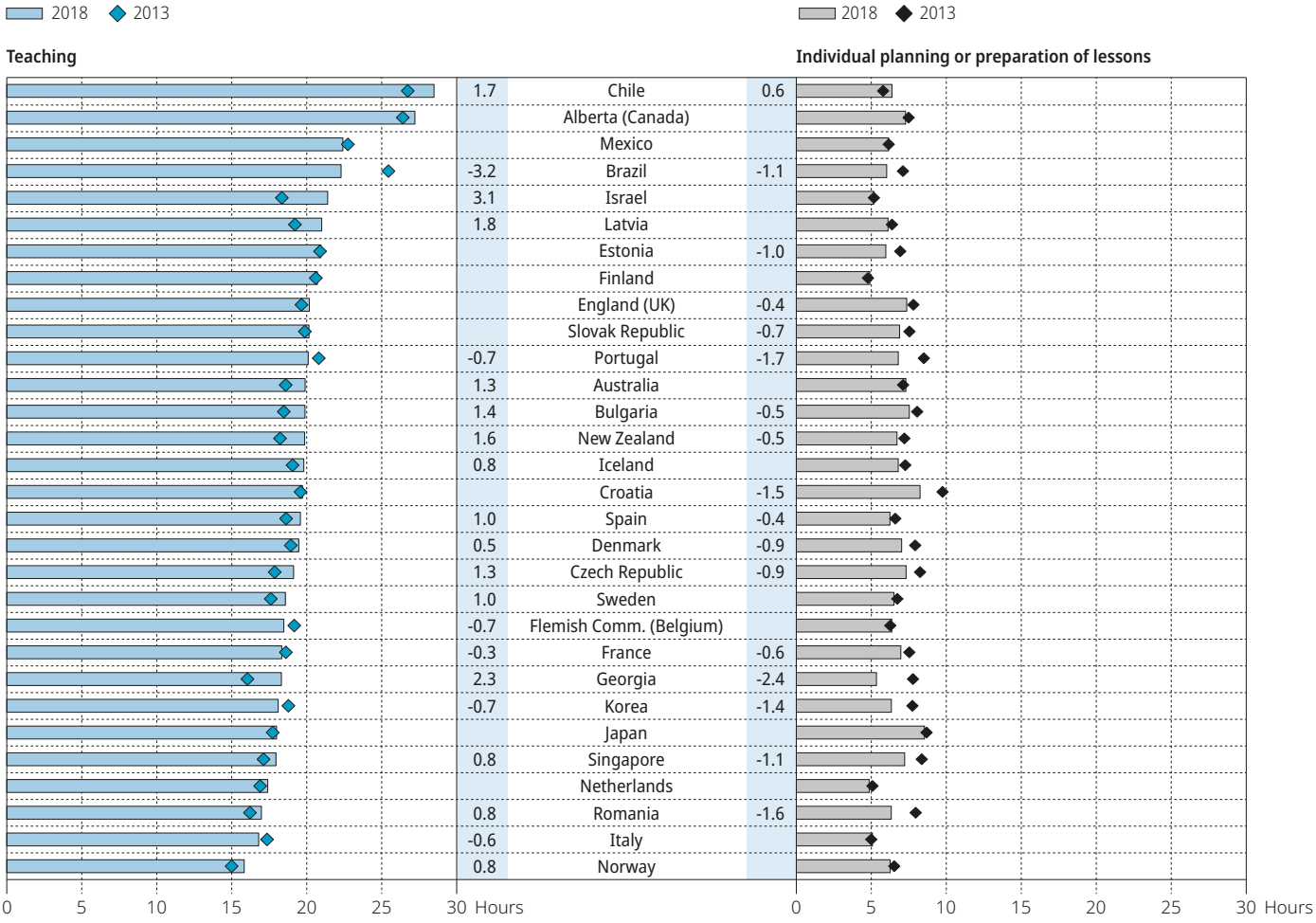
The next two most time-consuming activities in teachers' work are planning and lesson preparation (either at school or out of school) and marking and correcting student work. On average across the OECD, teachers spend 6.5 hours a week on planning and lesson preparation (the equivalent of 17% of their total working time) and 4.2 hours a week on marking and correcting (the equivalent of 11% of their total working time). The way teachers distribute their time across these two tasks also varies substantially across countries. For example, teachers in Ciudad Autónoma de Buenos Aires (hereafter CABA) (Argentina), Finland, Japan, the Netherlands, New Zealand, Sweden and Turkey dedicate the equivalent of 11% to 15% of their total time to preparing for classes, while teachers in Austria, Brazil, Bulgaria, Colombia, Croatia, Georgia, Malta, the Russian Federation, Slovenia and Viet Nam spend the equivalent of 20% to 23% of their total working time on preparation (Table I.2.27).

The way teachers distribute their time across teaching-related tasks has changed significantly over the past five years. Overall, teachers tend to report more teaching hours and less preparation time. In addition, teachers also report spending less time on general administrative work in 2018 than in 2013. Increases in teaching hours are observed in 16 of the 31 countries and economies with comparable data over time. However, five countries and economies show a small decline in the reported number of teaching hours: the Flemish Community of Belgium, France, Italy, Korea and Portugal, while Brazil shows the sharpest decrease in teaching time, three hours a week (Figure I.2.10, Table I.2.30).

Simultaneously, teachers tend to spend less time on planning and preparing for their lessons in 2018 than in 2013. A significant decline is found in 16 of the 32 countries and economies with comparable data. In contrast, a significant increase in preparation time is observed in Chile[10] and Shanghai (China). In Brazil, Croatia, Estonia, Georgia, Korea, Portugal, Romania and Singapore, teachers spend at least one hour less on planning and preparing their lessons in 2018 than they used to do in 2013. This is not a negligible shift given that, on average in the OECD, teachers spend six and a half hours on planning and preparing their lessons (Table I.2.27).[11]

Figure I.2.10 **Change in teachers' working hours from 2013 to 2018**

Average number of working hours (i.e. 60-minute hours) that lower secondary teachers spent on teaching and individual planning or preparation of lessons



Notes: Only countries and economies with available data for 2013 and 2018 are shown.

Statistically significant changes between 2013 and 2018 (TALIS 2018 - TALIS 2013) are found next to the category and the country/economy name (see Annex B).

Countries and economies are ranked in descending order of the average number of working hours teachers spent on teaching in 2018.

Source: OECD, TALIS 2018 Database, Table I.2.30.

StatLink http://dx.doi.org/10.1787/888933932076

This global reduction is worrisome, as past research has emphasised the importance of teacher preparation time for the quality of teaching and student learning. A study based on teacher interviews, conducted in Ontario (Canada), found that increases in preparation time had conferred important benefits on the quality of teachers' work in general and their instruction in particular (Hargreaves, 1992[66]). Preparation time can be seen as a way of providing teachers with working conditions designed to help them catch up with the diverse and changing requirements of their jobs. Preparation time is a promising lever to help teachers cope more effectively with these changes.

Some factors could make this downward tendency in preparation time less worrisome, for example, if teacher preparation has become more effective through the use of technology. More and more courses are prepared on computers and can more easily be updated, and there are more and more opportunities for sharing course materials and artefacts with other teachers through the Internet and social media. The declining trend may be less of a concern if the teacher population is ageing, as preparation time is typically longer for novice teachers than for more experienced teachers, or if more teachers are required to teach the same lesson several times to different classes. With regard to the role of the first factor, the seniorisation of the teacher population, Brazil and Portugal are the two countries that experience both one of the sharpest declines in lesson planning time and an increase in the share of teachers with more than 20 years of experience (see Table I.3.12 presented in Chapter 3).

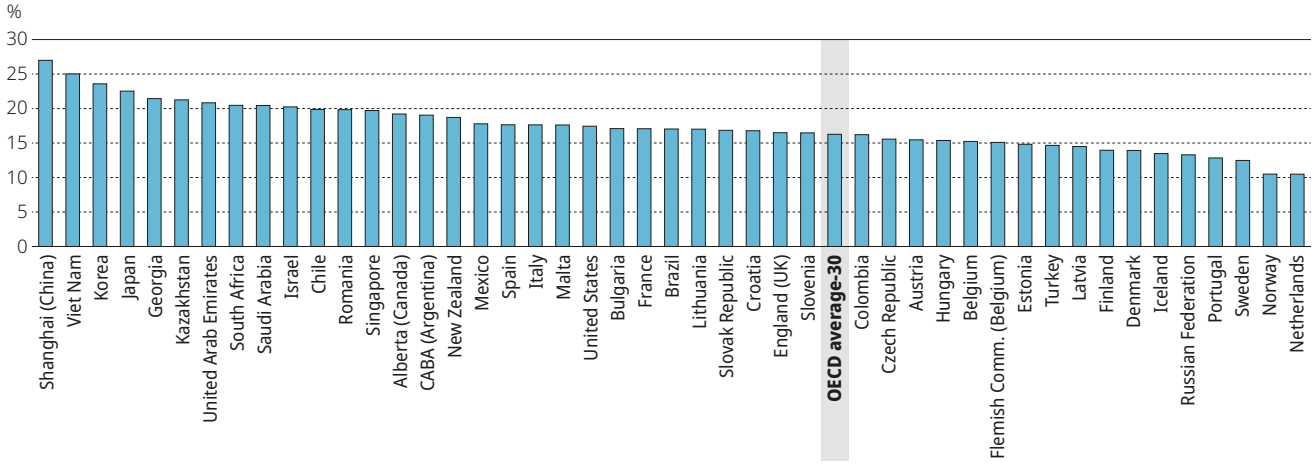
The role of the second factor – class duplication – is difficult to assess using TALIS data. Changes in class size and in student-teacher ratio could provide an indication of class reduction and potentially of class duplication for teachers, assuming that the size of the teacher workforce has remained stable. Among the countries that experienced the sharpest decline in teachers' preparation time, Croatia, Korea and Singapore also experienced a decline in both class size and student-teacher ratio (see Tables I.3.77 and I.3.79 presented in Chapter 3), which could, possibly, further explain the trend of reduced preparation time.

Time spent by school leaders on curriculum and teaching-related tasks

How do principals support their teachers in the core substance of their teaching tasks? TALIS asks school principals about the proportion of time they spend on various activities throughout the school year in their role as principal. Among the seven activities listed in the principal questionnaire, one is closely related to supporting teaching in their school: "curriculum and teaching-related tasks and meetings" (Figure I.2.11, Table I.2.31). This activity typically encompasses developing a school curriculum, teaching, observing their teachers' classes, mentoring teachers, designing and organising professional development activities for teachers or being involved in student evaluation. It has been identified as a key component of instructional leadership of school principals (OECD, 2016[67]). On average across the OECD, principals report spending 16% of their working time on this type of activity. This makes it the third most time-consuming task of principals, after administrative tasks and meetings[12] (30% of principals' working time) and leadership tasks and meetings[13] (21%).

Figure I.2.11 **Time spent by principals on curriculum and teaching**

Average proportion of time lower secondary principals report spending on curriculum and teaching-related tasks and meetings[1]



1. Including developing curriculum, teaching, classroom observations, student evaluation, mentoring teachers, teacher professional development.

Countries and economies are ranked in descending order of the average proportion of time lower secondary principals report spending on curriculum and teaching-related tasks and meetings in 2018.

Source: OECD, TALIS 2018 Database, Table I.2.31.

StatLink http://dx.doi.org/10.1787/888933932095

Box I.2.5 **Working time of teachers and principals from primary to upper secondary education**

Teachers' use of time during a typical working week

The total working time teachers actually spend on teaching during a typical working week decreases gradually with the level of education they teach. In 12 out of 13 countries and economies with available data for ISCED 1 and 2, teachers at the primary level spend more hours a week on teaching than their peers at the lower secondary level, with the largest differences in CABA (Argentina), France and Japan (more than 5 hours per week) (Table I.2.28). A further decrease in teaching hours is observed moving to the upper secondary level in 10 out of 11 countries and economies with available data for ISCED 2 and 3, with the most pronounced difference in Denmark (3.7 hours) (Table I.2.29). The difference in the number of hours spent on teaching reflects the differences in statutory teaching time across levels of education. In most OECD countries and economies, statutory teaching time at the primary level is longer than at the lower secondary level and even longer than at the upper secondary level (OECD, 2018[46]).

• • •

While teachers tend to teach fewer hours at higher levels of education, their total working hours across different levels of education show mixed patterns in the countries with available data for ISCED 1 and 3 (Tables I.2.28 and I.2.29). The most notable gaps are observed in CABA (Argentina), where primary teachers work 7.9 hours (or 21%) more than their counterparts at the lower secondary level and the Flemish Community of Belgium, where primary teachers work 4.6 hours (or 11%) more than lower secondary teachers.

Outside of teaching hours, teachers use their remaining working time slightly differently across levels of education. Starting with the most time-consuming activity after teaching, in 7 out of 13 countries with available data for ISCED 1 and 2, primary teachers tend to spend less time than lower secondary teachers on planning and preparing their lessons, while the opposite pattern is observed in another three countries. Depending on the activity, in 8 to 12 countries and economies, teachers at the primary level spend less time engaging in extracurricular activities, counselling students and marking and correcting student work than their peers at the lower secondary level (Table I.2.28). Japan has a notable shift, with lower secondary teachers spending almost seven hours more than primary teachers engaging in extracurricular activities.

School leaders' use of time throughout the school year

On average in the OECD, lower secondary school leaders spend half of their time on administrative tasks, leadership tasks and meetings, one-third of their time on interactions with students, parents, the local and regional community or business and industry, and less than one-fifth of their time on curriculum and teaching-related tasks (Table I.2.31). The proportion of time principals spend on these activities tends to be similar across all three levels of education in the 11 countries with available data for ISCED 1 and 2 and the 13 countries and economies with available data for ISCED 2 and 3. The most substantial differences are found between the lower and upper secondary level: in 8 countries and economies with available data, upper secondary principals spend less time than lower secondary principals on interactions with parents or guardians (Tables I.2.32 and I.2.33).

In 2018, there are also substantial cross-country differences in the way school leaders use their time. School leaders spend a higher share of their time on curriculum and teaching-related tasks (more than 20% of their total working time) in Eastern countries (Georgia, Israel, Japan, Kazakhstan, Korea, Saudi Arabia, Shanghai [China], the United Arab Emirates and Viet Nam) and in South Africa and a lower share (less than 15%) in Europe (Denmark, Estonia, Finland, Iceland, Latvia, the Netherlands, Norway, Portugal, the Russian Federation, Sweden and Turkey) (Table I.2.31). These differences are partly related to the way principals' responsibilities are defined and regulated, which varies among countries.

TO WHAT EXTENT CAN TEACHERS AND SCHOOLS INNOVATE?

Rapidly changing societies, economies, and technologies have led to frequent calls for innovation in education. Meetings of the International Summit on the Teaching Profession held in the past few years stress the importance of encouraging innovation to create 21st century learning environments and conditions for the success of education systems. The 2014 OECD report *Measuring Innovation in Education: A New Perspective* states that educational innovation can add value in four main areas: 1) improving learning outcomes and the quality of education; 2) enhancing equity in access to and use of education, as well as equality; 3) improving efficiency, minimising costs and maximising the "bang for the buck"; and 4) introducing the changes necessary to adapt to rapid changes in society (OECD, 2014, p. 21[69]).

However, it is not entirely clear how to define innovation. An OECD TALIS report, published in 2012, defined innovation as "… a new idea or a further development of an existing product, process or method that is applied in a specific context with the intention to create a value added." (Vieluf et al., 2012, p. 39[31]). The report pointed out that incremental adaptations of existing characteristics are a feature more commonly seen in relation to innovation than to radical change. A more recent OECD report defines innovation in teaching as "… a problem-solving process rooted in teachers' professionalism, a normal response to addressing the daily changes of constantly changing classrooms." (Paniagua and Istance, 2018, p. 13[70]).

The literature on innovation in education discusses several perspectives on this matter. The first perspective concerns innovative teaching practices that support students' acquisition of cross-curricular skills (OECD, 2014[69]). In addition to acquiring well-established literacies, such as reading and mathematics, students today need broader and more complex skills to have a fair chance of succeeding in complex modern societies and rapidly changing global labour markets. These skills encompass or refer to ways of thinking and working, mastering tools for working, and aspects of living in the 21st century (Binkley et al., 2012[71]; Bohle Carbonell et al., 2014[72]). Creativity and innovation, problem solving, critical thinking and digital literacy are the skills mentioned most often in this context, but there are others (OECD, 2015[73]).

A second perspective of interest with regard to innovation concerns the general uptake of innovative practices by teachers, as core actors in educational processes. Innovative practices typically encompass blended learning, gamification, computational thinking, experiential learning or embodied learning[14] (Paniagua and Istance, 2018[70]). On average across the OECD, 79% of teachers agree or strongly agree with the statement that "most teachers in [their] school strive to develop new ideas for teaching and learning", showing a general orientation of teachers towards innovative teaching. Fewer teachers agree with this in many European countries (particularly in Belgium, the Czech Republic, the Netherlands and Portugal) than in other regions of the globe (Table I.2.35). As discussed by Paniagua and Istance (2018[70]), there is a mismatch between how innovation is understood and theorised and how it occurs in practice: "... the innovation landscape today is populated by hundreds of very local experiences, and different frameworks and recommendations that conflate new learning goals, content, skills, organisation factors and different variables of pedagogical knowledge." (Paniagua and Sánchez-Marti, 2018, p. 24[74]). On average across the OECD, 74% of teachers agree or strongly agree that most teachers in their school are open to change (Figure I.2.12), and 77% of teachers agree or strongly agree that most teachers in their school search for new ways to solve problems. Openness to innovation seems to be lower in many European countries than in other parts of the world (Figure I.2.12, Table I.2.35). It may be the case that teachers in the European countries showing the lowest levels of innovation – such as Belgium and Portugal – rely more heavily on the curriculum. However, this cannot be the explanation for all European countries – especially in some Scandinavian countries, which allow teachers a lot of autonomy in their teaching or focus on evidence-based practice. It is unlikely that the cross-country differences for these indicators result more from cultural differences in the understanding of the concept than for other questions, as the TALIS measures on innovation proved to be the most comparable ones across countries (for more details, see the *TALIS 2018 Technical Report*).

Box I.2.6 **Encouraging schools to be autonomous and innovative in Portugal**

The Portuguese government introduced the Project for Autonomy and Curriculum Flexibility (PACF), a pilot programme for schools to build 21st century competencies for all their students. The foundations of the PACF are based on student outcomes that Portugal aims to achieve, as aligned to the National Skills Strategy of Portugal (2015) and described in detail in Student's Profile by the End of Compulsory Schooling. The PACF implementation plan is both holistic and action-oriented. First, the programme allows schools to make several curricular decisions. It includes citizenship education in its strategy to foster students' knowledge, skills and values in democratic institutions, the environment, sustainability, human rights and health, so that students graduate to be socially and culturally responsive individuals. Another key component of the PACF is the shift to formative and all-round assessments in Grades 4 and 6, including projects, art activities, presentations and group tasks to monitor student learning.

Implementation of the PACF thrives on school-level ownership, especially of educators, in order to drive local and context-specific innovation in an incremental manner. Because of this aspect, the PACF has the potential to develop students' skills based on their local context and need. Furthermore, the programme creates opportunities for teachers and principals to collaborate professionally to initiate new pedagogical approaches in their school, such as interdisciplinary and cross-classroom activities. One of the biggest strengths of the Portuguese project is that it allows a bottom-up approach to change in teaching and learning and focuses on the need of national-level bodies to adapt their monitoring processes accordingly. During the 2017/18 school year, 200 schools participated in this pilot programme on a voluntary basis. The Portuguese government is now attempting to expand implementation of this programme at the national level, with an appropriate balance of autonomy, capacity and accountability.

Education reform in Portugal has come at an opportune moment, with increased competitiveness of the national economy and improvements in students outcomes, indicating a strong grounding in basic education.

Source: OECD (2018[77]), *Curriculum Flexibility and Autonomy in Portugal: An OECD Review*, www.oecd.org/education/2030/Curriculum-Flexibility-and-Autonomy-in-Portugal-an-OECD-Review.pdf.

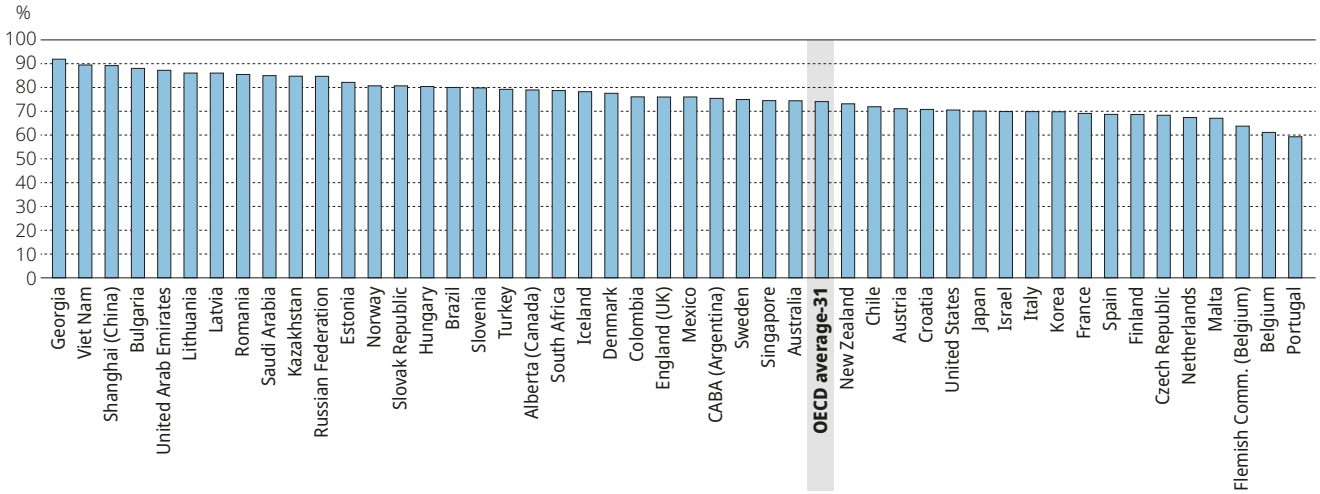
Teachers' opinions about their peers' openness to change also vary depending on their own characteristics (Table I.2.38). On average across the OECD, teachers age 50 or above are more likely to report that their colleagues are open to change than teachers under age 30 (a difference of 14 percentage points). This also holds true for 36 countries and economies. There is no country where the opposite pattern occurs, with younger teachers reporting higher levels of openness among their colleagues than older teachers. Except for Portugal, results are similar when comparing novice teachers with more experienced teachers. This is not surprising, as age groups and experience groups partly overlap. One plausible explanation is that this is related to the generation gap, with younger teachers more likely to be open to change. As teaching is, by definition, new to them, they can only

suggest new ways of doing things. This may result in older teachers reporting higher levels of openness to innovation among their peers (who are most likely younger[15]) and younger teachers reporting lower levels of openness to innovation among their peers (who are most likely older[16]). Indeed, past research found that teachers' willingness to implement innovative practices or reforms tends to decline with age and experience (Goodson, Moore and Hargreaves, 2006[75]). However, older teachers may just rely on their experience and well-proven teaching methods and may, therefore, be more reluctant to change their approaches. There is an exception to this pattern – Portugal – where novice teachers are more likely to report that most teachers in their school are open to change. Box I.2.6. sheds light on Portugal's pilot programme on fostering innovation in schools and among teachers to build 21st century competencies among its students.

The third literature-based perspective on innovation concerns school contexts that are open to innovation. On average across the OECD, 78% of teachers report that "most teachers in [their] school provide practical support to each other for the application of new ideas." This reinforces the idea that innovation also has an organisational component that reflects the perceptions of a group's innovativeness that are shared by the teachers of the school (Anderson and West, 1998[76]). This organisational component seems to be more pronounced in Georgia, Kazakhstan, Shanghai (China) and Viet Nam (where more than 90% of teachers so reported) and less prominent in Belgium and Portugal (where less than 70% of teachers so reported) (Table I.2.35).

Figure I.2.12 **Teachers' views on their colleagues' attitudes towards innovation**

Percentage of lower secondary teachers who "agree" or "strongly agree" that most teachers in the school are open to change (OECD average-31)



Countries and economies are ranked in descending order of lower secondary teachers' views on their colleagues' openness to change.
Source: OECD, TALIS 2018 Database, Table I.2.35.
StatLink http://dx.doi.org/10.1787/888933932114

Box I.2.7 **Innovation in primary, lower and upper secondary education**

Teachers' views on their colleagues' attitudes towards innovation

Across countries and economies with available data, more than two-thirds of teachers have a positive view of their colleagues' attitudes towards innovation, although this view tends to be less and less positive as the level of education they teach rises (Tables I.2.35, I.2.36 and I.2.37). Depending on the statement concerned, in 7 to 8 of the 13 countries and economies with available data for ISCED 1 and 2, teachers at the primary level are more likely than their peers at the lower secondary level to report that most teachers in their school strive to develop new ideas for teaching and learning, are open to change, search for new ways to solve problems and provide practical support to each other for the application of new ideas (Table I.2.36). The differences are particularly pronounced in the Flemish Community of Belgium where the percentage of teachers who agree or strongly agree with the different statements is 7 to 17 percentage points higher among primary teachers than among lower secondary teachers, and in Japan where the percentage is 8 to 12 percentage points higher. A further decrease in teachers' views on their colleagues' educational innovativeness is observed at the upper secondary level across the 11 countries and economies with available data for ISCED 2 and 3, with a significant difference in the percentage of teachers who agree or strongly agree with the different statements in 5 to 7 countries, depending on the statement concerned (Table I.2.37).

School principals also report high levels of innovationfriendliness in their schools (Table I.2.39). On average across the OECD, 85% to 89% of school principals agree or strongly agree with the following statements about their school: "makes assistance readily available for the development of new ideas" (89%); "quickly identifies the need to do things differently" (89%); "quickly responds to changes when needed" (88%); and "readily accepts new ideas" (85%). In addition to an innovation-friendly school climate, certain system characteristics are important preconditions for innovation, because their presence makes it easier for schools to adapt to rapid developments. One such characteristic is documented in several OECD reports (Kools and Stoll, 2016[78]; Vieluf et al., 2012[31]), which pointed out the value that professional learning communities offer by constantly providing feedback to teachers, thus supporting incremental change and positively affecting instructional quality and student achievement (Bolam et al., 2005[79]; Louis and Marks, 1998[80]). Professional learning communities will be discussed in detail in Volume II of this report (forthcoming).

Notes

1. The class that lower secondary teachers base their responses on is the first lower secondary education class they taught in the surveyed school after 11 a.m. on the Tuesday prior to the day they participated in the survey.
2. Another TALIS-related project, the TALIS Video Study, also aims to capture what teaching looks like, through video observation in several countries. It will usefully complement teachers' self-reports on their classroom practices and self-efficacy collected by TALIS.
3. The OECD average corresponds to the arithmetic mean of the estimates of the OECD countries and economies that participate in TALIS, with adjudicated data.
4. TALIS data could be explored further to address this question in future research.
5. The response options for this question were not exactly the same in the French version of the teacher questionnaires of 2013 and 2018. However, additional analysis conducted on French data for 2013 and 2018 confirms a decline in the share of teachers who feel that they are able to provide alternative explanations when students are confused.
6. TALIS 2018 data also show that novice teachers report higher needs in professional development on student behaviour and classroom management (see Chapter 5 and Table I.5.18).
7. On average across the OECD, full-time teachers work a total of 40.8 hours and teach 21.6 hours a week, while part-time teachers (i.e. teachers working up to 90% of full-time hours, all teaching employments together) work a total of 31.9 hours and teach 17.2 hours a week (OECD TALIS 2018 database).
8. The sum of hours spent on different tasks may not be equal to the number of total working hours, because teachers were asked about these elements separately. Therefore, the share of total working time teachers spend on each of the reported activities should be interpreted with great care. These percentages have been included in the text to ease the reading of the results. It is also important to note that the data represent the averages from all the teachers surveyed, including part-time teachers. Yet, on average across the OECD, the share of total work hours spent on teaching for full-time (53%) and part-time teachers (54%) is very similar (OECD TALIS 2018 database).
9. Results for Chile should be interpreted with care, as a lesson typically lasts 45, rather than 60, minutes.
10. In Chile, the regulation of non-teaching time as part of contract hours was reformed in April 2016 by the law that creates the System for Teacher Professional Development (*Sistema de Desarrollo Profesional Docente*). The 2016 Law provides for a lower proportion of teaching time as of 2017 (70% of the workload) and 2019 (65% of the workload) (Santiago et al., 2017, p. 273[82]).
11. Some evidence of a downward trend also started to emerge in Germany (Philipp and Kunter, 2013[81]).
12. This task includes regulations, reports, school budget, preparing timetables and class composition, and responding to requests from district, regional, state or national education officials.
13. This task includes strategic planning, leadership and management activities (such as developing school improvement plans) and human resource and personnel issues (such as hiring staff). It can also be considered a teacher-centred task.
14. Blended learning seeks to use the potential of new technology to offer more individualised teaching and direct instruction. Gamification includes the pedagogical core of gaming and the benefits of playful environments for student engagement and well-being. Computational thinking intersects mathematics, ICTs and digital literacy. It aims to address mathematics as a language for coding and looks at ICTs as a platform for developing problem-solving reasoning in students. Experiential learning refers to approaches where learners are brought directly into contact with the realities being studied. Embodied learning refers to pedagogical approaches that focus on the non-mental factors involved in learning and that signal the importance of the body and feelings (Paniagua and Istance, 2018[70]).
15. Years of experience of teachers working in the same school vary greatly. On average across the OECD and across all countries and economies participating in TALIS, the between-school variation in teacher experience represents only 8% of the total variation in teacher experience.
16. See endnote 15.

References

ACT Government: Education (2016), *Teachers' Guide to Assessment*, ACT Government: Education, www.education.act.gov.au/__data/assets/pdf_file/0011/297182/Teachers-Guide-To-Assessment.pdf. [44]

Anderson, N. and **M. West** (1998), "Measuring climate for work group innovation: Development and validation of the team climate inventory", *Journal of Organizational Behavior*, Vol. 19/3, pp. 235-258, https://onlinelibrary.wiley.com/doi/epdf/10.1002/%28SICI%291099-1379%28199805%2919%3A3%3C235%3A%3AAID-JOB837%3E3.0.CO%3B2-C. [76]

Avanzi, L. et al. (2013), "Cross-validation of the Norwegian Teacher's Self-Efficacy Scale (NTSES)", *Teaching and Teacher Education*, Vol. 31, pp. 69-78, http://dx.doi.org/10.1016/J.TATE.2013.01.002. [56]

Baumert, J. et al. (2010), "Teachers' mathematical knowledge, cognitive activation in the classroom, and student progress", *American Educational Research Journal*, Vol. 47/1, pp. 133-180, http://dx.doi.org/10.3102/0002831209345157. [9]

Binkley, M. et al. (2012), "Defining twenty-first century skills", in Griffin, P., B. McGaw and E. Care (eds.), *Assessment and Teaching of 21st Century Skills*, Springer, Dordrecht, http://dx.doi.org/10.1007/978-94-007-2324-5_2. [71]

Bohle Carbonell, K. et al. (2014), "How experts deal with novel situations: A review of adaptive expertise", *Educational Research Review*, Vol. 12, pp. 14-29, http://dx.doi.org/10.1016/J.EDUREV.2014.03.001. [72]

Bolam, R. et al. (2005), "Creating and Sustaining Effective Professional Learning Communities", *DfES Research Report*, No. 637, University of Bristol, Bristol, http://dera.ioe.ac.uk/5622/1/RR637.pdf. [79]

Brouwers, A. and **W. Tomic** (2000), "A longitudinal study of teacher burnout and perceived self-efficacy in classroom management", *Teaching and Teacher Education*, Vol. 16/2, pp. 239-253, http://dx.doi.org/10.1016/S0742-051X(99)00057-8. [60]

Caprara, G. et al. (2006), "Teachers' self-efficacy beliefs as determinants of job satisfaction and students' academic achievement: A study at the school level", *Journal of School Psychology*, Vol. 44/6, pp. 473-490, http://dx.doi.org/10.1016/j.jsp.2006.09.001. [53]

Cárdenas, S. (2016), "Curriculum reform and twenty-first century skills in Mexico: Are standards and teacher training materials aligned?", in Reimers, F. and C. Chung (eds.), *Teaching and Learning for the Twenty-First Century: Educational Goals, Policies and Curricula from Six Nations*, Harvard Education Press, Cambridge, MA. [65]

Case, R. (1985), *Intellectual Development: Birth to Adulthood*, Academic Press, London. [48]

Chesnut, S. and **H. Burley** (2015), "Self-efficacy as a predictor of commitment to the teaching profession: A meta-analysis", *Educational Research Review*, Vol. 15, pp. 1-16, http://dx.doi.org/10.1016/j.edurev.2015.02.001. [57]

Chetty, R., J. Friedman and **J. Rockoff** (2014), "Measuring the impacts of teachers II: Teacher value-added and student outcomes in adulthood", *American Economic Review*, Vol. 104/9, pp. 2633-79. [62]

Comi, S. et al. (2017), "Is it the way they use it? Teachers, ICT and student achievement", *Economics of Education Review*, Vol. 56, pp. 24-39, http://dx.doi.org/10.1016/j.econedurev.2016.11.007. [36]

Creemers, B. and **L. Kyriakides** (2008), *The Dynamics of Educational Effectiveness: A Contribution to Policy, Practice and Theory in Contemporary Schools*, Routledge, Abingdon, https://lib.ugent.be/nl/catalog/rug01:001240853. [10]

Echazarra, A. et al. (2016), "How teachers teach and students learn: Successful strategies for school", *OECD Education Working Papers*, No. 130, OECD Publishing, Paris, https://dx.doi.org/10.1787/5jm29kpt0xxx-en. [35]

Fauth, B. et al. (2014), "Student ratings of teaching quality in primary school: Dimensions and prediction of student outcomes", *Learning and Instruction*, Vol. 29, pp. 1-9, http://dx.doi.org/10.1016/j.learninstruc.2013.07.001. [15]

Fraillon, J. et al. (2014), *Preparing for Life in a Digital Age: The IEA International Computer and Information Literacy Study International Report*, Springer International Publishing, Heidelberg, www.iea.nl/fileadmin/user_upload/Publications/Electronic_versions/ICILS_2013_International_Report.pdf. [33]

Gil-Flores, J., J. Rodríguez-Santero and **J. Torres-Gordillo** (2017), "Factors that explain the use of ICT in secondary-education classrooms: The role of teacher characteristics and school infrastructure", *Computers in Human Behavior*, Vol. 68, pp. 441-449, http://dx.doi.org/10.1016/J.CHB.2016.11.057. [37]

Gobierno de México (n.d.), *Nuevo Modelo Educativo [New Educational Model]*, www.gob.mx/nuevomodeloeducativo (accessed on 25 February 2019). [64]

Goodson, I., S. Moore and **A. Hargreaves** (2006), "Teacher nostalgia and the sustainability of reform: The generation and degeneration of teachers' missions, memory, and meaning", *Educational Administration Quarterly*, Vol. 42/1, pp. 42-61, http://dx.doi.org/10.1177/0013161X05278180. [75]

Hargreaves, A. (1992), "Time and teachers' work: An analysis of the intensification thesis", *Teachers College Record*, Vol. 94/1, pp. 87-108, www.tcrecord.org/content.asp?contentid=179. [66]

Hattie, J. (2009), *Visible Learning: A Synthesis of over 800 Meta-Analyses Relating to Achievement*, Routledge, London. [3]

Hattie, J. and **H. Timperley** (2007), "The power of feedback", *Review of Educational Research*, Vol. 77/1, pp. 81-112, http://dx.doi.org/10.3102/003465430298487. [40]

Hiebert, J. and **D. Grouws** (2007), "The effect of classroom mathematics teaching on students' learning", in Lester, F. (ed.), *Second Handbook of Research on Mathematics Teaching and Learning,* Information Age Publishing Inc., Charlotte, NC. [29]

Holzberger, D., A. Philipp and **M. Kunter** (2013), "How teachers' self-efficacy is related to instructional quality: A longitudinal analysis", *Journal of Educational Psychology*, Vol. 105/3, pp. 774-786, http://dx.doi.org/10.1037/a0032198. [52]

Ingersoll, R. and **G. Collins** (2018), "The status of teaching as a profession", in Ballantine, J., J. Spade and J. Stuber (eds.), *Schools and Society: A Sociological Approach to Education*, Pine Forge Press/Sage Publications, Thousand Oaks, CA, https://repository.upenn.edu/gse_pubs/221. [2]

Isac, M. et al. (2015), *Teaching Practices in Primary and Secondary Schools in Europe: Insights from Large-Scale Assessments in Education*, JRC Science and Policy Report, Publications Office of the European Union, Luxembourg, http://dx.doi.org/10.2788/383588. [11]

Kane, T. and **S. Cantrell** (2010), *Learning about Teaching: Initial Findings from the Measures of Effective Teaching Project About the Measures of Effective Teaching Project*, Bill & Melinda Gates Foundation, Seattle, WA, https://docs.gatesfoundation.org/Documents/preliminary-findings-research-paper.pdf. [16]

Kane, T., J. Rockoff and **D. Staiger** (2008), "What does certification tell us about teacher effectiveness? Evidence from New York City", *Economics of Education Review*, Vol. 27/6, pp. 615-631. [63]

Klassen, R. and **V. Tze** (2014), "Teachers' self-efficacy, personality, and teaching effectiveness: A meta-analysis", *Educational Research Review*, Vol. 12, pp. 59-76, http://dx.doi.org/10.1016/j.edurev.2014.06.001. [50]

Klassen, R. et al. (2011), "Teacher efficacy research 1998-2009: Signs of progress or unfulfilled promise?", *Educational Psychology Review*, Vol. 23/1, pp. 21-43, http://dx.doi.org/10.1007/s10648-010-9141-8. [49]

Klieme, E., C. Pauli and **K. Reusser** (2009), "The Pythagoras study: Investigating effects of teaching and learning in Swiss and German mathematics classrooms", in Janík, T. and T. Seidel (eds.), *The Power of Video Studies in Investigating Teaching and Learning in the Classroom*, Waxmann, Münster. [30]

Klusmann, U. et al. (2008), "Teachers' occupational well-being and quality of instruction: The important role of self-regulatory patterns", *Journal of Educational Psychology*, Vol. 100/3, pp. 702-715, http://dx.doi.org/10.1037/0022-0663.100.3.702. [22]

Kools, M. and **L. Stoll** (2016), "What Makes a School a Learning Organisation?", *OECD Education Working Papers*, No. 137, OECD Publishing, Paris, https://dx.doi.org/10.1787/5jlwm62b3bvh-en. [78]

Kunter, M. et al. (2013), "Professional competence of teachers: Effects on instructional quality and student development", *Journal of Educational Psychology*, Vol. 105/3, pp. 805-820, http://dx.doi.org/10.1037/a0032583. [12]

Kunter, M. and **T. Voss** (2013), "The model of instructional quality in COACTIV: A multicriteria analysis", in Kunter, M. et al. (eds.), *Cognitive Activation in the Mathematics Classroom and Professional Competence of Teachers*, Springer, New York, NY, http://dx.doi.org/10.1007/978-1-4614-5149-5_6. [17]

Kyriakides, L., R. Campbell and **A. Gagatsis** (2000), "The significance of the classroom effect in primary schools: An application of Creemers' comprehensive model of educational effectiveness", *School Effectiveness and School Improvement*, Vol. 11/4, pp. 501-529, http://dx.doi.org/10.1076/sesi.11.4.501.3560. [25]

Kyriakides, L. and **B. Creemers** (2008), "Using a multidimensional approach to measure the impact of classroom-level factors upon student achievement: a study testing the validity of the dynamic model", *School Effectiveness and School Improvement*, Vol. 19/2, pp. 183-205, http://dx.doi.org/10.1080/09243450802047873. [41]

Lavy, V. (2016), "What Makes an Effective Teacher? Quasi-Experimental Evidence", *CESifo Economic Studies*, Vol. 62/1, pp. 88-125, http://dx.doi.org/10.1093/cesifo/ifv001. [19]

Le Donné, N., P. Fraser and **G. Bousquet** (2016), "Teaching Strategies for Instructional Quality: Insights from the TALIS-PISA Link Data", *OECD Education Working Papers*, No. 148, OECD Publishing, Paris, https://dx.doi.org/10.1787/5jln1hlsr0lr-en. [8]

Lipowsky, F. et al. (2009), "Quality of geometry instruction and its short-term impact on students' understanding of the Pythagorean Theorem", *Learning and Instruction*, Vol. 19/6, pp. 527-537, http://dx.doi.org/10.1016/j.learninstruc.2008.11.001. [28]

Little, O., L. Goe and **C. Bell** (2009), *A Practical Guide to Evaluating Teacher Effectiveness*, National Comprehensive Center for Teacher Quality, Washington, DC. [5]

Louis, K. and **H. Marks** (1998), "Does professional community affect the classroom? Teachers' work and student experiences in restructuring schools", *American Journal of Education*, Vol. 106/4, pp. 532-575, https://doi.org/10.1086/444197. [80]

Martin, M. et al. (2013), "Effective schools in reading, mathematics, and science at the fourth grade", in Martin, M. and I. Mullis (eds.), *TIMSS and PIRLS 2011: Relationships Among Reading, Mathematics, and Science Achievement at the Fourth Grade - Implications for Early Learning*, TIMSS & PIRLS International Study Center, Lynch School of Education, Boston College and International Association for the Evaluation of Educational Achievement (IEA), Chestnut Hill, MA, https://timssandpirls.bc.edu/timsspirls2011/downloads/TP11_Chapter_3.pdf. [23]

Mostafa, T. and **J. Pál** (2018), "Science teachers' satisfaction: Evidence from the PISA 2015 teacher survey", *OECD Education Working Papers*, No. 168, OECD Publishing, Paris, https://dx.doi.org/10.1787/1ecdb4e3-en. [58]

Muijs, D. and **D. Reynolds** (2002), "Teachers' beliefs and behaviors: What really matters?", *The Journal of Classroom Interaction*, Vol. 37/2, pp. 3-15, www.jstor.org/stable/23870407. [54]

Muijs, D. and **D. Reynolds** (2001), *Effective Teaching: Evidence and Practice*, Sage Publications, London. [43]

Nilsen, T. and **J. Gustafsson** (eds.) (2016), *Teacher Quality, Instructional Quality and Student Outcomes: Relationships Across Countries, Cohorts and Time*, IEA Research for Education, Springer Open/International Association for the Evaluation of Educational Achievement (IEA), http://dx.doi.org/10.1007/978-3-319-41252-8. [13]

O'Dwyer, L., Y. Wang and **K. Shields** (2015), "Teaching for conceptual understanding: A cross-national comparison of the relationship between teachers' instructional practices and student achievement in mathematics", *Large-scale Assessments in Education*, Vol. 3/1, pp. 3-30, http://dx.doi.org/10.1186/s40536-014-0011-6. [14]

OECD (2018), *Curriculum Flexibility and Autonomy in Portugal: an OECD Review*, OECD, Paris, www.oecd.org/education/2030/Curriculum-Flexibility-and-Autonomy-in-Portugal-an-OECD-Review.pdf. [77]

OECD (2018), *Education at a Glance 2018: OECD Indicators*, OECD Publishing, Paris, https://dx.doi.org/10.1787/eag-2018-en. [46]

OECD (2018), *Effective Teacher Policies: Insights from PISA*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264301603-en. [47]

OECD (2018), *Teaching for the Future: Effective Classroom Practices To Transform Education*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264293243-en. [1]

OECD (2016), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264267510-en. [32]

OECD (2016), *School Leadership for Learning: Insights from TALIS 2013*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264258341-en. [67]

OECD (2015), *OECD Skills Outlook 2015: Youth, Skills and Employability*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264234178-en. [73]

OECD (2015), *Students, Computers and Learning: Making the Connection*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264239555-en. [34]

OECD (2014), *Measuring Innovation in Education: A New Perspective*, Educational Research and Innovation, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264215696-en. [69]

OECD (2014), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264196261-en. [61]

OECD (2005), *Teachers Matter: Attracting, Developing and Retaining Effective Teachers*, Education and Training Policy, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264018044-en. [4]

Orphanos, S. and **M. Orr** (2014), "Learning leadership matters", *Educational Management Administration & Leadership*, Vol. 42/5, pp. 680-700, http://dx.doi.org/10.1177/1741143213502187. [68]

Paniagua, A. and **D. Istance** (2018), *Teachers as Designers of Learning Environments: The Importance of Innovative Pedagogies*, Educational Research and Innovation, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264085374-en. [70]

Paniagua, A. and **A. Sánchez-Martí** (2018), "Early Career Teachers: Pioneers Triggering Innovation or Compliant Professionals?", *OECD Education Working Papers*, No. 190, OECD Publishing, Paris, https://dx.doi.org/10.1787/4a7043f9-en. [74]

Philipp, A. and **M. Kunter** (2013), "How do teachers spend their time? A study on teachers' strategies of selection, optimisation, and compensation over their career cycle", *Teaching and Teacher Education*, Vol. 35, pp. 1-12, http://dx.doi.org/10.1016/j.tate.2013.04.014. [81]

Pollard, A. (2010), *Professionalism and Pedagogy: A Contemporary Opportunity: A Commentary by the Teaching and Learning Research Programme and the General Teaching Council for England*, TLRP/Institute of Education/University of London, London, https://dera.ioe.ac.uk//11320/. [7]

Rjosk, C. et al. (2014), "Socioeconomic and language minority classroom composition and individual reading achievement: The mediating role of instructional quality", *Learning and Instruction*, Vol. 32, pp. 63-72, http://dx.doi.org/10.1016/j.learninstruc.2014.01.007. [20]

Rožman, M. and **E. Klieme** (2017), "Exploring cross-national changes in instructional practices: evidence from four cycles of TIMSS", *IEA Policy brief*, No. 13, IEA, Amsterdam, http://pub.iea.nl/fileadmin/user_upload/Policy_Briefs/IEA_Policy_Brief_Feb2017.pdf. [45]

Santiago, P. et al. (2017), *OECD Reviews of School Resources: Chile 2017*, OECD Reviews of School Resources, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264285637-en. [82]

Scheerens, J. (2016), *Educational Effectiveness and Ineffectiveness: A Critical Review of the Knowledge Base*, Springer, Dordrecht. [42]

Scherer, R. and **J. Gustafsson** (2015), "Student assessment of teaching as a source of information about aspects of teaching quality in multiple subject domains: An application of multilevel bifactor structural equation modeling", *Frontiers in Psychology*, Vol. 6, pp. 1-15, http://dx.doi.org/10.3389/fpsyg.2015.01550. [26]

Seidel, T., R. Rimmele and **M. Prenzel** (2005), "Clarity and coherence of lesson goals as a scaffold for student learning", *Learning and Instruction*, Vol. 15/6, pp. 539-556, http://dx.doi.org/10.1016/j.learninstruc.2005.08.004. [27]

Severin, E. (2016), "Building and Sustaining National ICT/Education Agencies : Lessons from Chile (Enlaces)", *SABER-ICT Technical Paper Series*, No. 7, World Bank, Washington, DC, https://openknowledge.worldbank.org/handle/10986/26264. [38]

Skaalvik, E. and **S. Skaalvik** (2010), "Teacher self-efficacy and teacher burnout: A study of relations", *Teaching and Teacher Education*, Vol. 26/4, pp. 1059-1069, http://dx.doi.org/10.1016/j.tate.2009.11.001. [59]

Tschannen-Moran, M. and **A. Hoy** (2001), "Teacher efficacy: Capturing an elusive construct", *Teaching and Teacher Education*, Vol. 17/7, pp. 783-805, https://doi.org/10.1016/S0742-051X(01)00036-1. [51]

van de Vijver, F. and **J. He** (2014), "Report on Social Desirability, Midpoint and Extreme Responding in TALIS 2013", *OECD Education Working Papers*, No. 107, OECD Publishing, Paris, http://dx.doi.org/10.1787/5jxswcfwt76h-en. [6]

van Tartwijk, J. and **K. Hammerness** (2011), "The neglected role of classroom management in teacher education", *Teaching Education*, Vol. 22/2, pp. 109-112, http://dx.doi.org/10.1080/10476210.2011.567836. [21]

Vieluf, S. et al. (2012), *Teaching Practices and Pedagogical Innovations: Evidence from TALIS*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264123540-en. [31]

Wagner, W. et al. (2013), "Construct validity of student perceptions of instructional quality is high, but not perfect: Dimensionality and generalizability of domain-independent assessments", *Learning and Instruction*, Vol. 28, pp. 1-11, http://dx.doi.org/10.1016/j.learninstruc.2013.03.003. [18]

Wang, M. and **J. Degol** (2016), "School climate: A review of the construct, measurement, and impact on student outcomes", *Educational Psychology Review*, Vol. 28/2, pp. 315-352, http://dx.doi.org/10.1007/s10648-015-9319-1. [24]

Winer, D. (2018), *Israel: Country Report on ICT in Education*, European Schoolnet (EUN), Brussels, www.eun.org/documents/411753/839549/Israel_2018.pdf/c01cb526-a5d7-469b-b8b1-b67a494d294b. [39]

Woolfolk Hoy, A. and **H. Davis** (2006), "Teacher self-efficacy and its influence on the achievement of adolescents", in Urdan, T. and F. Pajares (eds.), *Self-Efficacy Beliefs of Adolescents*, Information Age Publishing, Greenwich, CT. [55]

The changing landscape of teaching

This chapter describes the age, experience and gender distribution profiles of lower secondary teachers and school principals in countries and economies participating in TALIS and examines how their demographic characteristics and experience have evolved since 2008. It explores how teachers deal with societal changes that have created new contexts for teaching, with increasingly diverse classrooms and schools. It also explores the practices implemented in schools to respond to student diversity, as well as teachers' preparedness and confidence to teach in these more diverse environments. The chapter then turns to school and classroom climate as an important lever within the school for students' learning and well-being, as well as for teachers' confidence and commitment to teaching. Finally, it sets the scene for the remainder of the report by identifying school resources issues that, according to teachers and school leaders, particularly require action.

A note regarding Israel

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.

Highlights

- Across OECD countries and economies participating in the Teaching and Learning International Survey (TALIS), principals are generally older than teachers, with the average age for a principal being 52, compared to 44 for teachers. However, the teacher workforce has also aged in a number of countries over the past five to ten years.
- Women account for 68% of the teacher workforce, while only 47% of principals are women, on average across OECD countries and economies participating in TALIS.
- On average across OECD countries and economies participating in TALIS, 17% to 31% of teachers work in schools with diverse student composition in terms of socio-economic, cultural, linguistic background or educational needs, as reported by school leaders. Since it is unlikely that the same schools concentrate all forms of diversity at the same time, the proportion of teachers actually working with diverse students is likely much higher. These averages, however, conceal significant cross-country variations.
- According to school leaders, more than 75% of schools implement equity-related policies to address gender and socio-economic discrimination, on average across OECD countries and economies participating in TALIS.
- According to school leaders, the most common policies and practices related to diversity are those embedded in the teaching process: 80% of teachers working in multicultural schools work in a school that has integrated global issues throughout the curriculum and teaches students how to deal with ethnic and cultural discrimination. Policies and practices promoting diverse cultures are less common: only 61% of teachers working in multicultural schools work in a school that supports activities or organisations encouraging students' expression of diverse ethnic and cultural identities.
- According to school leaders, schools in OECD countries and economies participating in TALIS remain immune from daily and weekly safety-related incidents for the most part. But, 14% of school principals still report regular acts of intimidation or bullying among their students. Change over time suggests that the frequency of incidents related to bullying has decreased in eight participating countries and economies since 2013, according to principals' reports. But, in a few systems, their frequency has increased, according to principals, which calls for close monitoring and specific action.
- Relations between teachers and their students are extremely positive. On average across OECD countries and economies participating in TALIS, 96% of teachers concur that teachers and students usually get on well with one another – up from 2008 for most countries with available data. Change in student-teacher relations over time also reveals that teachers' belief in the importance of student well-being has progressed in the vast majority of countries since 2008.
- The most common resource issues reported by school leaders in participating countries and economies are shortages of: 1) support personnel; 2) teachers with competence in teaching students with special needs; and 3) time for instructional leadership (each reported by about one-third of principals).
- The most common priorities for policy intervention reported by teachers in participating countries and economies are: 1) reducing class sizes (reported by 65% of teachers); 2) improving teacher salaries (64%); 3) offering high-quality professional development for teachers (55%) and 4) reducing teachers' administration load (55%).

INTRODUCTION

Since the first cycle of TALIS in 2008, the world has experienced substantial changes: emergence of a global middle class, greater digitalisation, rapid dissemination of innovation, the 2008 financial crisis and its ongoing impacts, growing pressures on public budgets, challenges to social cohesion and democratic values and a large influx of refugees in recent years. All these trends have an impact on countries and societies, as well as on students, teachers and school leaders in their education systems (OECD, 2016[1]; OECD, 2019[2]).

In addition to their impact on the characteristics and profiles of learners and the learning environments and climate in schools and classrooms, these issues challenge the way education has been conceived and the nature of teaching in the 21st century, engendering a sense of urgency to adapt to new realities as the pace of change is accelerating.

It is now widely accepted that students today need to develop broader knowledge, skills and attitudes than previous generations to be successful in their careers and personal lives (Kuhn and Weinberger, 2005[3]; OECD, 2018[4]; UNESCO, 2016[5]). This is prompting many education systems to review their curriculum and the way it is taught, to prepare students to confront the future with confidence as responsible citizens (Barber and Mourshed, 2009[6]; Reimers and Chung, 2016[7]; UNESCO, 2016[8]). Thus, the work of teachers is more complex than ever, raising the question of how well teachers are prepared for these new contexts and new demands. This chapter describes the current landscape of teaching and the extent and complexity of change since the two previous TALIS surveys in 2008 and 2013.

The strong influence of teachers on instructional quality and student achievement is widely accepted (Hattie, 2009[9]; Kyriakides, Christoforou and Charalambous, 2013[10]), as is the acknowledgement of school leadership as a lever for school-level improvement (Hallinger and Heck, 2010[11]; Horng and Loeb, 2010[12]; Scheerens and Bosker, 1997[13]).

Recognising that teachers are central to the teaching process and school leadership is critical to enhancing education quality, this chapter begins by describing the profiles of lower secondary teachers and school principals in countries and economies participating in TALIS, in terms of age, experience and gender distribution and how their demographic characteristics and experience have evolved since 2008. It then explores how teachers deal with societal changes that have created new contexts for their teaching, with increasingly diverse classrooms and schools in terms of students' backgrounds and ability levels. It also examines the practices implemented in schools to respond to student diversity, as well as teachers' preparedness and confidence to teach in these more diverse environments. Attention then turns to school and classroom climate, as important context and a school-level lever for both students' learning and social well-being and teachers' confidence and commitment to teaching. The chapter concludes by identifying school resources issues and areas that particularly require intervention and improvement, according to teachers and school leaders. This sets the scene for the remainder of this volume and for Volume II, *Teachers and School Leaders as Valued Professionals* (to be published in 2020).

CHANGING DEMOGRAPHICS OF THE PROFESSION

Only some education systems have staffing surveys or census information providing a detailed profile of their teachers and principals. When this is not the case, the TALIS survey offers a useful alternative, as well as an international comparative perspective on the characteristics of teachers and school leaders across participating countries and economies. This makes it possible to capture their demographic profiles in terms of age and gender and also, through analysis of their work experience (overall and at their current school), to provide indications on career paths of teachers and principals, as well as the degree of staff stability and mobility in the system. Patterns of experience also have implications for policy makers, with respect to the nature of training and support mechanisms needed to support the profession, through induction and mentoring schemes for inexperienced teachers and principals (see Chapter 4) and professional development for more experienced teachers and school leaders (see Chapter 5). Changes over time in these indicators also provide valuable information on the dynamics of human resources in school education.

Age and experience profile of teachers and school leaders

Information from TALIS about the age and experience distribution of the teacher workforce is valuable to policy makers because, in combination with projections on student numbers, it helps them to assess the renewal of the profession needed to compensate for retirement attrition in education systems with ageing populations (OECD, 2009[14]; OECD, 2018[15]). Information on the age and experience distribution of teachers also helps policy makers to assess needs for training and support mechanisms to best support the profession. Having a diverse age distribution among teachers can also expose students to different role models at different stages of the lifespan.

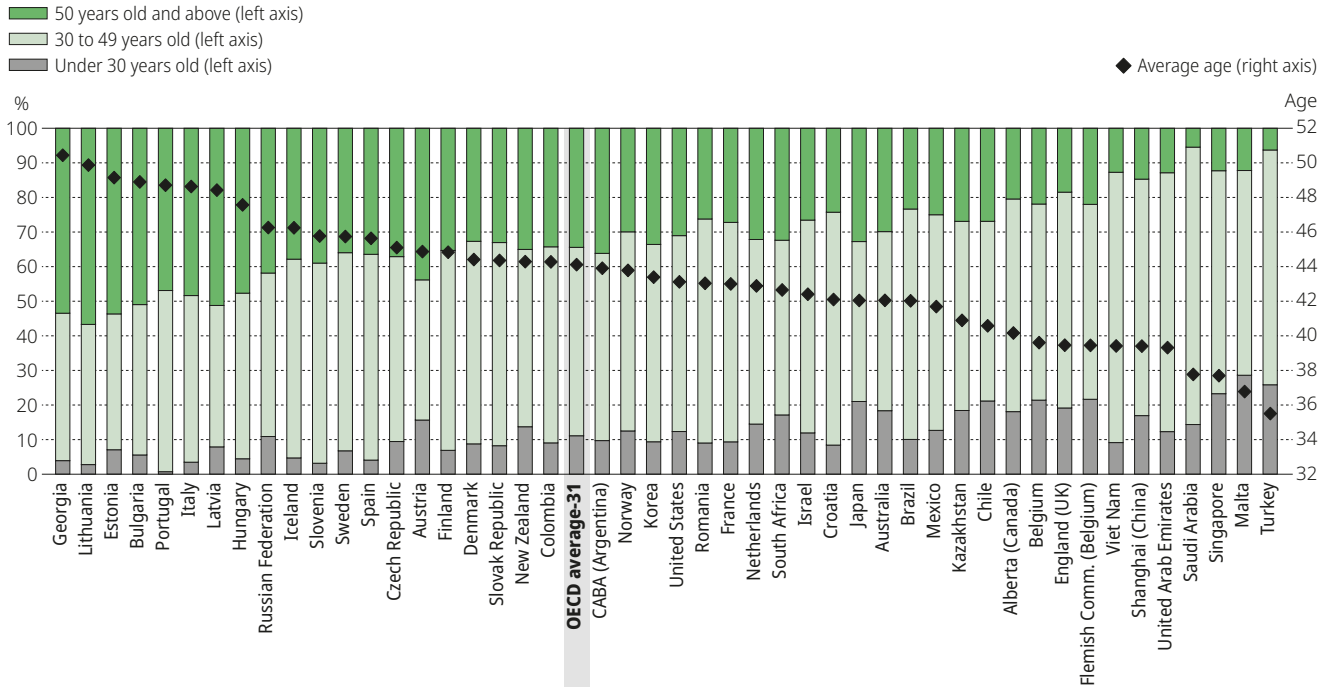
Likewise, the demographic and experience profiles of principals help policy makers to forecast and manage human resources for principals in the system and to support them in schools. Indeed, school principals are increasingly viewed as critical in fostering quality teaching, through their influence – direct or indirect – on school organisation and climate and on teachers and teaching (OECD, 2016[16]; Orphanos and Orr, 2014[17]). School leadership has become a priority for many countries concerned about improving student achievement (Pont, Nusche and Moorman, 2008[18]) and improving schools that are underperforming or failing (Branch, Hanuschek and Rivkin, 2013[19]). School leaders are at the intersection between teachers, students, parents/guardians, the educational system and the wider community in which the school exists. There is mounting evidence that the role of school leaders has become increasingly challenging, with increased workloads and accountability duties (OECD, 2014[20]; OECD, 2016[16]). It is even more so for new principals, who find it particularly challenging to collaborate with and gain the credibility of different stakeholders (Beam, Claxton and Smith, 2016[21]). The challenges that school leaders face also depend on the social, economic and physical context of the schools they lead (Pont, Nusche and Moorman, 2008[18]). Previous evidence from TALIS shows that principals' actions as instructional leaders are limited but are positively associated with training received in instructional leadership (OECD, 2014[20]). This brings to the fore the question of how much experience they bring to the job and how to best support them to meet the many demands they face.

In 2018, the average age of teachers across the OECD[1] was around 44, with considerable variation across countries (Figure I.3.1, Table I.3.1). These differences are reflected in varied proportions of younger teachers (under age 30) and older teachers (aged 50 or above). At one end of the spectrum, the average teacher is aged 40 or younger in Belgium (and in the Flemish Community), England (United Kingdom), Malta, Saudi Arabia, Shanghai (China), Singapore, Turkey, the United Arab Emirates and Viet Nam. At the other extreme, the average teacher is over age 48 in Bulgaria, Estonia, Georgia, Italy, Latvia, Lithuania and Portugal.

More than half of teachers are aged 50 or above in Bulgaria, Estonia, Georgia, Latvia and Lithuania, and this is also the case for over 45% of teachers in Hungary, Italy and Portugal, suggesting ageing teacher populations. These education systems may face the challenge of replacing teachers in large numbers over the next 15 years (or even sooner), since the average normal pension age in OECD countries in 2016 was 64.3 years for men and 63.7 years for women (OECD, 2017, pp. 93, Table 3.7[22]). Such challenges will inevitably emerge if new teacher recruitment does not keep pace with retirement-induced attrition, after accounting for projected changes in student enrolments (Figure I.3.1, Table I.3.1).

Figure I.3.1 **Teachers' age**

Percentage of lower secondary teachers, by age group and average age of teachers



Countries and economies are ranked in descending order of the average age of teachers.

Source: OECD, TALIS 2018 Database, Table I.3.1.

StatLink http://dx.doi.org/10.1787/888933932133

While TALIS 2018 demographics data provide a snapshot of the profile of the teacher population in participating countries and economies, changes over time shed further light on its dynamics. Indeed, the challenges currently faced by policy makers (or expected in the years to come) depend on countries' historical trajectories in education. For example, in many countries, entry of the baby-boom generation into the education system in the 1950s and 1960s, combined with widening access to secondary education, translated into mass recruitment of teachers in the 1960s and 1970s and hence mass retirements a generation later (Lim, 2013[23]).

Since the earlier rounds of TALIS in 2008 and 2013, some education systems have faced ageing of their teacher population. The share of teachers age 50 or above rose by over 5 percentage points or more in Brazil, Estonia, Georgia, Iceland, Korea, Latvia, Portugal and Shanghai (China) since 2013 (Figure I.3.3), and in Bulgaria, Hungary, Lithuania, Slovenia and Spain since 2008. The change has been most dramatic in Portugal, with an increase in the share of teachers age 50 or above from 28% in 2013 to 47% in 2018. By contrast, Australia and Croatia saw the share of their teachers over age 50 drop by more than 5 percentage points since 2013, as did Denmark, Malta and Norway since 2008 (Table I.3.4 and Box I.3.1).

As far as school leaders are concerned, across the OECD in 2018, the average principal is 52 years old, 8 years older than the average teacher. This is not surprising, as principals are usually recruited from among the ranks of teachers, and their positions often require higher academic credentials and more years of experience. Brazil, Malta, Romania, Saudi Arabia, Turkey and the United States have the youngest principals (under age 48 on average), while the average principal is aged 56 or above in Italy, Japan and Korea. The largest proportions of principals under age 40 are found in Brazil, Mexico, Saudi Arabia, Turkey and the United States, with over 20% of school leaders in this age group. The five countries with the largest proportions of principals nearing retirement (at age 60 or above) are Austria, Colombia, Italy, Korea and Lithuania (Figure I.3.2, Table I.3.5).

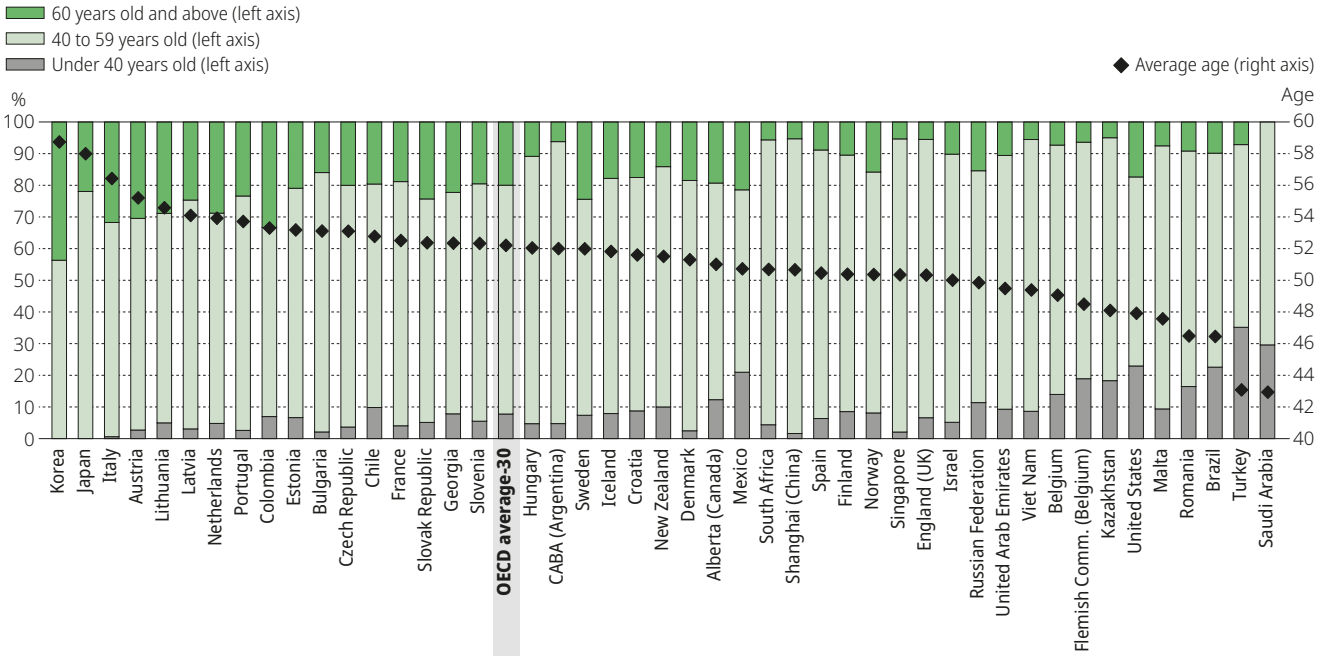
Box I.3.1 **Balancing the age distribution of Denmark's teacher workforce by improving graduation rates in initial teacher education**

A critical problem concerning the teaching workforce in Denmark was the high dropout rates of students from teacher education institutions. In order to address this issue, initial teacher education reforms in 2013 have shifted the focus of institutions from the quantity of teacher candidates to the quality of teacher graduates. Admission requirements for entry into teacher education institutes, initially limited to marks obtained in upper secondary education, were revised to a two-tier process. Following these reforms, teacher candidates can gain admission to university colleges that offer teacher education programmes through either specific requirements for performance in upper secondary education or an entry examination and interview. In addition to these changes in selection processes, the curriculum of initial teacher education institutions was considerably deregulated. The focus of teacher education programmes has shifted from subject-specific knowledge to pedagogical content. Teaching candidates also take competency-based examinations and are expected to graduate with teaching competencies in two main subjects. In the last five years, dropout rates in teacher education have declined considerably, and an increased number of young and high-quality teacher graduates have entered the Danish teaching workforce.

Source: Nusche, D., et al. (2016[24]), *OECD Reviews of School Resources: Denmark 2016*, OECD Reviews of School Resources, https://doi.org/10.1787/9789264262430-en.

Figure I.3.2 **Principals' age**

Percentage of lower secondary principals, by age group and average age of principals



Countries and economies are ranked in descending order of the average age of principals.

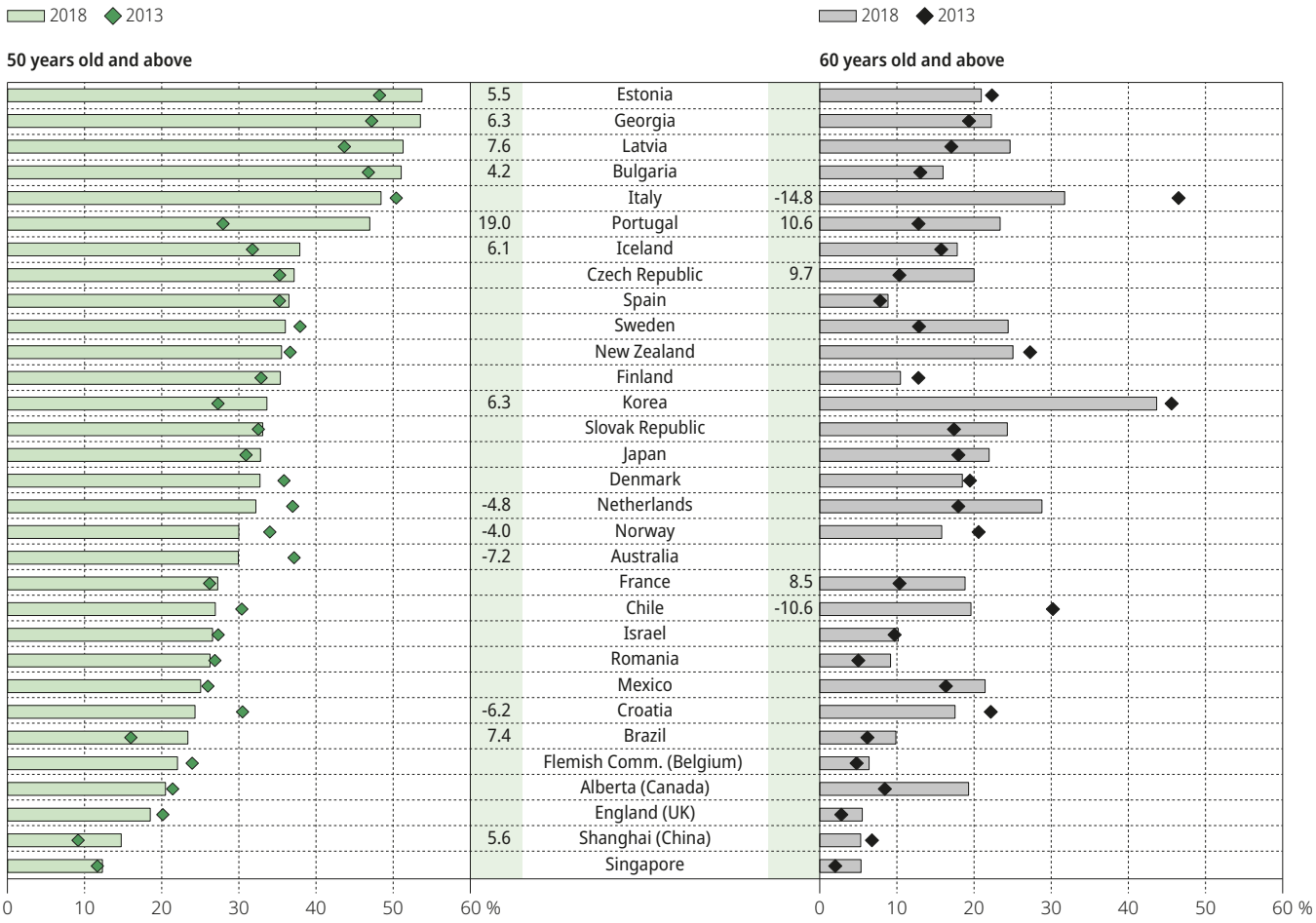
Source: OECD, TALIS 2018 Database, Table I.3.5.

StatLink http://dx.doi.org/10.1787/888933932152

Changes in the share of principals nearing retirement show that some education systems have experienced ageing in their principal population, with increases greater than 5 percentage points in the share of principals age 60 or above. This is the case for the Czech Republic, France and Portugal since 2013 (Figure I.3.3), and Austria, Brazil, Bulgaria, Estonia, Lithuania, Mexico, the Slovak Republic, Slovenia and Turkey since 2008. To accommodate the attrition of principals to come as a result of retirements, those systems will need to prepare and promote a new generation of school leaders in the near future or reorganise their school networks and school management responsibilities in new ways (Table I.3.8).

Figure I.3.3 **Change in the share of seniors among teachers and principals from 2013 to 2018**

Percentage of lower secondary teachers and principals by age group



Notes: Only countries and economies with available data for 2013 and 2018 are shown.
Statistically significant changes between 2013 and 2018 (TALIS 2018 – TALIS 2013) are found next to the category and the country/economy name (see Annex B).
Countries and economies are ranked in descending order of the percentage of lower secondary teachers who are 50 years old and above in 2018.
Source: OECD, TALIS 2018 Database, Tables I.3.4 and I.3.8.
StatLink http://dx.doi.org/10.1787/888933932171

Demographic patterns of the teacher and principal populations inevitably translate into diverse patterns of teacher and principal experience across countries. In 2018, on average across the OECD, teachers have about 17 years of experience in teaching in total, of which about 10 years is at their current school (Table I.3.9). Likewise, the average principal across the OECD has 10 years of experience in this role in total in 2018, of which 7 years is at the current school (Table I.3.13).

Changes in the proportions of teachers and school leaders with different levels of experience confirm some of the change patterns identified in relation to ageing of the profession. Brazil, Portugal, Singapore and Shanghai (China) have experienced an increase in the levels of experience ("seniorisation") of their teachers since 2013, with either increases in the share of the most

experienced teachers (over 20 years of experience) or decreases in the share of new teachers (less than or equal to 5 years) of at least 5 percentage points (Table I.3.12). With respect to school leaders, a relative seniorisation of principals has occurred in France since 2013, and in Bulgaria, Estonia and Lithuania since 2008. These systems benefit from having more experienced teachers and principals, but they will need to plan for their replacement in coming years wherever large proportions of staff are over age 60 (Table I.3.16).

Patterns of teacher experience vary with respect to the degree to which they have worked (or are still working) in non-education roles in addition to being a teacher, which can signal either late entry into the profession (as a second career) or holding two jobs at a time. On average across the OECD, teachers have worked 3.5 years in non-education roles. Work experience outside education is commonplace in Alberta (Canada), Brazil, Ciudad Autónoma de Buenos Aires (hereafter CABA, Argentina), Iceland, New Zealand, Sweden and the United States, where teachers have worked at least 5 years on average in non-education roles. But this is seldom the case in Japan, Korea, Saudi Arabia, Shanghai (China), Slovenia, Turkey and Viet Nam (Table I.3.9).

Principals also bring a variety of experiences to their role. School leadership careers typically build upon a foundation of teaching experience, and the average OECD principal has close to 20 years of experience as a teacher as well as 5 years working in school management roles other than principal. However the routes to school leadership positions vary across education systems. Principals in Austria, CABA (Argentina), Japan, Korea and Latvia have the longest teaching background, with over 25 years of teaching experience on average. Intermediate (non-principal) school management roles are most common in England (United Kingdom) and Shanghai (China), where principals have over 10 years of experience in such positions, on average. Principals with the most experience in jobs other than teaching, principal or school management roles (5 years or more) are found in CABA (Argentina), Colombia, Estonia, Georgia, New Zealand, Sweden and the United States. This suggests that they might have entered the education sector as a second career or that they have or have had two jobs at the same time (Table I.3.13).

The experience of teachers and principals at their current school sheds light on the degree of staff mobility within the system. On average across the OECD, teachers have been working at their current school for 10 years, which suggests relatively low levels of staff mobility across schools within the education system. The reasons for this can derive from many different factors: geography (schools dispersed across a large territory with few other schools nearby); legislation (e.g. mandatory staff mobility in Japan and Korea, (OECD, 2005[25]); degree of school autonomy (state or school employer and easiness to transfer to another school); age and settlement in a residential area; and degree of satisfaction with the current school. Mobility across schools is lowest in Georgia, Latvia, Lithuania, the Russian Federation and Slovenia, where teachers have worked at the same school for more than 15 years on average, and highest in Japan, Korea and Turkey, where the average experience at the same school is 5 years or less (Table I.3.9).

Principals in Colombia, France, the Netherlands, Singapore, Sweden and Viet Nam display the lowest levels of experience at their current school when contrasted with their total experience as principals – suggesting mobility across schools. By contrast, there is little mobility (non-significant difference between total years of experience as a principal and time as a principal at the current school) in 20 countries and economies participating in TALIS (Table I.3.13).

Gender of teachers and school leaders

Information about the gender distribution of the teacher and principal workforces makes it possible to assess the degree of gender imbalance in the teaching profession. This is a well-documented phenomenon, with female teachers dominating the teaching profession, most prominently in pre-primary and primary education, although the differences persist well into secondary education in many countries (OECD, 2014[20]; OECD, 2018[15]; UNESCO Institute for Statistics, 2006[26]; UNESCO Institute for Statistics, 2009[27]). There is also evidence that gender balance issues differ across disciplines (American Academy of Arts & Sciences, 2017[28]),[2] levels of education (OECD, 2018[15]), and between the teaching and leadership professions.

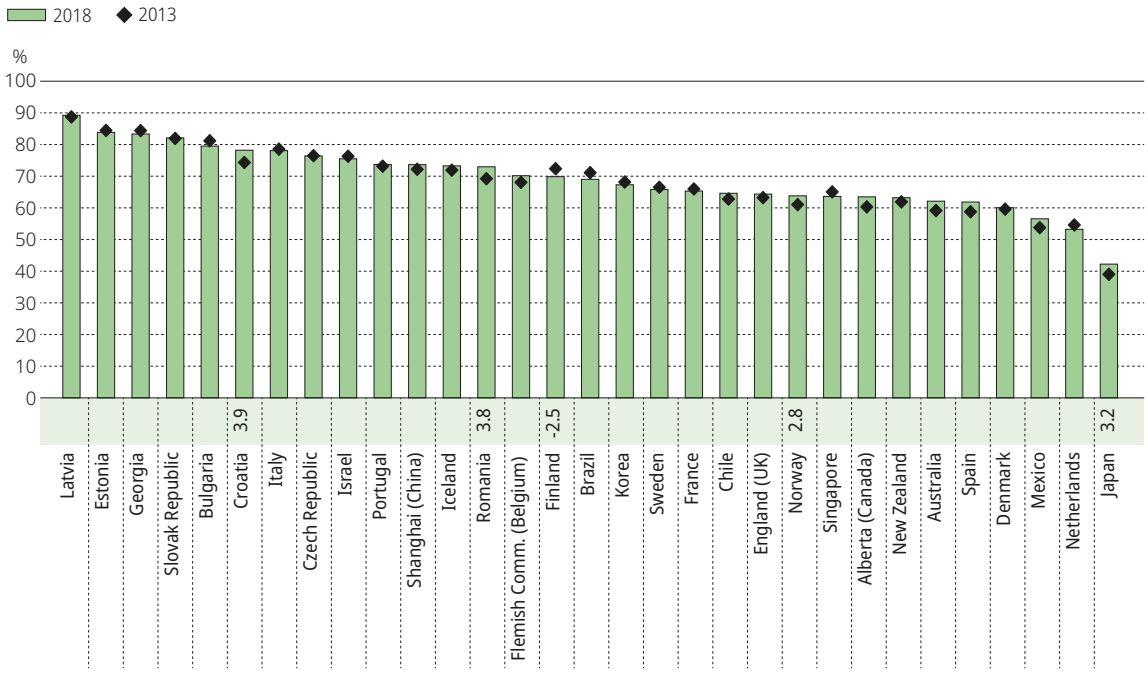
Gender imbalances in the teaching profession are a policy concern in a number of systems that struggle to attract men to the profession (Drudy, 2008[29]; OECD, 2005[25]; OECD, 2009[14]), but there are two distinct aspects to this policy issue. The first has to do with the impact of teachers' and principals' gender on students. In terms of education quality, there is little evidence that a teacher's gender has an impact on student performance (Antecol, Eren and Ozbeklik, 2012[30]; Holmlund and Sund, 2006[31]). However, the gender balance of the teaching force has been shown to have an impact on students' attitudes, career aspirations and achievements in some disciplines and contexts, through role model effects (Beilock et al., 2010[32]; Dee, 2005[33]). The effect of a teacher's gender is particularly associated with the learning outcomes of female students (Lim and Meer, 2017[34]), which could be explained by differences in the way teachers interact with students of the same or opposite gender (Jones and Dindia, 2004[35]). The second aspect of gender balance relates to the degree of gender equity within the workforce and gender disparities in the career progression of teachers, as well as the scope for promotion to leadership positions. It is, thus, interesting to examine gender balance patterns in 2018 and how they have changed since 2008.

TALIS data show that in 2018, 68% of all teachers are female, on average across the OECD, and women make up more than half of the teaching workforce in all participating countries and economies, with the exception of Japan. The gender distribution of teachers is most imbalanced in Latvia, where about 90% of teachers are women, as well as in Israel, Italy and a number of other countries in the Balkans, Baltic region, Eastern Europe and Central Asia, where women make up more than 75% of teachers (Table I.3.17).[3]

TALIS data further suggest that gender patterns in the teaching profession are enduring, and change little over time for most countries and economies. However, the proportion of female teachers has grown in Croatia, Japan and Romania since 2013, as well as in Australia[4], Austria, Iceland, Malta, Mexico, Norway, Portugal and Spain since 2008, with the share of female teachers rising by at least 2 percentage points. By contrast, the gender distribution of teachers has become more balanced in Finland since 2013, as well as in Brazil and Bulgaria since 2008 (Figure I.3.4, Table I.3.20).

Figure I.3.4 **Change in gender balance among teachers from 2013 to 2018**

Average proportion of lower secondary female teachers



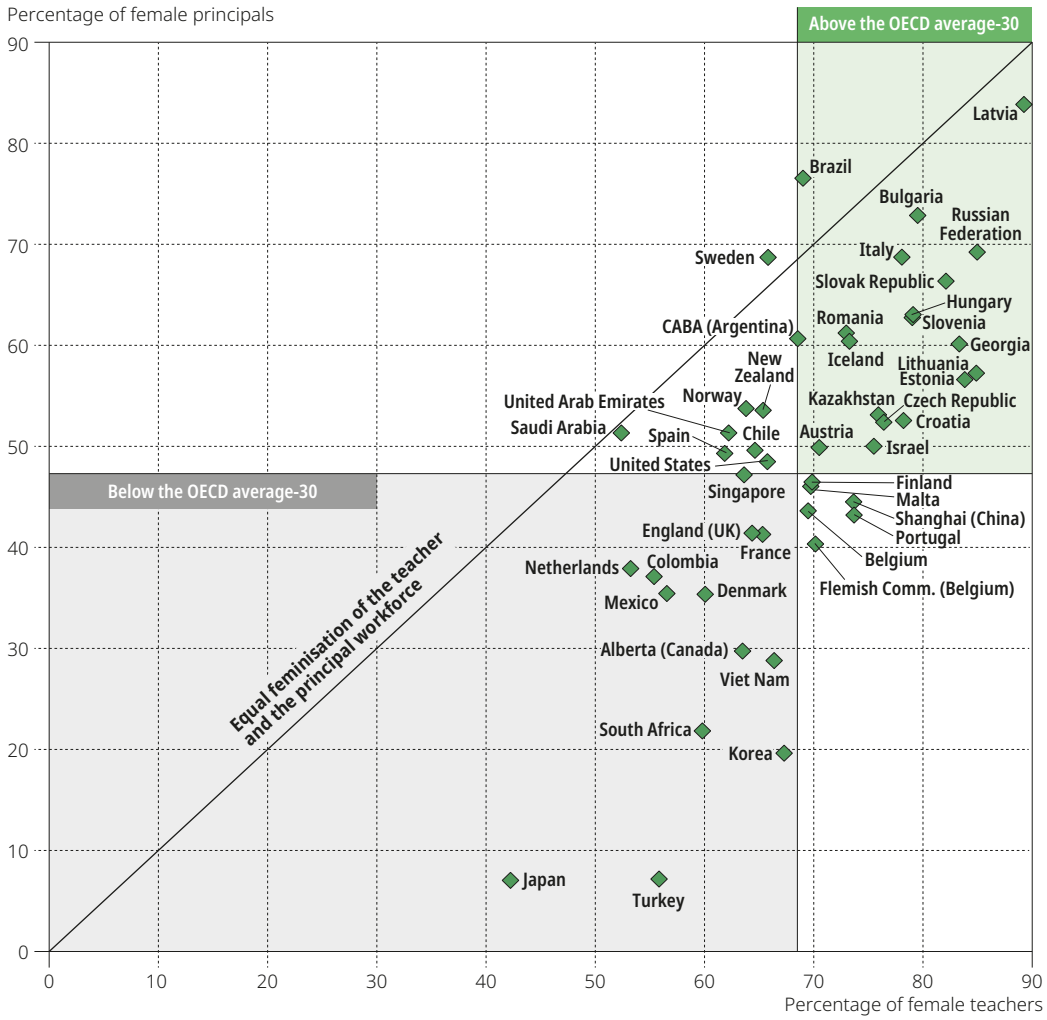
Notes: Only countries and economies with available data for 2013 and 2018 are shown.
Statistically significant changes between 2013 and 2018 (TALIS 2018 – TALIS 2013) are found next to the category and the country/economy name (see Annex B).
Countries and economies are ranked in descending order of the average proportion of lower secondary female teachers.
Source: OECD, TALIS 2018 Database, Table I.3.20.
StatLink http://dx.doi.org/10.1787/888933932190

Women are a majority in the teaching profession in all countries and economies participating in TALIS except Japan, but they are a minority among school principals in around half of the participating countries and economies (Figure I.3.5). In 2018, on average across the OECD, only 47% of principals are women, compared to 68% of teachers. This suggests significant gender imbalances in the promotion of female teachers to leadership positions, particularly for countries and economies that are most distant from the equal feminisation line[5] in Figure I.3.5. It is important to acknowledge, however, that the cause for this pattern can be endogenous, with a lesser propensity of women to apply for leadership positions, as much as exogenous, with a lesser propensity for women to be selected when applying for leadership positions (Table I.3.21). Box I.3.2 describes how policy can help reduce gender imbalances among principals.

In a number of countries, often those where women strongly outnumber men among teachers, more than 60% of principals are female. This is the case in Brazil, Bulgaria, CABA (Argentina), Georgia, Hungary, Iceland, Italy, Latvia, Romania, the Russian Federation, the Slovak Republic, Slovenia and Sweden. By contrast, female principals are the exception in Japan and Turkey, where they make up less than 10% of the principal population, and they are also scarce in Alberta (Canada), Korea, South Africa and Viet Nam, at less than 30% of the total (Table I.3.21).

Figure I.3.5 **Gender balance among teachers and principals**

Results based on responses of lower secondary teachers and principals



Notes: Only countries and economies with available data for the percentage of female teachers and the percentage of female principals are shown.

The OECD average-30 includes all TALIS 2018 OECD countries, except for Australia.

Source: OECD, TALIS 2018 Database, Tables I.3.17 and I.3.21.

StatLink http://dx.doi.org/10.1787/888933932209

Box I.3.2 **Efforts to foster female school leadership in Austria**

As a part of Austria's Federal Equal Treatment Act, the government has included a comprehensive set of provisions to improve opportunities for women for promotion and leadership positions in public sector jobs. Under the act, each federal department is required to issue a Women's Promotion Plan based on the proportion of women in the total number of permanent employees in that department (updated every two years). The plan specifies the personnel, organisational and further training measures through which the existing under-representation of women in the department can be eliminated. These include measures such as priority in career advancement policy to select female candidates among equally skilled candidates and priority in education and training that enables women to take up roles involving higher functions and advanced skills.

Source: Federal Ministry for Digital and Economic Affairs, Austria (2019[36]), *Bundesrecht konsolidiert: Gesamte Rechtsvorschrift für Bundes-Gleichbehandlungsgesetz, Fassung vom 22.03.2019*, www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=10008858.

Changes over time in the gender profiles of principals reveal that a few countries have experienced substantial increases in the proportion of female principals in recent years, reversing the under-representation of females among principals compared to their share of the teacher population. The share of female principals has surged by more than 10 percentage points in Italy and Sweden[6] since 2013, and in Austria[7] (Box I.3.2), Hungary and Norway[8] since 2008 (Table I.3.24).

Box I.3.3 **Teachers' and principals' profiles, from primary to upper secondary education**

The average age of teachers increases gradually with the level of education they teach. In 7 out of 13 countries and economies with available data for ISCED 1 and 2, primary teachers are at least one year younger than their lower secondary counterparts, with the largest difference of three years in Korea (Table I.3.2). At the upper secondary level, teachers are, on average, older by at least one year in 8 out of 11 countries and economies with available data for ISCED 2 and 3 (Table I.3.3). This tendency is found in most OECD countries (OECD, 2018[15]) and reflects the teachers' recruitment and retirement cycle (Lim, 2013[23]). The opposite pattern is observed only in Viet Nam, where 40 is the average age for primary teachers, 39 for lower secondary teachers, and 38 for upper secondary teachers. In contrast, there are almost no significant differences in the age distribution of principals across levels of education. One striking exception is France, where primary principals are six years younger, on average, than lower secondary principals (Tables I.3.5 and I.3.6).

The highest proportions of female teachers are concentrated in the lower levels of education, and the share shrinks at each successive level. At the primary level, female teachers are a majority in all 13 countries and economies with available data for ISCED 1 and 2. The proportion of women among primary teachers is at least 15 percentage points higher than in lower secondary education in CABA (Argentina), England (United Kingdom), Japan and Sweden, and at least 20 percentage points higher in France and the United Arab Emirates (Table I.3.18). The gender profile of upper secondary teachers is much more balanced than that of lower secondary teachers, with a proportion of female teachers at least 4 percentage points lower in all 11 countries and economies with available data for ISCED 2 and 3, and at least 10 percentage points lower in Brazil, Croatia and Sweden (Table I.3.19).

The gender distribution of principals mirrors the gender distribution of teachers. At the primary level, more than 50% of principals are women in 7 of the 13 countries and economies with available data for ISCED 1 and 2, but this only holds true for 3 of the 13 countries at lower secondary levels of education (Table I.3.22). The gender profile of upper secondary principals is similar to that of lower secondary principals in most of the 11 countries and economies with available data for ISCED 2 and 3, except in Sweden, where men are more represented among upper secondary principals than among lower secondary principals (Table I.3.23).

CHANGING CONTEXTS FOR TEACHING AND LEARNING

Several aspects of diversity in schools and classrooms help to understand the key features of teachers' working conditions and the context in which teaching and learning currently take place in schools. The diversity of student backgrounds encompasses many dimensions, including cultural background, language spoken at home, socio-economic background, ability level and learning needs, as well as gender. Such information is of interest from a descriptive perspective, but also because of the relationship between school composition and other factors, such as student outcomes (OECD, 2013[37]; OECD, 2015[38]; Sirin, 2005[39]) or teaching processes (Echazarra et al., 2016[40]).

Analyses of PISA data show that a school's socio-economic background and student intake matter for student performance and that students, regardless of their own socio-economic background, are advantaged scholastically if they attend a school whose students are from more advantaged socio-economic backgrounds (OECD, 2004, p. 189[41]; OECD, 2013[37]), although the strength of this advantage varies across countries. Likewise, data from the 2013 TALIS-PISA link show that the use and impact of effective teaching practices vary depending on school composition (Le Donné, Fraser and Bousquet, 2016[42]). Evidence from PISA also shows that students from immigrant backgrounds who are culturally and ethnically different from other students in their country of schooling perform less well academically and that these cultural differences also relate to their psychological and social well-being at school (OECD, 2015[38]).[9] Furthermore, the way teachers perceive multicultural learning environments shapes, in turn, the effectiveness of their teaching (Stanovich and Jordan, 1998[43]).[10] These findings have heightened interest in the composition of schools' intakes and how they relate to the characteristics of teachers, the pedagogical approaches that teachers implement in their classrooms (Echazarra et al., 2016[40]) and the broader policies on diversity adopted in the school.

TALIS provides a unique opportunity to investigate these issues, as it asks principals and teachers about the composition of the student body in their school/classroom in terms of special needs, socio-economic disadvantage, immigrant background, language

background and refugee status of students. These measures differ from those used in PISA studies (see Box I.3.4) and provide more direct context on how teachers and principals perceive the profile of their students. This provides important context for examining teachers' work, school practices related to diversity and teachers' preparedness and confidence to teach in diverse environments.

Box I.3.4 **School composition in PISA and TALIS**

PISA measures of school composition rely upon information collected through student questionnaires administered to a random sample of 30 students in each PISA school and aggregates at the school level of students' responses on their gender, migration background and index of economic, social and cultural status (ESCS). The school socio-economic composition in PISA is the mean value of the ESCS index of students in the school (OECD, 2016[44]).

TALIS relies upon the perspectives of teachers and school leaders on the composition of their school and of teachers on the composition of a randomly selected target class. It asks teachers and school leaders about the share of students with different profiles at the classroom level (this is unique to TALIS) and at the school level.

In TALIS, the approach is different, as it is based on the perceptions of teachers and school leaders. This is more subjective, but it is also more complete than the PISA measures, as principals describe the entire school composition and teachers refer to their entire target classroom (not just a random sample of students), and TALIS uniquely provides information on classroom composition as perceived by teachers. The two approaches provide complementary perspectives on actual school composition. But because TALIS measures reflect the subjective perceptions of teachers and school leaders, it can be argued that they are more likely to be related to teachers' practices (Gay, 2014[45]; Kielly et al., 2014[46]; Lucas, Villegas and Martin, 2014[47]) and to school policies put in place by principals.

School and classroom composition

A substantial body of research has investigated the impact on student achievement of school and classroom context, conceptualised either as the social composition of the school and classroom or as the neighbourhood in which the school is located (OECD, 2013[37]; OECD, 2015[38]; Sirin, 2005[39]). There is much debate on the extent to which school composition has an effect on student learning outcomes, after controlling for individual student characteristics (Banting and Kymlicka, 2004[48]; Borman and Dowling, 2010[49]; Firmino et al., 2018[50]; Willms, 2010[51]). But school composition remains relevant for policy makers, to better understand the profile of the students that schools and teachers serve and how it has changed over time, so they can provide adequate support and training to schools and teachers.

TALIS asks school principals and teachers to estimate the broad percentage (none, 1% to 10%, 11% to 30%, 31% to 60%, more than 60%) of certain types of students in their school (for principals) and in their target class (for teachers): "students with special needs"; "students from socio-economically disadvantaged homes"; "students who are immigrants or with a migrant background" (hereafter referred to as "students with a migrant background"); "students whose first language is different from the language of instruction or from a dialect of this/these language(s)" (hereafter referred to as "students whose first language is different from the language(s) of instruction"); and "students who are refugees". An international cut-off value is set for each student characteristic, in order to group the percentage categories in a relevant manner.[11]

As some of these questions were asked in previous cycles of the survey in 2008 and 2013, TALIS 2018 makes it possible to assess the degree to which learning environments have changed in terms of school and classroom composition. But TALIS 2018 tackles topics that have emerged since the last cycle. In particular, it more closely examines students with a migrant or refugee background, as their education is currently a priority for many countries in the context of the global refugee crisis (OECD, 2015[38]; OECD, 2018[52]).

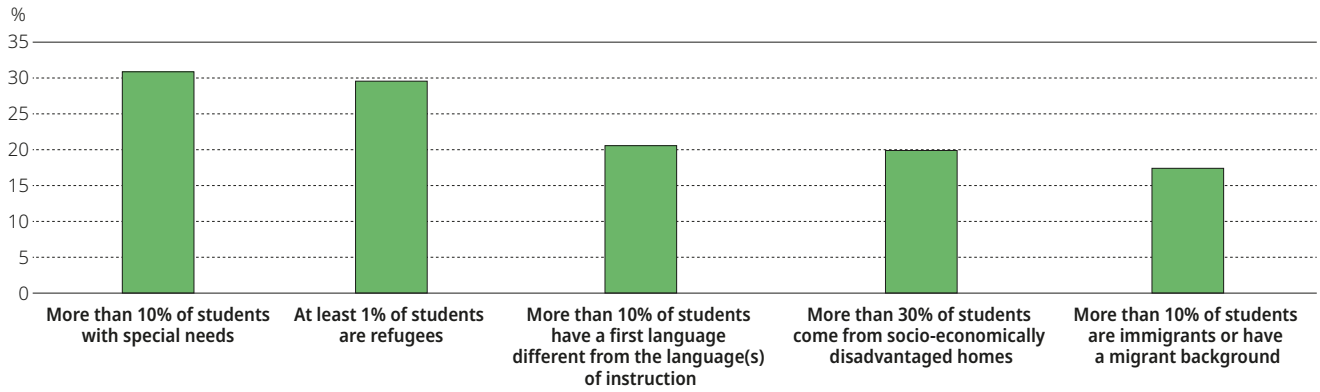
In 2018, working with quite diverse student populations is no longer exceptional and is part of the reality for a number of teachers. Depending on which aspect of diversity is considered, 17% to 31% of teachers on average across the OECD work in schools with a diverse student composition as reported by school principals, and since it is unlikely that the same schools concentrate all forms of diversity at the same time, the proportion of teachers actually working with diverse students is likely much higher (Figure I.3.6 and Table I.3.25). More specifically, the share of teachers working with these types of students is as follows:

- 31% in schools with at least 10% of students with special needs (i.e. those for whom a special learning need has been formally identified because they are mentally, physically, or emotionally disadvantaged)
- 30% in schools with at least 1% of refugee students (i.e. those who, regardless of legal status, fled to another country seeking refuge from war, political oppression, religious persecution, or a natural disaster)

- 21% in schools with at least 10% of students whose first language is different from the language(s) of instruction or from a dialect of this (these) language(s)
- 20% in schools with at least 30% of socio-economically disadvantaged students (i.e. those whose homes lack the basic necessities or advantages of life, such as adequate housing, nutrition or medical care)
- 17% in schools with at least 10% of students with a migrant background (i.e. those born outside the country or whose parents were both born outside the country).

Figure I.3.6 **School composition**

Percentage of lower secondary teachers teaching in schools with the following composition (OECD average-30)



Values are ranked in descending order of the percentage of lower secondary teachers teaching in schools with the following composition.
Source: OECD, TALIS 2018 Database, Table I.3.25.
StatLink http://dx.doi.org/10.1787/888933932228

However, these averages reflect very different patterns and realities across countries. More than 40% of teachers in Brazil, Chile, Colombia, France, Mexico, Portugal, South Africa and the United States work in schools with over 30% of socio-economically disadvantaged students, according to principals. This pattern may signal either high levels of poverty/inequality in these countries and/or high degrees of social segregation in their education systems. By contrast, less than 3% of teachers work in schools with over 30% of socio-economically disadvantaged students in the Czech Republic, Iceland, Malta, and the Russian Federation, suggesting either lower levels of poverty/inequality or lower levels of social segregation in those systems (Table I.3.25). Teachers' reports on the socio-economic composition of their target class confirm these patterns (Table I.3.28).

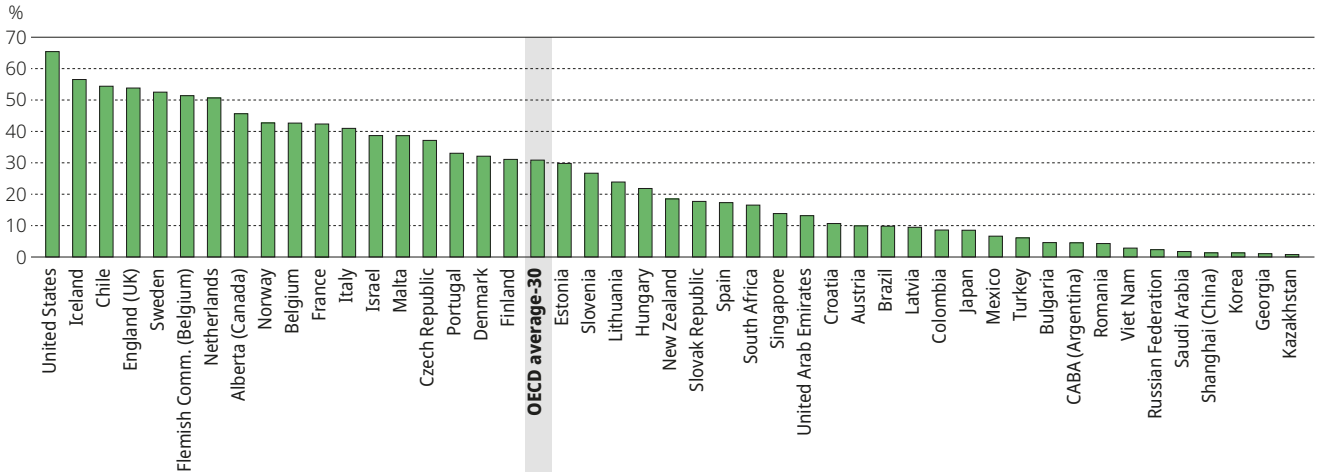
With respect to students with special needs, their access to formal education has improved around the world, as a number of international initiatives[12] have acknowledged the rights of children with disabilities to be included in the general education system and receive appropriate instructional support (Cooc, 2018[53]; Peters, 2007[54]; Winzer and Mazurek, 2014[55]; United Nations, 2015[56]). Accordingly, students with special needs are increasingly enrolled in mainstream schools, although the extent to which this is the case varies across countries (Cooc, 2018[53]). In 2018, more than 50% of teachers in Chile, England (United Kingdom), the Flemish Community of Belgium, Iceland, the Netherlands, Sweden and the United States work in schools with at least 10% of special needs students, according to principals (Figure I.3.7, Table I.3.25). The high concentration of special needs students in these countries is confirmed by teachers' reports (Table I.3.28). At the other end of the spectrum, less than 5% of teachers work in schools with a large proportion of special needs students in Georgia, Kazakhstan, Korea, Romania, the Russian Federation, Saudi Arabia, Shanghai (China) and Viet Nam. There are many causes for these wide differences across countries. They could reflect different conceptions of special needs across countries and the extent of "labelling" and formal identification of special needs students, differences in the inclusiveness of education systems and the enrolment of special needs students in regular schools, as well as possible segregation effects (e.g. if only a subset of schools is equipped and staffed to serve them) (Figure I.3.7, Table I.3.25).

Another major societal development in past decades is the growing integration of world economies and societies and associated labour mobility across countries (OECD, 2015[38]; OECD, 2018[52]; OECD, 2019[2]). In some regions, such as the European Union, this phenomenon has been facilitated by regional integration. In other parts of the world, more traditional drivers of economic migration, family reunion and skilled migration have been at play. But a more recent issue has been the rapid surge of refugee flows (OECD, 2018[52]), fuelling yet another type of population movement. With migration on the rise in many parts of the world,

the children of immigrants are enrolled in the school systems of their host countries, often requiring specific support from their schools and teachers (OECD, 2015[38]). It is, thus, interesting to examine how much of a reality this phenomenon is in the countries and economies participating in TALIS.

Figure I.3.7 **School concentration of students with special needs**

Percentage of lower secondary teachers teaching in schools where more than 10% of students have special needs[1]



1. "Students with special needs" are those for whom a special learning need has been formally identified because they are mentally, physically, or emotionally disadvantaged.

Countries and economies are ranked in descending order of the percentage of teachers teaching in schools where more than 10% of students have special needs.

Source: OECD, TALIS 2018 Database, Table I.3.25.

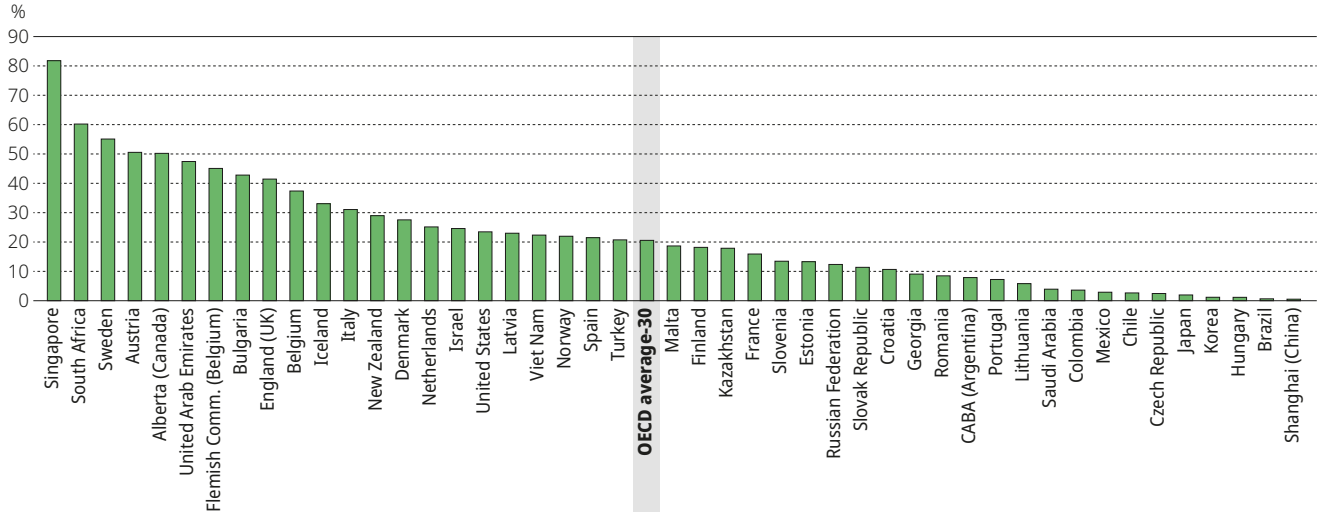
StatLink http://dx.doi.org/10.1787/888933932247

The largest proportions of teachers working in schools with more than 10% of students with a migrant background[13] are found in Alberta (Canada), Austria, Belgium (and in the Flemish Community), CABA (Argentina), Italy, Singapore and Sweden, where more than a third of teachers work in such schools, according to their principals (Table I.3.25). Teachers' reports on the composition of their target class confirm this pattern, with diversity related to students with a migrant background highest in Alberta (Canada), Australia, Austria, Belgium, CABA (Argentina), Sweden and the United Arab Emirates (Table I.3.28). However, just like the socio-economic composition of schools and classrooms, it is not possible to disentangle whether these patterns reflect large migration inflows or patterns of school segregation, where students with a migrant background are concentrated in some neighbourhoods and the schools located there (OECD, 2015[38]; OECD, 2018[57]). At the other end of the spectrum, countries and economies with traditionally low migration inflows have 1% or less teachers working in schools with large proportions of students with a migrant background: Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Japan, Korea, Lithuania, Romania, Shanghai (China), the Slovak Republic and Viet Nam (Table I.3.25).

Linguistic diversity is a phenomenon related to migration flows. But it can also exist due to the presence of linguistic or indigenous minorities in a country. On average across the OECD in 2018, 21% of teachers work in schools with more than 10% of students whose native language is different from the language of instruction, according to principals (Table I.3.25), and 18% of teachers report having more than 10% of students whose first language is different from the language(s) of instruction in their target class (Table I.3.28). However, this phenomenon is not universally shared across participating countries and economies (Figure I.3.8). In Singapore, nearly 82% of teachers work in schools with at least 10% of students whose first language is different from the language(s) of instruction, according to their principals, and this is also the case for over 40% of teachers in Alberta (Canada), Austria, Bulgaria, England (United Kingdom), the Flemish Community of Belgium, South Africa, Sweden and the United Arab Emirates. The Singaporean pattern is not surprising, given the multicultural and multilingual make-up of the island state's population and the fact that English was chosen as the language of instruction over the official ethnic languages (Mandarin, Malay and Tamil) (Chua, 2010[58]). Likewise, the other countries above also have large populations of linguistic minorities, immigrants or expatriate workers. At the other end of the spectrum, some education systems face very little linguistic diversity, with less than 5% of teachers working in schools with more than 10% of students whose first language is different from the language(s) of instruction in Brazil, Chile, Colombia, the Czech Republic, Hungary, Japan, Korea, Mexico, Saudi Arabia and Shanghai (China), where the populations are linguistically more homogenous (Table I.3.25).

Figure I.3.8 School concentration of students whose first language is different from the language(s) of instruction

Percentage of lower secondary teachers teaching in schools with more than 10% of students whose first language is different from the language(s) of instruction



Countries and economies are ranked in descending order of the percentage of teachers teaching in schools with more than 10% students whose first language is different from the language(s) of instruction.

Source: OECD, TALIS 2018 Database, Table I.3.25.

StatLink http://dx.doi.org/10.1787/888933932266

TALIS makes it possible to examine the extent to which the 2015-16 refugee crisis is visible in schools across participating countries and economies. As the question on this subject is new to TALIS 2018, it is not possible to analyse change over time. But the 2018 school composition with respect to refugee students provides an indication of the share of teachers directly exposed to refugee students, and presumably some of these refugee students are a result of the refugee crisis. Refugee students often come with a personal history of forced relocation and trauma that requires specific support from the school and its community (Graham, Minhas and Paxton, 2016[59]; Hart, 2009[60]; Taylor and Sidhu, 2012[61]). In nearly half of the participating countries and economies, at least 25% of teachers work in a school with at least 1% of refugee students, according to principals. This is the case for more than 50% of teachers in Austria, Belgium (and the Flemish Community), Denmark, England (United Kingdom), Finland, the Netherlands, Norway and Sweden. By contrast, less than 1% of teachers are working in such schools in Japan, Kazakhstan, Latvia, Romania, Shanghai (China), Singapore and the Slovak Republic, where, according to principals, there are almost no refugees (Table I.3.25).

On these various aspects of school composition, teachers' perceptions on the composition of their target class are generally consistent with the views of their principals on the composition of the entire school, although teachers tend to report less diversity than principals. In the case of Australia, the insufficient response rate for school principals does not allow examination of school composition, but teachers' reports on the composition of their target class suggest that the percentage of teachers working with diverse students is slightly above the OECD average for students from disadvantaged backgrounds and with special needs, about 10 percentage points above the OECD average for students whose home language is different from the language(s) of instruction, and close to 20 percentage points above the OECD average when it comes to students with a migrant background and refugee students (Table I.3.28).

Changes in school composition over time provide a good indication of how much the learning environments have transformed in recent years. TALIS data make it possible to explore this through principals' reports on their school composition in terms of students from disadvantaged homes, students with special needs and students whose first language is different from the language(s) of instruction.[14] It is not possible to do such analysis for students with a migrant background or for refugee students, as these questions are new to TALIS 2018. But changes in linguistic diversity over time provide a good indication of how much the learning environments for teachers have changed in terms of dealing with more linguistically diverse students, irrespective of the underlying cause of this diversity.[15]

One group of countries and economies participating in TALIS experienced a rise in linguistic diversity, with a significant increase in the proportion of teachers who work in schools with more than 10% of students whose first language is different from the language(s) of instruction. This is the case in Austria, the Flemish Community of Belgium and Iceland since 2008, and in Bulgaria,

England (United Kingdom), Finland, Portugal and Sweden since 2013. This suggests patterns in these countries of either growing international migration and/or refugee inflows, greater ethnic or linguistic grouping of students, or lag effects from differential birth rates of different linguistic communities that change the linguistic make-up of society (Table I.3.29). By contrast, another group of countries and economies experienced a reverse pattern, with a decrease in the share of teachers working in schools that are very diverse linguistically in Brazil, Korea, Lithuania, Mexico, the Slovak Republic, Slovenia and Spain since 2008, and in Singapore since 2013 (Table I.3.29).

With respect to socio-economic diversity; several education systems have experienced a decline since 2013 in the share of teachers working in schools with more than 30% of students from socio-economically disadvantaged homes: Estonia, Israel, Latvia, Shanghai (China) and the Slovak Republic. This may result from a decline in poverty and social inequalities among students in these countries and economies or a rise in school social inclusion. Denmark and Sweden experienced the opposite pattern (Table I.3.30).

As for diversity in terms of educational needs, the share of teachers working in schools with more than 10% of students with special needs has increased in six countries since 2013: Brazil, Chile, the Czech Republic, Italy, Portugal and Singapore. This could result from a greater propensity to identify and detect students with special needs and to implement school policies and practices catering to these students, or changes in how these students are grouped across schools. In three other systems, the share of schools with more than 10% of students with special needs has substantially decreased: England (United Kingdom), Korea and Sweden (Table I.3.31).

Box I.3.5 **Student diversity from primary to upper secondary education**

Student diversity presents mixed patterns

The levels of student diversity in schools, be it socio-economic, cultural, linguistic or based on educational needs, present mixed patterns across all three levels of education and all countries. Negative, positive and non-significant differences between the primary and lower secondary levels are found among the 13 countries and economies with available data for ISCED 1 and 2. However, upper secondary teachers tend to work in less diverse schools than lower secondary teachers in 2 to 5 out of 10 countries and economies with available data for ISCED 2 and 3, depending on the particular dimension of student diversity examined (Tables I.3.26 and I.3.27).

However, the largest difference in the school composition of primary and lower secondary schools is found with the proportion of refugee students at school. In 6 out of 13 countries and economies with available data for ISCED 1 and 2, the percentage of teachers teaching in schools with at least 1% of refugees is lower in primary schools than in lower secondary schools, with the largest differences in England (United Kingdom) (24 percentage points) and France (22 percentage points).

Compared to the lower secondary level, at the upper secondary level, in 5 out of 10 countries and economies with available data for ISCED 2 and 3, fewer teachers teach in schools that enrol at least 10% of special needs students, with the largest differences in Portugal and Sweden.

School diversity policies and practices differ slightly across levels of education

Primary teachers tend to report more often than lower secondary teachers that their school implements practices addressing student cultural diversity. Across several countries among the 13 countries and economies with available data for ISCED 1 and 2, more primary schools tend to implement the following practices: organising multicultural events, teaching how to deal with ethnic and cultural discrimination, and adopting teaching and learning practices that integrate global issues throughout the curriculum (Table I.3.36). The largest gaps between primary and lower secondary schools in the prevalence of these three school practices are found in Korea. In contrast, in France and Denmark, some diversity-related practices are more frequent in lower secondary schools than in primary schools.

Differences between the lower and upper secondary levels are generally smaller (Table I.3.37). However, in 5 out of 11 countries and economies with available data for ISCED 2 and 3, teaching how to deal with ethnic and cultural discrimination is less frequent in upper secondary schools than in lower secondary schools, with the largest differences in Denmark and Slovenia.

Principals tend to report higher levels of policies and practices related to diversity at their schools than teachers, and the respective proportions tend to be similar across all three levels of education (Tables I.3.36 and I.3.37).

Attitudes of school staff towards student diversity

In the context of rising migration worldwide and the growing integration of world economies and labour markets, many societies have become more globalised and multicultural (OECD, 2018[52]; OECD, 2019[2]). This new reality and the challenges and opportunities it entails have prompted academic and policy interest on how education systems manage to integrate populations with a high proportion of students from migrant backgrounds (Alsubaie, 2015[62]; Bowen and Salsman, 1979[63]; Jackson and Boutte, 2018[64]; OECD, 2012[65]; OECD, 2015[38]; OECD, 2018[57]).

School responses to student diversity take multiple forms, varying greatly in prevalence across participating countries and economies, depending on the type of diversity issue. A key aspect of school responses to student diversity derives from the attitudes of staff and their beliefs in relation to equity and diversity. Research has shown that asking sensitive questions directly can result in significant proportions of respondents[16] hiding their true sentiments due to social desirability pressures (Janus, 2010[66]). To overcome this issue, one approach used by survey methodologists is to ask sensitive issues indirectly. Thus, TALIS asks principals to estimate approximately what proportion of teachers in their school ("none or almost none"; "some"; "many"; or "all or almost all") would agree with a series of statements related to equity and cultural diversity. The responses of principals show that their teachers share very inclusive and positive views on equity and diversity.

With respect to equity beliefs, the importance of treating male and female students equally is a belief almost universally shared by teachers, according to their principals: 98% of principals on average across OECD countries and economies report that "many" or "all or almost all" teachers in their school find this important in 2018. The same holds for treating students from all socio-economic backgrounds in the same manner: 97% of principals so report across the OECD. There is not the same consensus that students should be taught how to avoid gender discrimination, with 93% of principals reporting agreement among their teachers on average, and less than 90% in 10 countries and economies. There is also less consensus on the belief that schools should encourage students from different socio-economic backgrounds to work together, with 92% of principals reporting agreement among their teachers on average, and less than 90% in 17 countries and economies (Table I.3.32).

As far as cultural diversity beliefs are concerned, the conviction that children and young people should learn that people of different cultures have a lot in common is the most widely shared belief among teachers, according to their school leaders (95% of them so report in 2018). The belief that respecting other cultures is something that children and young people should learn as early as possible comes next (94% of principals reporting agreement among their staff). On average across the OECD, 92% of principals also report agreement among their teachers that it is important for students to learn that people from other cultures can have different values, and 91% of principals report that teachers find it important to be responsive to differences in students' cultural backgrounds. However, less than 90% of principals report agreement of their teachers with cultural diversity beliefs in the Czech Republic, Saudi Arabia and Shanghai (China) for all four diversity beliefs, in Alberta (Canada)[17], Belgium (and the Flemish Community) and the Slovak Republic for three diversity beliefs, and in Austria, France, Hungary, Japan, Kazakhstan, Romania, South Africa and Turkey for two diversity beliefs (Table I.3.33).

Box I.3.6 **Supporting students from socio-economically disadvantaged backgrounds through the Care programme in Kazakhstan**

One of the critical challenges facing Kazakhstan's education system is the high number of students from socio-economically disadvantaged backgrounds who are at risk of dropping out of school. For almost a decade, Kazakhstan has been deploying significant efforts to integrate these students from socio-economically disadvantaged backgrounds into its education system through a systemic approach. Kazakhstan's Care programme involves both investing financial resources and using teachers as social actors to bring these students to school. Teachers do community visits with households to identify students who are out of school or have been absent for more than ten days without a valid reason. Teachers interact with these students and their families to identify the barriers preventing them from coming to school regularly and provide assistance to them in coming back to school. In addition to the role of teachers, the Care programme focuses on providing material support in the form of uniforms, stationery, textbooks, etc. The programme has supported more than 1.1 million disadvantaged students since 2010. The focus on supporting students from low socio-economic backgrounds remains a priority in education policy for the government of Kazakhstan. Overall, socio-economic background has a weaker influence on student outcomes in Kazakhstan than in other OECD countries, as indicated by PISA results.

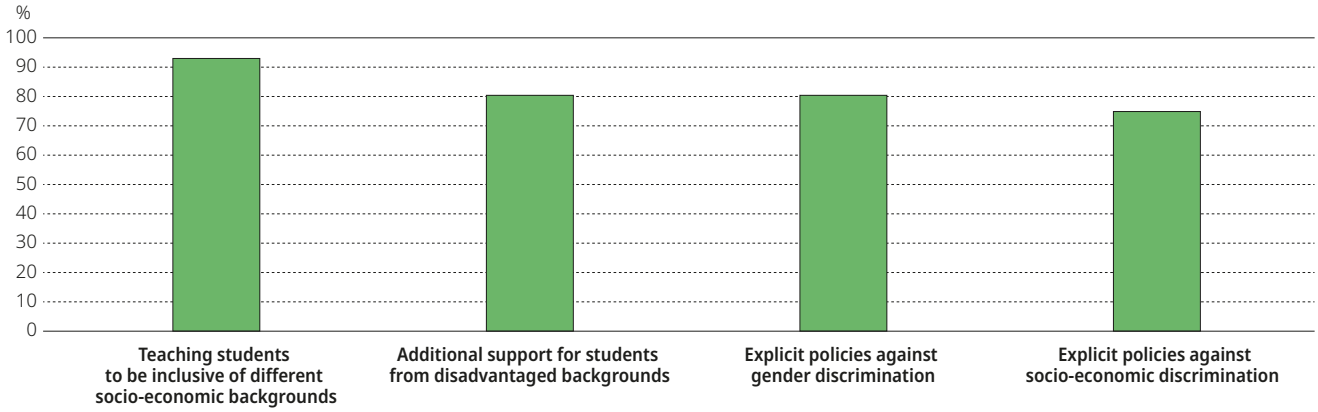
Source: OECD (2018[70]), *Education Policy Outlook: Kazakhstan*, www.oecd.org/education/Education-Policy-Outlook-Country-Profile-Kazakhstan-2018.pdf.

In 2018, a range of equity-related policies and practices are implemented in schools, according to their principals, to address gender and socio-economic equity issues (Figure I.3.9). The most common practice is teaching students to be inclusive of different socio-economic backgrounds (implemented in 93% of schools in 2018, on average across the OECD). The provision of additional support for students from disadvantaged backgrounds and explicit policies against gender discrimination come next (80% each), followed by explicit policies against socio-economic discrimination (75%). It is noteworthy that, at a time when there is growing awareness of the importance of educating youngsters to respect women at the earliest ages (Simmonds, 2017[67]; UNESCO, 2018[68]), 20% of lower secondary schools in the OECD do not have explicit policies to fight gender discrimination. Likewise, at a time of growing social inequalities in most OECD countries (OECD, 2018[69]), only 75% of schools have policies combating socio-economic discrimination (Table I.3.34). Box I.3.6 describes some of the initiatives undertaken in Kazakhstan to support the needs of students from disadvantaged backgrounds.

Differences exist across participating countries and economies in the prevalence of these equity-related policies and practices. Teaching students to be inclusive of different socio-economic backgrounds is implemented in at least 95% of schools in almost half of participating countries and economies, but in less than 85% of schools in Denmark, Japan, the Slovak Republic, Sweden and Viet Nam. Interestingly, the education systems where this practice is least used are countries with less socio-economic inequality,[18] which may signal that this practice is less necessary. The provision of additional support for students from disadvantaged backgrounds is also a widespread practice, implemented by at least 80% of schools in about 80% of participating countries and economies. But, again, it is least used in Finland and Norway, as well as in Sweden. In the case of Sweden, the practice is to support challenging schools and neighbourhoods rather than students within schools, in order to pursue equity objectives while avoiding stigmatisation. There is much more variation across systems in the prevalence of explicit policies against gender and socio-economic discrimination. The percentage of schools implementing such policies ranges from 45% in the Flemish Community of Belgium, to over 95% in the Czech Republic, Finland and Korea for gender discrimination, and from 39% in New Zealand to over 95% in the Czech Republic and Lithuania for socio-economic discrimination (Table I.3.34).[19]

Figure I.3.9 **School practices related to equity**

Percentage of lower secondary principals reporting that the following policies and practices are implemented in their school (OECD average-30)



Values are ranked in descending order of the prevalence of equity-related school practices.

Source: OECD, TALIS 2018 Database, Table I.3.34.

StatLink http://dx.doi.org/10.1787/888933932285

For diversity-related school policies and practices, the previous section has shown the wide variation across participating countries and economies in the prevalence of multicultural diversity in the composition of schools. There is also variation in the degree to which schools have adopted specific policies and practices related to multicultural diversity and the nature of these policies and practices at the school level. The examination of these policies and practices is restricted to the sample of teachers who reported that students from more than one cultural or ethnic background are enrolled in their school (around 70% of the sample of teachers across all participating countries and economies and on average across the OECD[20]). For the sake of simplicity, these schools are referred to as "multicultural schools".

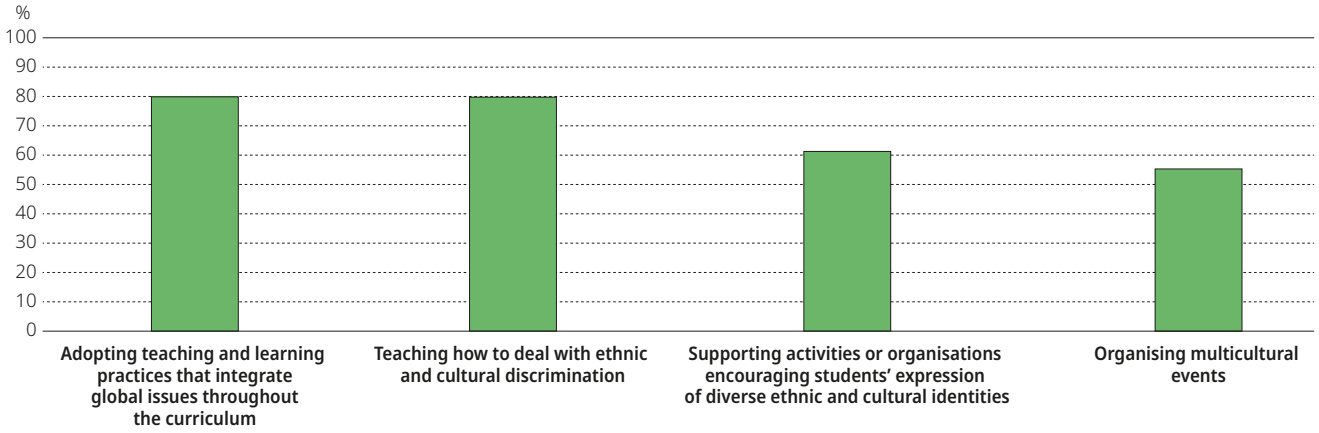
An important consideration in reviewing school policies and practices related to multicultural diversity is the social context in which they take place. The dominant paradigm in research on cultural diversity identifies two main ideological approaches and perspectives of countries' policies: equity and multiculturalism (Ely and Thomas, 2001[71]). The equity approach emphasises

fostering equality and inclusion and valuing diversity. In education, it is often referred to as a colour-blind approach that regards all children in a class as equals, avoids discrimination and treats all students fairly, with the goal of creating and maintaining homogeneity (Schachner et al., 2016[72]). Some argue that, in practice, this homogeneity often implicitly refers to the dominant culture of a country, and tends to be associated with assimilationist ideological models (Plaut, Thomas and Goren, 2009[73]). By contrast, the multiculturalism approach is based on the premise that diversity can enrich the school and promote respect for and knowledge of other cultures and the enhancement of intercultural skills. Accordingly, it acknowledges and recognises expressions of diversity. Although the two policy streams of equity and multiculturalism may seem at odds, empirical studies show that schools often combine components of both (Schachner et al., 2016[72]).

In 2018, TALIS examines school policies and practices in relation to cultural diversity for the first time. On average across the OECD, the most common policies and practices related to diversity, according to principals, are those embedded in the teaching process: 80% of teachers working in multicultural schools – that is, schools with more than one cultural or ethnic background among students – do so in a school that has integrated global issues throughout the curriculum, and an equal proportion of 80% work in a school that teaches how to deal with ethnic and cultural discrimination (Figure I.3.10). Policies and practices promoting diverse cultures are less common: only 61% of teachers working in multicultural schools do so in a school that supports activities or organisations encouraging students' expression of diverse ethnic and cultural identities, and 55% work in a school that organises multicultural events. Box I.3.7 describes some of the initiatives undertaken in Austria to support the needs of multicultural schools and their teachers.

Figure I.3.10 **School practices related to diversity**

Percentage of lower secondary teachers working in a school with diverse ethnic and cultural student backgrounds where the following diversity-related practices are implemented[1] (OECD average-30)



1. Data based on principals' views. Principals' responses were merged with teacher data, and weighted using teacher final weights.
Values are ranked in descending order of the prevalence of diversity-related school practices.
Source: OECD, TALIS 2018 Database, Table I.3.35.
StatLink http://dx.doi.org/10.1787/888933932304

It is interesting to examine teachers' perspectives on school policies and practices related to multicultural diversity, as they are based on the perceptions of the actors on the frontline of classrooms. They show the wide variation across countries and economies in the prevalence of school policies and practices related to diversity, even when the analysis is limited to teachers working in multicultural schools.

According to teachers' views, the education systems where global issues are most systematically integrated into the curriculum of multicultural schools (with over 85% of teachers in multicultural schools so reporting) are Alberta (Canada), Austria, Brazil, Singapore, the United Arab Emirates and Viet Nam. Those where this practice is least common in multicultural schools are Iceland, Japan, Korea and Saudi Arabia. Teaching how to deal with ethnic and cultural discrimination is, according to teachers, most widespread in CABA (Argentina), Chile, Colombia, Singapore, Slovenia and Viet Nam, and least common in the multicultural schools of Denmark, Iceland, Japan, Norway and Turkey (Table I.3.35).

The last two diversity practices examined in TALIS are more illustrative of the multiculturalism approach. Supporting activities or organisations encouraging students' expression of diverse ethnic and cultural identities is most common in Kazakhstan, New Zealand, Shanghai (China), Singapore, the United Arab Emirates and Viet Nam, and least widespread in Denmark, Finland,[21]

Japan, Norway and Sweden. Finally, the organisation of multicultural events is most prevalent in the multicultural schools of Kazakhstan, Shanghai (China), Singapore and the United Arab Emirates, and least common in the Czech Republic, Denmark, Japan, the Netherlands, Norway, Sweden and Turkey (Table I.3.35).

Box I.3.7 **Initiatives in Austria to respond to the needs of multicultural schools**

The education system in Austria is continuously adapting itself to cater to the needs of students from diverse ethnic and cultural backgrounds. In order to build teacher capacity, a nationwide course on home-language teaching, Teaching First Languages In The Context Of Migration, is offered to teachers as a four-semester course. Further, home-language teaching is organised in two ways in Austria, based on the number of students: teaching at a single school, when the number of students for a particular language is high, and grouping students from different schools together when the number from each school is low.

The Ministry of Education has also implemented a programme called Mobile Intercultural Teams that offers support to schools with a high proportion of immigrant students. These teams work with teachers, principals and administrators at these schools, offering advice based on teachers' experiences in working with immigrant students, workshops on classroom climate, etc. The teams include educational psychologists who interact with teachers, principals, students and their parents, serving as a bridge between these stakeholders so that schools and teachers can best support students in their daily classroom instruction.

Source: European Commission/EACEA/Eurydice (2019[74]), "Integrating Students from Migrant Backgrounds into Schools in Europe: National Policies and Measures", *Eurydice Report*, http://dx.doi.org/10.2797/222073.

As for equity-related school policies and practices, the limited number of principals' observations in each country does not allow regression analyses on the factors associated with diversity-related school policies and practices. Interestingly, at the system level, the proportion of teachers working in linguistically diverse schools, which can act as a proxy for schools' cultural diversity, is unrelated to the share of schools with multicultural policies and practices as reported by principals (the linear correlation coefficient is close to 0).

Teachers' readiness to teach in multicultural environments

With migration on the rise in many parts of the world (OECD, 2018[52]), the children of immigrants are enrolled in the schools of their host countries and a number of education systems have experienced an increase in the linguistic diversity of their students over the past decade. This phenomenon is not exclusively driven by migration flows, but it is strongly related to migration patterns and the countries of origin of immigrants and refugees. An implication of both migration/refugee flows and greater linguistic diversity in schools is that schools and teachers increasingly need to cater to multicultural student profiles.

In this context, a key issue for policy makers and school leaders is to understand teachers' readiness to teach multicultural classes. Indeed, a recent international review of the integration of immigrant students acknowledged that handling cultural diversity in class is difficult and requires preparation. Often, students differ not only in the knowledge and skills they have acquired in their early years, but also in the strategies they use to approach and solve problems. De Abreu (2006[75]) argues that, in mathematics for instance, teachers who are not fully aware of cultural differences in approaches to mathematical problems or who play down cultural differences, arguing for general notions of ability and equity, are ill-equipped to build on their students' knowledge and experience (OECD, 2015[38]).

Thus, it is important to examine how confident teachers feel about teaching a culturally diverse class. TALIS 2018 includes several questions on teaching in diverse environments for teachers who have previously taught a classroom with students from different cultures.[22] In particular, TALIS asks teachers to report on their preparedness for teaching in a multicultural or multilingual setting. As discussed in Chapter 4, the vast majority of teachers did not feel ready for the challenge at the time they completed their teacher education. Indeed, more than 50% of teachers report that they were not well prepared to teach in a multicultural or multilingual setting in all participating countries except Shanghai (China), Singapore, South Africa and the United Arab Emirates (Table I.4.20 in Chapter 4).

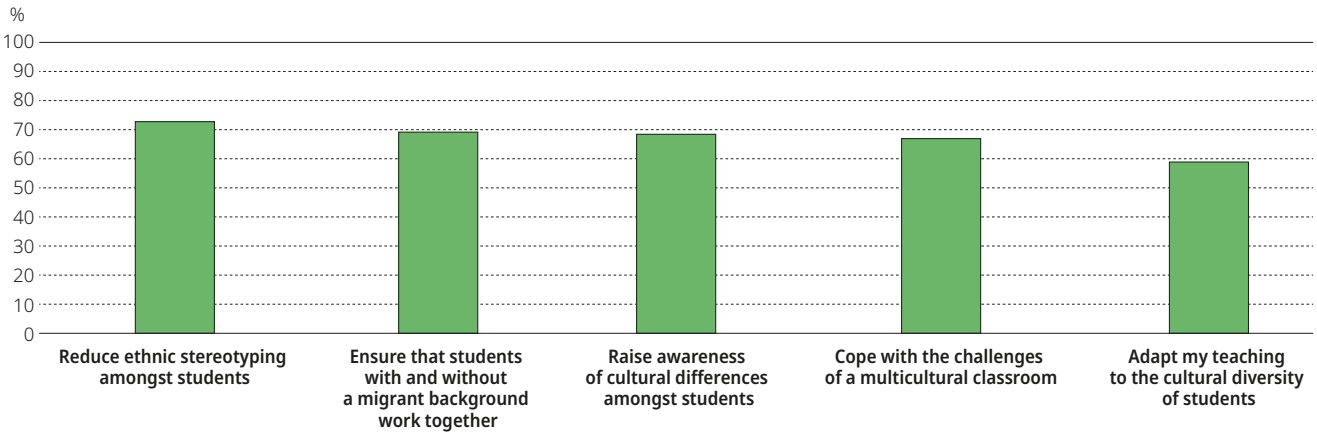
TALIS also asks about teachers' perceived need for professional development. As noted in Chapter 5, 15% of teachers report a high need for professional development in teaching in a multicultural or multilingual setting, and this need has become even more prominent in 2018. It is now the third-highest area of need for professional development reported by teachers, after teaching students with special needs and information and communication technology (ICT) skills for teaching (Table I.5.21 in Chapter 5).

TALIS 2018 also asks teachers who have previously taught classrooms with students from different cultures a range of questions about their experience and self-efficacy teaching a culturally diverse class, and to what extent ("not at all"; "to some extent"; "quite a bit"; "a lot") they can manage a number of aspects of teaching in multicultural contexts. Results show that, on average across the OECD:

- Teachers' self-efficacy in multicultural settings is highest with respect to reducing ethnic stereotyping among students, with 73% of teachers feeling that they can do this "quite a bit" or "a lot" (Figure I.3.11, Table I.3.38).
- Ensuring that students with and without a migrant background work together comes next, with 69% of teachers reporting high levels of self-efficacy in this area.
- 68% of teachers report high levels of self-efficacy in raising awareness of cultural differences amongst students.
- 67% report high levels of self-efficacy in coping with the challenges of a multicultural classroom.
- It is noteworthy that the proportion of teachers reporting high levels of self-efficacy drops to 59% when it comes to adapting their teaching to the cultural diversity of students, i.e. much lower than for aspects related to promoting positive relationships and interactions between students from different backgrounds (Figure I.3.11, Table I.3.38). This pattern mirrors the finding from Chapter 5 that teachers' reported need for professional development is higher for teaching in a multicultural setting than for communicating with people from different cultures or countries (Table I.5.21 in Chapter 5).

Figure I.3.11 **Teachers' self-efficacy in teaching multicultural classes**

Percentage of lower secondary teachers who feel they can do the following "quite a bit" or "a lot" in teaching a culturally diverse class[1] (OECD average-31)



1. The sample is restricted to teachers reporting that they have already taught a class with students from different cultures.
Values are ranked in descending order of the percentage of teachers reporting that they feel they can do the following "quite a bit" or "a lot" in teaching a culturally diverse class.
Source: OECD, TALIS 2018 Database, Table I.3.38.
StatLink http://dx.doi.org/10.1787/888933932323

The examination of country-specific patterns of self-efficacy in multicultural settings reveals interesting regional and cultural patterns. With respect to adapting teaching to the cultural diversity of students, at least 90% of teachers report high self-efficacy in Colombia, Portugal and the United Arab Emirates, but this is the case for less than half of teachers in Estonia, Finland, Japan, Korea, the Netherlands, Norway and Slovenia. When examining all aspects of self-efficacy in multicultural settings, teachers tend to display high levels of multicultural self-efficacy in Latin American and Middle Eastern countries and in Portugal, but lower levels of self-efficacy in multicultural settings in Asian and Nordic countries (Table I.3.38). One has to keep in mind, however, that TALIS captures teachers' perceptions that are subjective and may be subject to cultural bias, particularly for self-evaluative questions such as self-efficacy (He and Kubacka, 2015[76]). Therefore, comparisons across countries and economies need to be interpreted with caution.[23]

On average across OECD countries and economies, teachers tend to feel more confident in their ability to teach a class with students from different cultures when their class actually includes higher shares of immigrant students and students whose first language is different from the language(s) of instruction (more than 10% of these students versus 0% to 10%). Teachers'

ability to teach multicultural classes is positively related with one or both of these measures of classroom composition in about two-thirds of the countries and economies participating in TALIS (Table I.3.41). There is a range of possible explanations for this finding. Assuming that classes do not become culturally diverse overnight, this finding may suggest a pattern of learning by doing, whereby past experience in teaching in a multicultural setting is a key lever of teachers' self-efficacy in teaching in multicultural environments. Along the same lines, another possible reason is that schools with culturally diverse populations receive or develop targeted in-house professional development, which has a direct impact on feelings of efficacy of their teachers. Selection issues may also be at play, whereby teachers with more multicultural self-efficacy are more likely to choose to teach at multicultural schools, and multicultural schools are more likely to hire teachers with higher multicultural self-efficacy, or assign teachers with high multicultural self-efficacy to the more diverse classrooms within schools.

There are hardly any countries where the share of students with refugee status in a class is significantly related to teachers' self-efficacy in teaching in multicultural settings. However, in four European countries, the Czech Republic, Latvia, Norway and Portugal, teachers tend to report feeling less able to teach a multicultural class when they have at least one refugee student in their classroom (Table I.3.41). This negative relationship could be explained by the specificities of teaching refugees, students who may have experienced a trauma and arrived in the host country with little preparation in the language of instruction (Graham, Minhas and Paxton, 2016[59]; Hart, 2009[60]). The massive and sudden inflow that occurred in some countries (especially Sweden) may have also taken teachers and schools by surprise (OECD, 2018[52]), with little time to adjust, leaving them feeling unprepared. The teachers who are actually coping with these infrequent situations may, in fact, be quite realistic about the challenges they entail.

ENHANCING SCHOOL CLIMATE AND LEARNING ENVIRONMENTS

An important issue for policy makers, principals, teachers and parents alike is to understand the dynamics at play in school and classroom climates, as research shows that a positive school climate is a powerful direct or indirect influence on student learning and social well-being (Battistich et al., 1997[77]; Bryk and Schneider, 2002[78]; Cohen et al., 2009[79]; Engel, Rutkowski and Rutkowski, 2009[80]; Hoy, Tarter and Hoy, 2006[81]; Martin et al., 2013[82]; Nilsen and Gustafsson, 2014[83]), as well as on teachers' sense of efficacy, confidence, and commitment to teaching (Carroll et al., 2005[84]; Hoy and Woolfolk, 1993[85]; Weiss, 1999[86]). School climate is a collective indicator of the culture of schools that encompasses physical, social and academic dimensions (Epstein and Mcpartland, 1976[87]). School safety can be conceptualised as pertaining to the physical and social dimensions of school climate. At a more micro-level (i.e. the class level), the relationships students forge with their teachers, the support they get from them, as well as the disciplinary climate in the classroom, are also crucial aspects for teacher and student well-being and student learning. It is particularly relevant to examine classroom discipline in light of its relation to teaching time and, by implication, to students' opportunity to learn (Le Donné, Fraser and Bousquet, 2016[42]; Vollmer, 2000[88]).

As earlier cycles of TALIS had asked teachers and principals about various aspects of school and classroom climates, TALIS 2018 provides a unique opportunity to investigate changes over time in this area and how the various dimensions of school safety, student-teacher relations and classroom discipline have changed since 2008.

Safety of schools' learning environments

TALIS asks school principals about the frequency of a number of incidents related to school safety, more specifically the frequency with which they occur in their school ("never"; "less than monthly"; "monthly"; "weekly"; or "daily"). While it is important to keep in mind that these reports reflect principals' perceptions and awareness of incidents as much as their actual prevalence, they nevertheless shed light on the safety of schools. Fortunately, on average across the OECD, schools in 2018 are, for the most part, immune from weekly or daily school-safety incidents and, thus, provide students with safe learning environments (Figure I.3.12, Table I.3.42). Some issues of traditional concern to parents do, in fact, occur on a weekly basis in a small minority of schools (under 3%). This is the case for the use/possession of drugs or alcohol (an issue occurring at least weekly in only 1% of schools on average in the OECD), physical injury caused by violence among students (2%), the posting of hurtful information about students on the Internet (2.5%) or vandalism and theft (3%). Incidents related to intimidation or verbal abuse of teachers/staff or unwanted electronic contact among students are slightly more frequent (occurring at least weekly in 3% to 4% of schools) (Figure I.3.12, Table I.3.42).

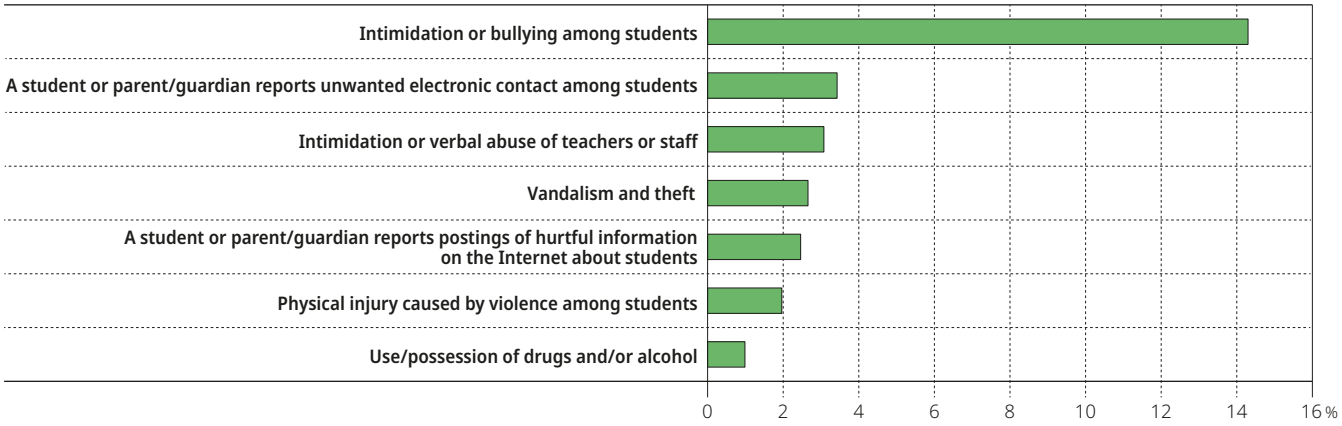
However, one issue stands out in the reports of school principals on school safety: reports of regular incidents related to intimidation or bullying among students are significantly higher than for the other school safety incidents, occurring at least weekly in 14% of schools on average across the OECD. This is an issue of concern for policy makers, teachers, principals and parents, given the enduring impact of intimidation and bullying on the well-being, confidence and achievement of students who are victims of it, as well as its potentially dramatic consequences (Hoy, Hannum and Tschannen-Moran, 1998[89]). According to principals' reports, this problem is most prevalent in Belgium (and the Flemish Community),[24] Malta, New Zealand and South Africa (occurring at least weekly in 30% to 40% of schools), as well as in Brazil, Bulgaria, England (United Kingdom), Finland, France, Israel, Sweden and the United States (occurring at least weekly in 20% to 30% of schools). This phenomenon might also be a significant issue in Australia[25] (Table I.3.42). By contrast, this issue is, according to principals' reports, extremely rare in Japan, Kazakhstan, Korea and Shanghai (China) (Table I.3.42).

Likewise, it is worrisome that 3% of schools face issues of intimidation or verbal abuse of teachers or staff at least weekly. This can also have enduring consequences for their well-being, stress levels, confidence and, eventually, for their retention in the profession (Guo and Higgins-D'Alessandro, 2011[90]). Brazil and the Flemish Community of Belgium are the education systems where this issue seems most frequent, as it occurs at least weekly in over 10% of schools. Intimidation or verbal abuse of teachers or staff also happens at least weekly in 5% to 10% of schools in Belgium, Colombia, Denmark, Estonia, New Zealand, Saudi Arabia, South Africa, Sweden and the United States (Table I.3.42).

Country-specific patterns shed light on the specific challenges faced by different countries and economies in relation to school safety. The education systems where school safety incidents are most frequent and widespread, according to principals, are Brazil, England (United Kingdom), the Flemish Community of Belgium and South Africa, where at least 10% of principals report school safety incidents at least weekly on at least three of the seven dimensions of school safety examined in TALIS (Table I.3.42).

Figure I.3.12 **School safety**

Percentage of lower secondary principals reporting that the following incidents occurred at least weekly in their school (OECD average-30)



Values are ranked in descending order of the percentage of lower secondary principals reporting that the following incidents occurred at least weekly in their school.

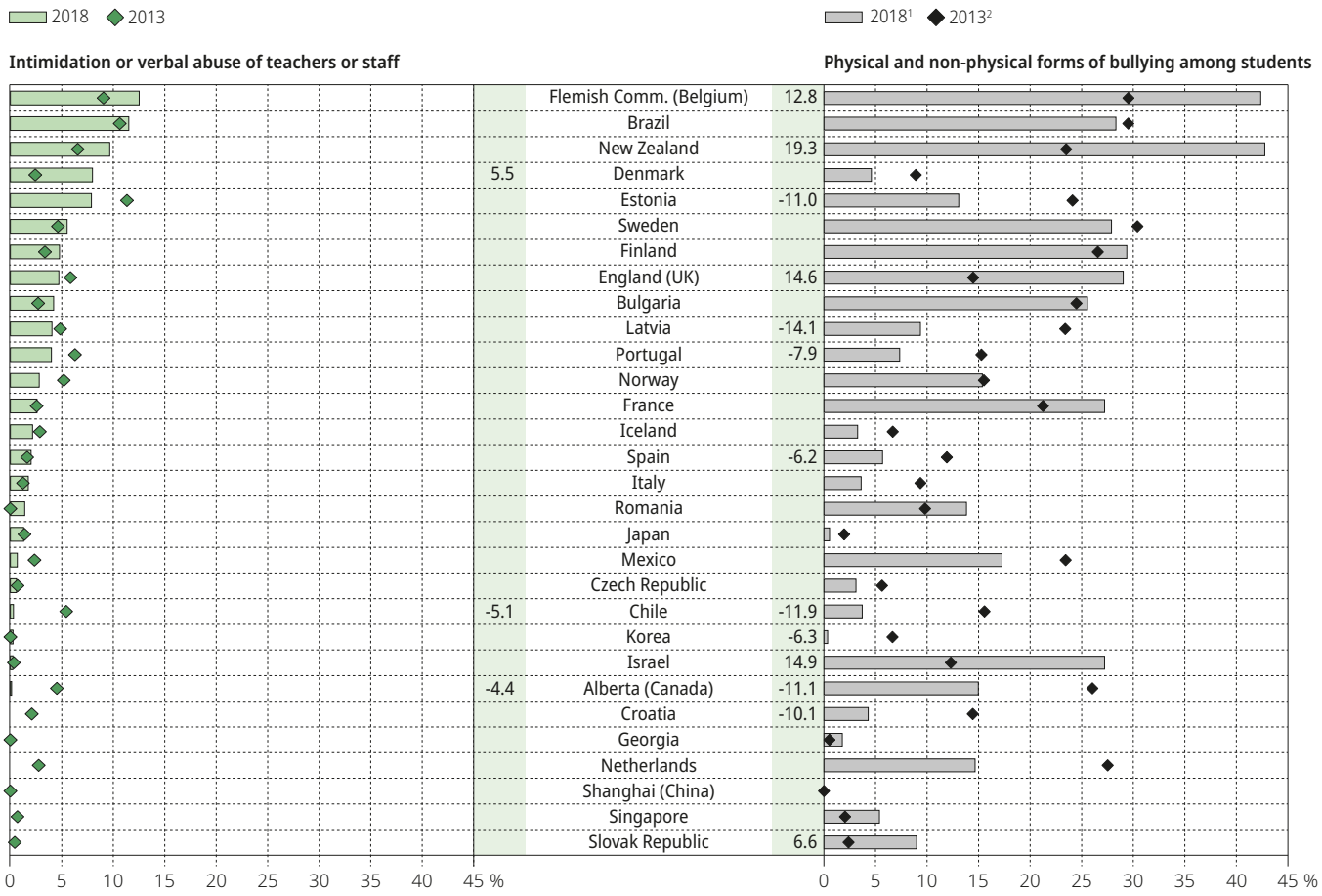
Source: OECD, TALIS 2018 Database, Table I.3.42.

StatLink http://dx.doi.org/10.1787/888933932342

TALIS makes it possible to scrutinise the change in school safety over the past five years. To the extent that intimidation or bullying among students is the most frequent school safety issue reported by principals in 2018, it is interesting to examine how it has changed compared to 2013. It is noticeable in this respect that principals' reports suggest that the frequency of intimidation or bullying has declined over the past five years in many countries and economies with available data (Figure I.3.13, Table I.3.45). However, one limitation is that, in 2018, a new question asks principals about the frequency of a student or parent/guardian reporting the posting of hurtful information on the Internet about students – akin to cyberbullying – whereas those types of incidents would likely have been included under the bullying item in 2013. Therefore, a change in bullying over time needs to be interpreted cautiously. A more accurate picture of change patterns can be obtained by taking into account not only incidents of "intimidation or bullying among students", but also incidents of "a student or parent/guardian reports postings of hurtful information on the Internet about students" (in 2018). Such an approach, contrasting daily or weekly incidents of "intimidation or verbal abuse among students (or other forms of non-physical bullying)" in 2013 with daily or weekly incidents of both intimidation or bullying and reports of posting hurtful information on the Internet (in 2018) reveals that eight participating countries and economies have experienced a significant reduction in the frequency of this phenomenon, as reported by principals.[26] This improvement is particularly marked in Alberta (Canada), Chile, Croatia, Estonia and Latvia. Box I.3.8 provides insights on some of the initiatives taken by these countries to address bullying issues. By contrast, England (United Kingdom), the Flemish Community of Belgium, Israel, New Zealand and the Slovak Republic have faced a reverse pattern on this issue, which calls for close monitoring and specific action. There is little significant change in other areas of school safety, with the exception of intimidation or verbal abuse of teachers or staff, for which frequency has increased in Denmark but declined in Alberta (Canada) and Chile, and physical injury caused by violence among students, for which frequency has increased in Finland, Israel and New Zealand (Table I.3.45).

Figure I.3.13 **Change in school safety from 2013 to 2018**

Percentage of lower secondary principals reporting that the following incidents occurred at least weekly in their school



1. Data for TALIS 2018 refer to "Intimidation or bullying among students (or other forms of verbal abuse)" and/or "A student or parent/guardian reports postings of hurtful information on the Internet about students".

2. Data for TALIS 2013 refer to "Intimidation or verbal abuse among students (or other forms of non-physical bullying)".

Notes: Only countries and economies with available data for 2013 and 2018 are shown.

Statistically significant changes between 2013 and 2018 (TALIS 2018 – TALIS 2013) are found next to the category and the country/economy name (see Annex B).

Countries and economies are ranked in descending order of the percentage of lower secondary principals reporting that intimidation or verbal abuse of teachers or staff occurred at least weekly in their school in 2018.

Source: OECD, TALIS 2018 Database, Table I.3.45.

StatLink http://dx.doi.org/10.1787/888933932361

Box I.3.8 **Initiatives to identify and combat bullying**

Estonia

Strategic action to prevent bullying and respond to bullying incidents in Estonia is a joint effort of the government ministries of welfare and health, academic institutions and non-profit foundations. As a result, there is a diverse set of initiatives on multiple fronts and with a shared goal of combatting bullying in all forms. These initiatives include bullying prevention and awareness campaigns at the school level and leading a public discourse in media to involve community stakeholders. There are special measures to combat cyberbullying, such as "web-constables" who are police officers working on line giving advice to young users on the Internet. What stands out in the Estonian approach is also the priority given to anti-bullying programmes at all levels of education – including both kindergartens and schools.

• • •

Chile

In Chile, the Education Superintendence (*Superintendencia de Educación*) is responsible for upholding the quality of school climate based on the "Law of School Violence", by monitoring school indicators developed by the Quality of Education Agency. These indicators include perceptions and attitudes that students, teachers and parents have regarding the presence of a respectful and safe environment. The Superintendence oversees the "School Internal Regulation", which mandates schools to define bullying prevention policies as well as protocols of action when bullying conducts are identified. According to the Education Superintendence, the body allows citizens to have a mechanism to report bullying. This increases the citizens' control of a school's implementation of all protocols (that by law the school must have) in the case of bullying or any other action that affects the school environment and coexistence. About 68% of the complaints that the Education Superintendence receives are related to school environment and coexistence.

Alberta (Canada)

In Alberta (Canada), teachers have access to a wealth of resources provided by the Ministry of Education in order to identify behavioural signs of bullying in the school, covering physical, social and cyberbullying. These resources also support teachers to develop a response plan for bullying-related situations and to involve parents and caregivers in these response plans. According to these resources, teachers should observe school incidents to track bullying behaviour, develop strategies for promoting positive behaviour and create a general awareness in the school regarding the negative impact of bullying and what students can do if they witness bullying among their peers.

Sources: Estonian Union for Child Welfare (2015[91]), *Kiusamisest vabaks! (Free of Bullying)*, http://kiusamisestvabaks.ee/about-us, (accessed 12 April 2019); information provided by the Ministry of Education, Estonia, 11 April 2019; Agencia de Calidad de la Educación, Gobierno de Chile (n.d.[92]) *Desarrollo Personal y Social: Otros Indicadores de Calidad Educativa [Personal and Social Development: Other Indicators of Educational Quality]*, http://archivos.agenciaeducacion.cl/Desarrollo_personal_social_OIC_25_11.pdf, information provided by the Ministry of Education, Chile, 9 April 2019; Government of Alberta (2019[93]), *Bullying prevention for educators: Learn how to recognize, prevent and respond to signs of bullying in school*, www.alberta.ca/bullying-prevention-for-educators.aspx (accessed 8 April 2019).

Teachers' relationships with students

TALIS sheds light on relationships in the school by asking teachers a series of questions on teacher-student relations, which provide indications on whether teachers and students get along well, as well as on the school climate as it pertains to supporting student well-being. These data suggest that relations between teachers and their students are extremely positive. On average across the OECD, 96% of teachers agree or strongly agree that most teachers believe that the students' well-being is important, and 96% also agree or strongly agree that teachers and students usually get on well with each other (Table I.3.46). High shares of teachers also concur with the statements that most teachers are interested in what students have to say (93%) and that, if a student needs extra assistance, the school provides it (92%).

When examining country-specific patterns, it is striking that over 90% of teachers agree that teachers and students get along well in all participating countries and economies, except South Africa, which is just under 85%. Teachers valuing students' well-being is also a widely shared belief across countries and economies participating in TALIS, since only Kazakhstan and the Slovak Republic have levels of agreement below 90% for the statement that most teachers believe that the students' well-being is important. By contrast, there is less consensus on the statements that most teachers are interested in what students have to say and that if a student needs extra assistance, the school provides it (Table I.3.46).

TALIS also asks teachers the extent to which teachers in the school can rely on each other. This provides additional information on the degree of cohesion and reliance, as another important element of the school climate (Finnan, Schnepel and Anderson, 2003[94]; Ghaith, 2003[95]). Teachers' agreement on this statement (87% on average across the OECD) is noticeably below the wide consensus on teacher-student relations, as 13% of teachers perceive that cohesion with their colleagues is insufficient. This pattern is particularly marked in Mexico (only 66% agreement) but also, to a lower extent (79% to 83%), in Colombia, Croatia, Hungary, Japan, Portugal, South Africa and Turkey (Table I.3.46).

The analysis of teacher-student relations over time confirms the findings on school safety that the school climate has improved overall in a majority of TALIS countries and economies since the first TALIS survey in 2008:

- On the belief that teachers and students usually get on well with each other, Israel is the only country that has seen a moderate decrease in the proportion of teachers concurring with this statement since 2013 (2 percentage points). All other countries and economies either did not experience much change, or saw an improvement in teacher-student relations, with the most significant progress on this dimension of school climate in Estonia, Lithuania, Mexico and the Slovak Republic since 2008, and Italy since 2013, with changes greater than 5 percentage points.

- Teachers' belief in the importance of student well-being has also progressed in the vast majority of countries, mostly in Korea and Turkey, since 2008. But Hungary and the Slovak Republic have experienced a reverse pattern, with less agreement among teachers on this statement in 2018 than in 2008.
- The other two dimensions of teacher-student relations reveal more nuanced patterns, with improvements in a number of countries and economies, but declines in others (Table I.3.49).

Disciplinary climate in today's landscape

TALIS tackles the issue of discipline by asking teachers their level of agreement ("strongly disagree"; "disagree"; "agree"; or "strongly agree") with four statements about the disciplinary climate in their target class. In 2018, disciplinary issues in the target class are reported by 26% to 29% of teachers, on average across the OECD. More specifically, 29% of teachers agree or strongly agree that they "lose quite a lot of time because of students interrupting the lesson", 28% that they "have to wait quite a long time when the lesson begins for students to quieten down", and 26% that "there is much disruptive noise in the classroom". Mirroring these disciplinary issues, only 72% of teachers agree that students in their target class "take care to create a pleasant learning atmosphere" (Table I.3.50).

Country-specific patterns on these various aspects reveal that some education systems are more affected by disciplinary issues than others, with either disruptive behaviours reported by 40% of teachers or more, or a pleasant learning atmosphere reported by less than 60% of teachers. This is the case for Brazil on all four dimensions of the school disciplinary climate, in Spain for three dimensions of the disciplinary climate, and in Belgium, Chile, Iceland, Portugal and South Africa for two dimensions (Table I.3.50).

Classroom disciplinary climate, as perceived by teachers, varies with classroom composition. Logically, on average across the OECD and in all countries and economies participating in TALIS (except Viet Nam), the higher the concentration of students with behavioural problems in the classroom, the more teachers report a lack of discipline (Table I.3.53). This still holds after controlling for other classroom composition indicators and for teachers' characteristics – gender, employment status and years of experience (Table I.3.54). Conversely, the need for more discipline is significantly lower in classrooms with a higher share of academically gifted students in almost all participating countries, except Japan, Portugal and Romania, both before and after controlling for teacher characteristics.

The other aspects of classroom diversity are not clearly related to classroom disciplinary climate, from a cross-country perspective. Only a few countries show a significant relationship between some other indicator of classroom composition and disciplinary climate. Indeed, the share of students whose first language is different from the language of instruction shows no significant association with the disciplinary climate in 37 countries. There are a few outlier systems: the share of students whose first language is different from the language of instruction shows a small negative association with the disciplinary climate in eight countries and economies (Estonia, the Flemish Community of Belgium, France, Malta, Norway, the Russian Federation, Sweden and the United Arab Emirates), both before and after controlling for teacher characteristics, in addition to other classroom composition indicators (Tables I.3.53 and I.3.54). However, the effect is very small and may still be overestimated, as it may capture the effect of other aspects of teachers' profiles, beyond those controlled for in the analyses – teachers' gender, employment status and experience.[27] By contrast, four countries show a positive relationship between the share of students whose first language is different from the language of instruction and disciplinary climate, after controlling for classroom and teacher characteristics: Italy, Latvia, New Zealand and South Africa (Table I.3.54).

Changes in the classroom disciplinary climate reveal the progress achieved between 2013 and 2018 by about one-third of the participating countries and economies with available data, but also weakening of the disciplinary climate of another group of countries and economies. The loss of teaching time due to students taking time to quieten down at the beginning of the lessons is less of an issue for teachers in 2018 than it was in 2013 (Figure I.3.14, Table I.3.55). Since 2013, the share of teachers reporting this issue as a problem in their target class has decreased most in Norway (-20 percentage points), Estonia (-6) and Israel (-5). By contrast, this aspect of the disciplinary climate has worsened since 2013 in Bulgaria, the Flemish Community of Belgium, Korea, New Zealand, Portugal and Romania. Teaching time is also lost due to students interrupting the lesson once it has started. This aspect of the classroom disciplinary climate closely mirrors the changes over time with respect to time lost at the beginning of the class (Table I.3.55).

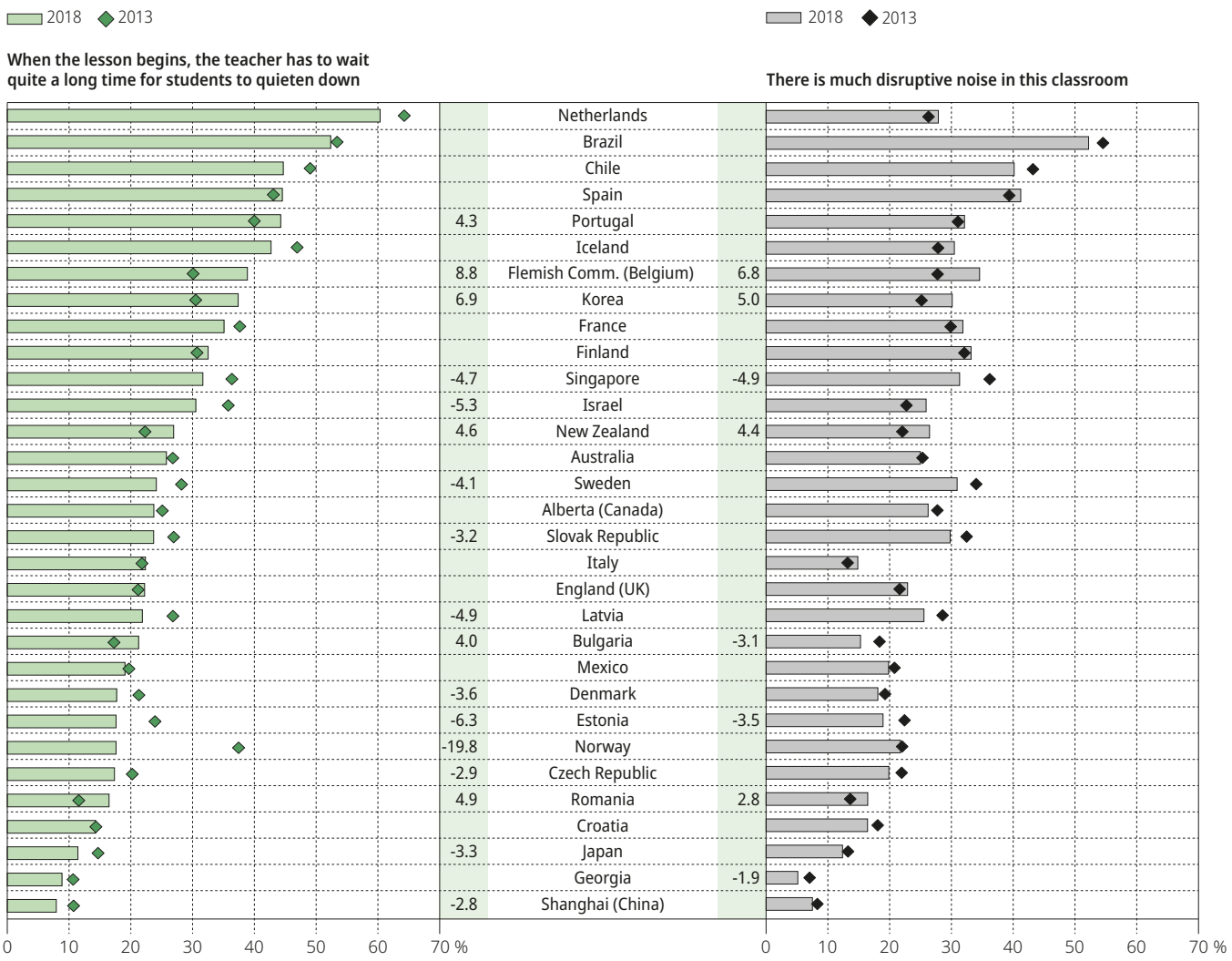
Another common disciplinary issue at the classroom level is disruptive noise in the classroom, which may prevent students and teachers from concentrating on the lesson. Changes over time for this aspect of the classroom disciplinary climate display mixed patterns, with roughly equal numbers of countries experiencing improvement or decline in this area (Figure I.3.14, Table I.3.55). In addition to understanding change in the prevalence of disruptive noise as a disciplinary issue, it should be kept in mind that an increase in the prevalence of disruptive noise could also be the result of a change in teaching practices – such as increased group work or classroom discussions between students – leading to changes in teachers' perceptions of disturbances.

Country-specific changes in the different classroom disciplinary climate dimensions underline consistent patterns for some countries. According to teachers' reports, the classroom disciplinary climate has worsened for at least three of the classroom disciplinary climate dimensions in Bulgaria, the Flemish Community of Belgium and New Zealand since 2013, and in Austria, Brazil, Bulgaria and Slovenia since 2008. By contrast, the classroom disciplinary climate has improved on at least three dimensions in the Czech Republic, Estonia and Singapore since 2013, as well as in Denmark and Norway[28] since 2008 (Table I.3.55).

In interpreting these change patterns, however, it is important to keep in mind that they are based on teachers' perceptions of the classroom disciplinary climate and, as such, may reflect a range of factors as much as actual changes in students' behaviours. Indeed, different mechanisms may be at play, such as changes in instructional practices, specific emphasis of professional development activities on classroom management/climate issues in recent years, or generation effects in cases where the age structure of the teaching workforce has evolved and different cohorts of teachers react differently to minor lesson interruptions (e.g. considering whether they are problematic and worth reporting).

Figure I.3.14 **Change in classroom discipline from 2013 to 2018**

Percentage of lower secondary teachers who "agree" or "strongly agree" with the following statements about their target class



Notes: Only countries and economies with available data for 2013 and 2018 are shown.

Statistically significant changes between 2013 and 2018 (TALIS 2018 – TALIS 2013) are found next to the category and the country/economy name (see Annex B).

Countries and economies are ranked in descending order of the percentage of lower secondary teachers who "agree" or "strongly agree" that, when the lesson begins, the teacher has to wait quite a long time for students to quieten down.

Source: OECD, TALIS 2018 Database, Table I.3.55.

StatLink http://dx.doi.org/10.1787/888933932380

Box I.3.9 **School climate from primary to upper secondary education**

School safety

Across countries and economies participating in TALIS, schools are a safe place. Among the 13 countries and economies with available data for ISCED 1 and 2 and the 11 countries with available data for ISCED 2 and 3, incidents such as vandalism or use of drugs typically occur on a daily or weekly basis in less than 3% of schools, and the frequency tends to be similar across primary, lower and upper secondary schools.

England (United Kingdom) stands out regarding the gap in incidents of intimidation or bullying among students, as they occur at least weekly in far fewer primary schools than lower secondary schools. Likewise, primary schools in England (United Kingdom), the Flemish Community of Belgium and France experience incidents related to the posting of hurtful information on the Internet about students or unwanted electronic contact among students far less frequently than lower secondary schools (Table I.3.43).

Student-teacher relationships

Across OECD countries, 96% of lower secondary teachers report a good relationship with their students. Primary schools exhibit similar shares of teachers reporting positive student-teacher relations even more often than lower secondary schools in most of the 13 countries and economies with available data for ISCED 1 and 2 (Table I.3.47).

Fewer upper secondary teachers report good relations with their students than their lower secondary peers. Depending on the specific aspect of student-teacher relationships considered, 2 to 7 out of the 11 countries and economies with available data for ISCED 2 and 3 display slightly lower shares of teachers in upper secondary education reporting good relations with their students, with the largest difference in Brazil (more than 5 percentage points under the category "if a student needs extra assistance, the school provides it"). In contrast, concerning the provision of extra assistance to a student that needs it, Denmark, Sweden and the United Arab Emirates display a better outlook in upper secondary education than in lower secondary education (Table I.3.48).

Disciplinary climate

Across OECD countries and economies participating in TALIS, more than two-thirds of lower secondary teachers report a high share of students in the class taking care to create a pleasant learning atmosphere (Table I.3.50). In 9 out of 13 countries and economies with available data for ISCED 1 and 2, teachers' reports suggest that primary students tend to take more care to create a pleasing learning atmosphere than their older peers at the lower secondary level, with the largest difference in the Flemish Community of Belgium (12 percentage points) and in Spain (14 percentage points) (Table I.3.51).

While lower secondary students tend to take less care to create a positive learning environment than their younger peers, the level of classroom discipline tends to increase between the two levels of education in some of the 13 countries and economies with available data for both levels. For instance, in 5 out of 13 countries, a lower share of teachers report that there is a considerable amount of disruptive noise in the classroom (Table I.3.51).

In upper secondary education, the vast majority of the 11 countries with available data for ISCED 2 and 3 display a more positive outlook on the disciplinary climate than in lower secondary education (Table I.3.52). For instance, in 9 out of 11 countries, a lower share of teachers report that the teacher loses quite a lot of time because of students interrupting the lesson. Likewise, in most countries, more upper secondary teachers than lower secondary teachers report that students in the class take care to create a pleasant learning atmosphere, with the largest difference in Portugal (12 percentage points).

School climate, teaching practices and teachers' self-efficacy

Beyond the reports of school principals and teachers on the school and classroom climate and related changes over time, it is also important to examine the extent to which the school and classroom climate relates to teaching practices used by teachers and their perceived efficacy (Kraft, Marinell and Shen-Wei Yee, 2016[96]; Maxwell et al., 2017[97]; Thomas and Bass, 1992[98]). These relationships can explain whether and to what extent the link between school climate and student achievement is mediated by teachers' practices and perceptions.

These issues are covered in more depth in Chapter 2, as part of a discussion of teaching quality, classroom factors and teacher characteristics. However, regression analyses show that teachers who report a greater lack of discipline in their classroom tend

to feel less confident in their teaching ability (Table I.3.56) and to spend less classroom time on actual teaching and learning (Table I.3.58). These relationships hold for all countries and economies participating in TALIS with available data, both before and after controlling for teacher characteristics (Tables I.3.57 and I.3.59). Teachers with less disciplined classes also tend to engage their students less frequently in practices pertaining to cognitive activation,[29] such as presenting tasks for which there is no obvious solution, giving tasks that require students to think critically, having students work in small groups to come up with a joint solution to a problem or task, and asking them to decide on their own procedures for solving complex tasks (Table I.3.60). This holds true for all countries and economies participating in TALIS, except Alberta (Canada), CABA (Argentina), France, Iceland, Japan and Viet Nam (Table I.3.60).[30]

CHALLENGES AND PRIORITIES, ACCORDING TO TEACHERS AND SCHOOL LEADERS

As shown at the beginning of this chapter, the landscape for teaching and learning has changed significantly over the past decade, in ways that can be challenging for teachers and principals in their efforts to deliver quality instruction. At the same time, since the turn of the 21st century, there has been growing interest in the academic and policy spheres in teacher professionalism as an approach to educational reform (Harris-Van Keuren, Silova and McAllister, 2015[99]; OECD, 2016[100]). One of the key aspects of the professionalisation of the teaching workforce is the role of teachers and their representative organisations in the areas of educational policy making and resource allocation (Darling-Hammond and Lieberman, 2012[101]; Lai and Lo, 2007[102]), although this aspect is relatively little explored beyond the school level. As the voice of teachers (and principals), TALIS provides an opportunity to sound out teachers and school leaders on the challenges they face and the priorities they feel policy makers should address, acting as an upward-feedback mechanism for the education system as a whole. More specifically, TALIS 2018 explores the views of these frontline actors on their educational policy priorities, particularly with regard to resource allocation within education systems (OECD, 2017[103]).

School leaders' views on school resources issues that hinder quality instruction

A first approach is to ask school principals about the school resources issues that they feel hinder their school's capacity to provide quality instruction. TALIS has asked them this question since 2008, but the coverage of issues broadened in 2013, so that indicators of change over time are available for a larger number of issues from then. In particular, on a number of resources issues, TALIS asks principals to what extent they hinder quality instruction ("not at all"; "to some extent"; "quite a bit"; or "a lot").

In 2018 on average across the OECD, the three most common resources issues in schools (reported by one-third of principals as hindering the school's capacity to provide quality instruction "quite a bit" or "a lot") are: "shortage of support personnel" (33%); "shortage of teachers with competence in teaching students with special needs" (32%); and "shortage or inadequacy of time for instructional leadership" (32%). The next most common issues (reported by one-quarter of principals are: "shortage or inadequacy of physical infrastructure" (26%); "shortage or inadequacy of time with students" (25%); and "shortage or inadequacy of instructional space" and "shortage or inadequacy of digital technology for instruction" (both 25%). About one-fifth of principals reported that the issues hindering quality instruction are: "shortage of qualified teachers" (21%) and "shortage of teachers with competence in teaching students in a multicultural or multilingual setting" (20%) (Table I.3.63).

Resources issues differ widely across countries and economies participating in TALIS. Overall, principals in Brazil, Colombia and Viet Nam expressed the highest level of shortages: at least 8 out of the 15 proposed issues were rated as key hindrances by 50% of school principals or more, most likely reflecting severe shortages and financial constraints in lower secondary education in those systems (Table I.3.63). But on resource shortages identified by principals, there is no systematic clustering of countries and economies along the lines of education expenditure or GDP.[31]

"Shortage of support personnel", the top priority identified by principals, was mentioned by less than 10% of school principals in Bulgaria, Iceland, Lithuania, the Netherlands, Norway, the Russian Federation, Shanghai (China), Singapore, Slovenia and Sweden, despite very different levels of education expenditure across these countries and economies (OECD, 2018[15]). But more than 50% of principals reported this resource shortage in Brazil, Colombia, Italy, Portugal, Saudi Arabia, South Africa and Viet Nam (Table I.3.63).

"Shortage of teachers with competence in teaching students with special needs", the second-highest resource shortage on average across the OECD, was cited by over 70% of principals in France, and by 50% to 70% of principals in Belgium,[32] Brazil, Colombia, Saudi Arabia, South Africa and Viet Nam, but by less than 15% in Alberta (Canada), Austria, Finland, Georgia, Iceland and the Russian Federation.

Large differences across countries are also found with respect to the "shortage or inadequacy of time for instructional leadership". It was cited by over 50% of principals in Belgium, Colombia, Italy, Portugal and Viet Nam, but less than 15% of principals in Bulgaria, England (United Kingdom), Estonia, Georgia, Mexico and Singapore (Table I.3.63).

Figure I.3.15 **Shortages of school resources that hinder quality instruction**

Percentage of lower secondary principals reporting that the following shortages of resources hinder the school's capacity to provide quality instruction "quite a bit" or "a lot" (OECD average-30)

Values are ranked in descending order of the prevalence of shortages of school resources.

Source: OECD, TALIS 2018 Database, Table I.3.63.

StatLink http://dx.doi.org/10.1787/888933932399

Aside from Brazil, Colombia and Viet Nam, which face widespread resources shortages in most dimensions examined by TALIS, some other severe country-specific shortages (cited by about 50% of principals or more) include:

- for material resources issues: shortages or inadequacy of physical infrastructure (in Italy, Portugal, Saudi Arabia and South Africa), instructional space (in Israel), and digital technology for instruction (in Portugal, Romania, Saudi Arabia and South Africa), as well as insufficient Internet access in Mexico
- for human resources issues: shortages of teachers with competence in teaching students with special needs (in Belgium, France, Saudi Arabia, South Africa and Viet Nam), in teaching students in a multicultural or multilingual setting (in Italy), and in teaching both students with special needs and students from socio-economically disadvantaged homes (in France) (Table I.3.63).

Box I.3.10 **School resources issues from primary to upper secondary education**

Across OECD countries and economies participating in TALIS, the three top resource-shortage issues reported by lower secondary principals are shortage of support personnel (33%), shortage of teachers with competence in teaching students with special needs (32%) and shortage or inadequacy of time for instructional leadership (32%) (Table I.3.63). Principals at the primary level tend to report the same top three resource issues in most of the 13 countries and economies with available data for ISCED 1 and 2 (Table I.3.64).

In upper secondary education, in the 11 countries and economies with available data for ISCED 2 and 3, the reported resource issues tend to be the same as at the lower secondary level overall. In a few countries, including Denmark, Portugal and Viet Nam, the reported shortage of support personnel and shortage or inadequacy of physical infrastructure is lower in upper secondary schools than in lower secondary schools by more than 10 percentage points. The latter resources issue is also less often mentioned in Sweden (Table I.3.65).

Teachers' views on priority areas for intervention and additional spending in education

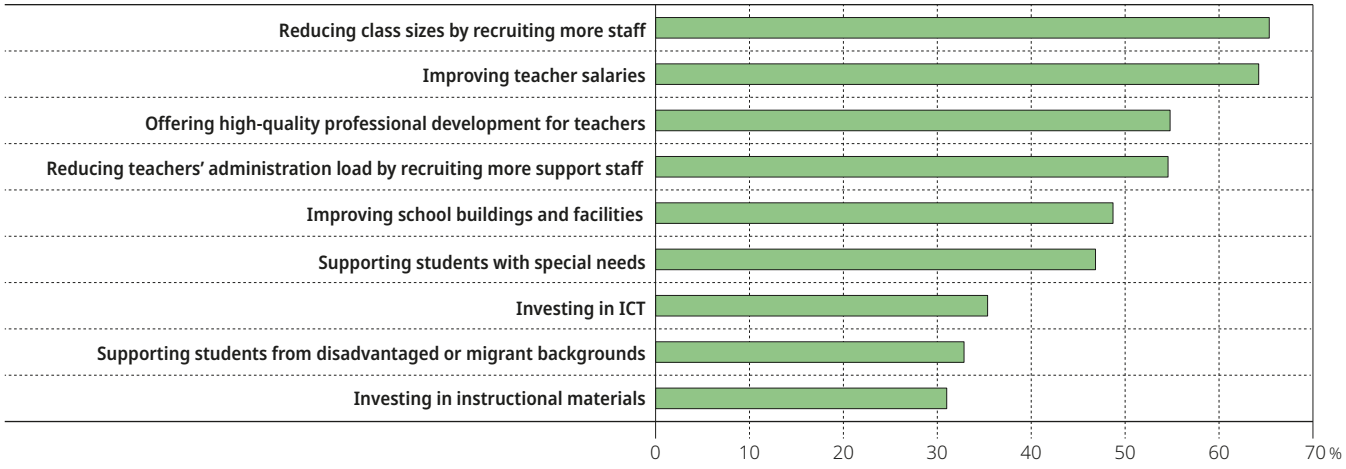
As a complement to principals' reports on resources issues that hinder their schools' capacity to provide quality instruction, TALIS 2018 also asks teachers, for the first time, what they think should be the priority areas for intervention and additional spending in education. This is an indirect way to identify the major resources issues. As frontline actors of education systems, teachers are particularly well-positioned to report on resources issues that directly affect their daily work. It is, therefore, important for policy makers to rely on the professional voice of teachers to inform policy on resources needs within the education sector, and to better understand not only what teachers believe should be priority areas for intervention and additional spending, but also what factors shape these beliefs.

TALIS 2018 makes it possible, for the first time, to explore resources issues from the perspective of teachers. It asks them to rate the importance of a number of priorities if the education budget were increased by 5%. For each priority they are asked if it is "of low importance", "of moderate importance" or "of high importance". To avoid the dilemma of forcing teachers to choose among competing issues, they had the option of rating all issues as of "high importance". Nevertheless, it is possible to get a sense of the most prominent resources issues by examining the proportion of teachers in each country that identified each issue as an area "of high importance", as well as the top three issues they most often reported as high priorities.

In 2018, on average across the OECD, the number one spending priority reported by teachers was "reducing class sizes by recruiting more staff" (rated of high importance by 65% of teachers), followed by "improving teacher salaries" (64%), "offering high-quality professional development for teachers" (55%), and "reducing teachers' administration load by recruiting more support staff" (55%). All of these four issues are rated of high importance by over half of the teaching workforce on average in the OECD. By contrast, "improving school buildings and facilities", "supporting students with special needs", "investing in ICT", "supporting students from disadvantaged or migrant backgrounds" and "investing in instructional materials" are rated of high importance less often. However, these issues are still considered of high importance by 30% to 50% of teachers across the OECD (Table I.3.66).

Figure I.3.16 **Spending priorities for lower secondary education**

Percentage of lower secondary teachers who reported the following spending priorities to be of high importance[1]
(OECD average-31)



1. Respondents were not asked to prioritise; they had the possibility to attribute "high importance" to all spending priorities.
Note: ICT: Information and communication technology.
Values are ranked in descending order of the percentage of lower secondary teachers who reported the following spending priorities to be of high importance.
Source: OECD, TALIS 2018 Database, Table I.3.66.
StatLink http://dx.doi.org/10.1787/888933932418

Another way to look at broad patterns is to examine, for each issue, the number of countries and economies for which it was among the top three priorities rated by teachers. With this approach, the key priority areas remain the same, but the order changes. "Improving teacher salaries" becomes the issue most often rated among the top three priorities (in the education systems of 39 participating countries and economies), followed by "reducing class sizes" (29 education systems), "reducing teachers' administration load" (24 education systems), "offering high-quality professional development for teachers" (23 education systems), "improving school buildings and facilities" (15 education systems) and "supporting students with special needs" (10 education systems) (Table I.3.66).

The patterns of country-specific spending priorities shed light on issues that, according to teachers, require specific attention from policy makers. Indeed, while the number one spending priority[33] in the bulk of participating countries and economies, according to teachers, is "improving teacher salaries" (in 21 countries) and "reducing class sizes by recruiting more staff" (in 17 countries), teachers in some education systems have selected other issues as their number one priority. Country-specific issues of high importance to the profession include: "offering high-quality professional development for teachers" in Brazil, Chile, Colombia, Mexico and Slovenia;[34] "improving school buildings and facilities" in Italy, Saudi Arabia and Turkey; and "reducing teachers' administration load by recruiting more support staff" in Australia (Table I.3.66). In Italy, teachers' ratings on the importance of "improving school buildings and facilities" are consistent with principals' emphasis on the "shortage or inadequacy of physical infrastructure". This could be related to the sequence of earthquakes in Central Italy in 2016-17, the school year preceding the survey. It damaged a number of schools and highlighted the vulnerability of existing school buildings (Di Ludovico et al., 2018[104]).

Box I.3.11 **Priorities for policy intervention from primary to upper secondary education**

Across OECD countries and economies participating in TALIS, the two top spending priorities reported by lower secondary teachers are "reducing class sizes by recruiting more staff" (65%) and "improving teacher salaries" (64%) (Table I.3.66). While these issues are also reported as highly important by primary teachers in the 13 countries and economies with available data for ISCED 1 and 2, "supporting students with special needs" was rated of high importance more often by primary teachers than by their lower secondary peers (Table I.3.67). In 5 out of 13 countries, this issue is one of the two top spending priorities for primary teachers, with the largest difference of 15 or more percentage points in Denmark, the Flemish Community of Belgium and Japan.

In upper secondary education, the key priority areas tend to be the same as reported at the lower secondary level in the 11 countries and economies with available data for ISCED 2 and 3 (Tables I.3.66 and I.3.68). However, in 6 out of 11 countries, the priorities "investing in ICT", "improving school buildings and facilities" and "supporting students with special needs" are rated less often as highly important by upper secondary teachers. The largest difference is found in Denmark regarding "supporting students with special needs" (-23 percentage points). Due to the slightly lower ratings of some priorities, "offering high-quality professional development for teachers" can be identified as one of the two top spending priorities in upper secondary education in 6 out of 11 countries.

The spending priority on "improving teacher salaries" deserves scrutiny. Indeed, this priority was rated highly by teachers in a majority of participating countries and economies. But this is not the case everywhere. In Australia, Austria, Belgium (and the Flemish Community), Denmark, Slovenia and Spain, "improving teacher salaries" was rated of high importance by less than half of the teachers overall,[35] and it does not figure in their top three priority areas for additional spending.

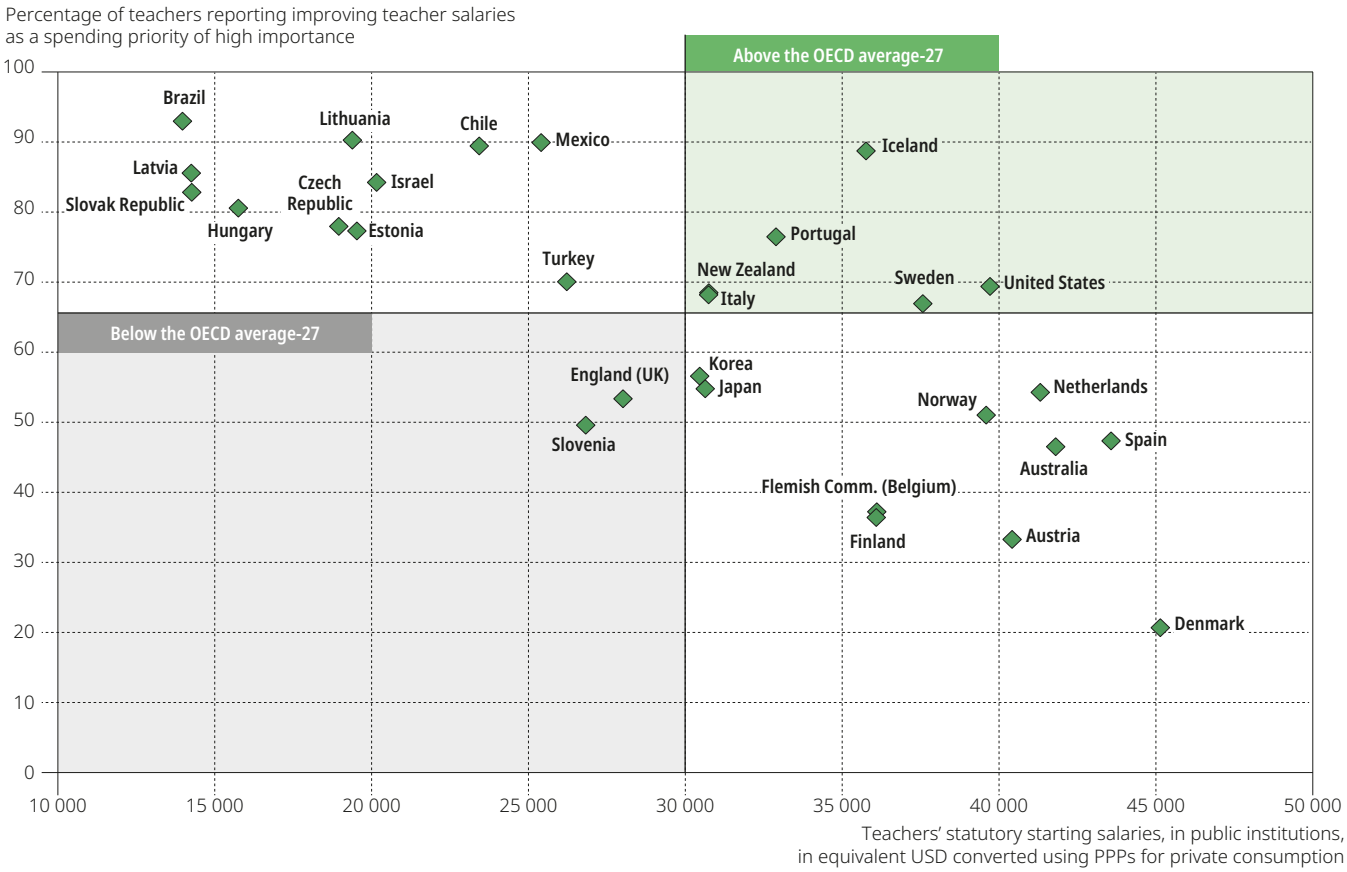
The availability of internationally comparable data on teachers' salaries relative to those of other tertiary-educated workers is not sufficiently widespread to allow more systematic examination of this issue. Instead, to compare the purchasing power of teachers' statutory earning across countries, data on teachers' statutory starting salaries are used, expressed in terms of purchasing power parity (PPP) (OECD, 2018[15]). Examining teachers' salary levels in different countries and economies and the proportion of teachers who rated improving teacher salaries as a priority of high importance helps to better understand why teachers prioritise salary increases. The share of teachers who rate salary increases as highly important tends to be inversely proportional to the level of statutory starting salaries in their country (the linear correlation coefficient amounts to 0.75) (Figure I.3.17). In other words, the lower the level of statutory teaching salaries in a country (in PPP), the more teachers consider teachers' salaries a priority of high importance. The same relationship holds when looking at levels of salaries after 15 years of experience or at the top of the salary scale (Tables I.3.66 and I.3.71). This pattern and the strength of the relationship again suggests that teachers may consider a range of factors when rating priority areas for additional spending, including the purchasing power and standard of living that salary levels grant, and how these compare internationally. Teachers seem more likely to prioritise salary increases when their standard of living is lower by international standards.

The examination of teachers' propensity to prioritise salary increases across different school locations confirms that standards of living and purchasing power are likely to be important factors in a teacher's likelihood to report salary increases as an important spending priority. Indeed, in a third of the countries and economies with available data, teachers working in cities (where housing prices and the cost of living are typically higher than in rural areas) display a higher propensity to report salary increases as "highly important" than their peers working in rural areas.[36] This issue of regional disparities in teachers'

standards of living is particularly acute in education systems where teachers' salary levels are set centrally, according to a system-level scale that does not take into account regional disparities in living expenses (Table I.3.69). Issues of teachers' contractual conditions and compensation will be examined in more depth in *Teachers and School Leaders as Valued Professionals*, Volume II of the TALIS 2018 international report, to be published in 2020.

Figure I.3.17 **Improving teacher salaries**

Improving teacher salaries as a highly-important spending priority for lower secondary teachers and lower secondary teachers' statutory starting salaries



Notes: Only countries and economies with available data for the percentage of teachers who reported improving teacher salaries as of high importance in relation to spending priorities and for teachers' statutory starting salaries are shown.
The OECD average-27 includes all TALIS 2018 OECD countries, except for Alberta (Canada), Belgium, Colombia and France.
Source: OECD, TALIS 2018 Database, Tables I.3.66 and I.3.71.
StatLink http://dx.doi.org/10.1787/888933932437

School context could be another driver of teachers' propensity to prioritise "improving teacher salaries" in some countries and economies. In Belgium, Denmark and the United Arab Emirates, for instance, teachers working in schools with larger concentrations of students with special needs report improving salaries as a priority less often than their peers working in schools with fewer such students. Likewise, teachers working in schools with larger concentrations of students from socio-economically disadvantaged homes in Hungary, Sweden and the United Arab Emirates are less likely to report improving salaries as a high priority than their peers working in more advantaged schools,[37] while the opposite pattern is observed in Australia and the United States (Table I.3.69).

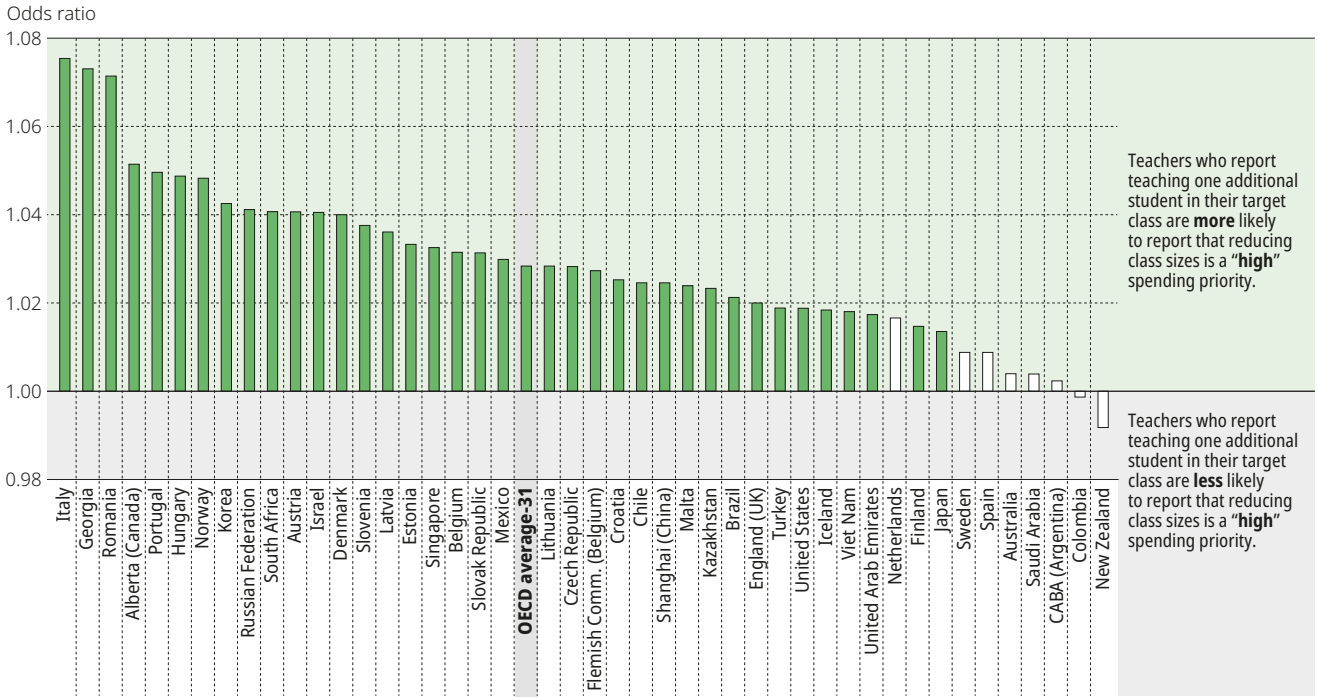
Motivational aspects could be another driver of teachers' tendency to prioritise "improving teacher salaries", whereby teachers whose motivation to join the profession was based on stronger social-utility incentives may be less likely to prioritise improving salaries than those whose motivation to join the profession was more driven by personal utility factors (Watt et al., 2012[105]; Watt and Richardson, 2008[106]). Logistic regression analyses were conducted to examine how motivations to join the profession are related to teachers' propensity to report improving salaries as a high priority. They show that teachers who report that the teaching schedule was an important motivation to join the profession are also more likely to report improvement in teacher

salaries as a high spending priority in almost half of the countries and economies participating in TALIS. Teachers who found it important that teaching offered a steady career path are also more likely to consider salary increases as important in 12 countries and economies participating in TALIS. These findings tend to support the notion that teachers who valued the economic characteristics and the working conditions of the job when they became teachers are also logically more prone to seek teacher salary increases (Table I.3.72).

Teachers' tendency to report "reducing class sizes by recruiting more staff" as a spending priority of high importance also deserves close examination, as this is the issue most commonly reported as a priority. First of all, it is noteworthy that, while reducing class sizes is reported as teachers' number one priority in 17 participating countries and economies and one of the three top priorities in 29 education systems, this aspect of school resources – while rated highly by teachers in general – is not among the top three issues reported as of high importance by teachers in Brazil, CABA (Argentina), Chile, Colombia, Croatia, Estonia, Georgia, Hungary, Kazakhstan, Latvia, Mexico, Romania, Saudi Arabia, the Slovak Republic, Turkey, the United Arab Emirates and Viet Nam (Table I.3.66).

Figure I.3.18 **Relationship between reducing class sizes as a highly-important spending priority and class size**

Likelihood of reducing class sizes reported as a "high" spending priority related to class size[1, 2, 3, 4, 5]



1. Results of binary logistic regression based on responses of lower secondary teachers. As the predictor is a continuous variable, the relationship refers to the marginal effect of one additional student in the target class on the likelihood of reducing class sizes reported as a highly-important spending priority.

2. An odds ratio indicates the degree to which an explanatory variable is associated with a categorical outcome variable. An odds ratio below one denotes a negative association; an odds ratio above one indicates a positive association; and an odds ratio of one means that there is no association.

3. The dependent variable is a dummy variable: the reference category refers to reducing class sizes reported as a low or moderate spending priority.

4. The predictor refers to the number of students in the target class.

5. Controlling for the following teacher characteristics: gender, working full-time and years of experience as a teacher; and for the following classroom characterisitcs: share of students whose first language is different from the language of instruction, share of students with special needs, share of students with behavioural problems, share of students from socio-economically disadvantaged homes, share of academically gifted students, share of students who are refugees.

Note: Statistically significant coefficients are marked in a darker tone (see Annex B).

Countries and economies are ranked in descending order of the likelihood of reducing class sizes reported as a "high" spending priority related to class size.

Source: OECD, TALIS 2018 Database, Table I.3.73.

StatLink http://dx.doi.org/10.1787/888933932456

Teachers' inclination to consider reducing class sizes as a high spending priority may well be related to their personal teaching conditions, in particular to the size of the classes they teach. Regression analyses show that, as can be expected, teachers who teach larger classes[38] are more likely to report reducing class sizes as a spending priority of high importance (Figure I.3.18 and Table I.3.73). This positive relationship holds true on average across the OECD and also for about three-quarters of all countries and economies participating in TALIS, after controlling for classroom composition and teacher characteristics.[39] Exceptions to this are Australia, CABA (Argentina), Colombia, the Netherlands, New Zealand, Saudi Arabia, Spain and Sweden. Some of these countries and economies implement policies aiming at channelling more teachers to disadvantaged schools (Bénabou, Kramarz and Prost, 2009[107]; Clotfelter et al., 2008[108]; Dieterle, 2015[109]; Jepsen and Rivkin, 2009[110]; Karsten, 2006[111]; OECD, 2005[25]; OECD, 2018[112]) so, it may be that their teachers have opted to signal other areas on which to spend any additional budget allocated to the education sector.

Notes

1. The OECD average corresponds to the arithmetic mean of the estimates of the OECD countries and economies that participate in TALIS, with adjudicated data.
2. In the United States, gender imbalances are less pronounced in science, computers, mathematics, technical and vocational fields.
3. Bulgaria, Croatia, the Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Lithuania, the Russian Federation, the Slovak Republic and Slovenia.
4. In Australia, the increased feminisation of the profession mainly took place between 2013 and 2018, rising from 59% in both 2008 and 2013 to 62% in 2018.
5. The equal feminisation line is the diagonal in the figure. It represents a theoretical situation of perfect equality in the proportion of women among teachers and their proportion among principals.
6. In Sweden, this increase is not the result of a deliberate policy, but the continuation of a long-term trend, as the proportion of female principals has been increasing for 30 years. The proportion of female teachers is high, and principals are, in general, recruited from the ranks of teachers.
7. In Austria, the rise in the share of female principals is related to the high proportion of female teachers and principals generally being recruited from the ranks of teachers, as well as an increase in the number of women aiming for jobs with more responsibilities. The government is also making efforts to support the representation of women in leadership positions through policies such as the Federal Equal Treatment Act.
8. In Norway, this increase is not the result of a deliberate policy, but rather the consequence of development over time, with increasingly more female teachers at all levels and now also in educational leadership positions.
9. What matters to students' psychological and social well-being is not cultural differences per se, but rather the way they are perceived and responded to by others (e.g. negative attitudes towards minority groups), or the way students themselves deal with their cultural differences, irrespective of the friendliness of the surrounding climate.
10. Effective teaching was measured in this study through a classroom observations checklist instrument based on a framework for effective teaching that incorporated principles of social constructivism.
11. In the following analyses, a 30% threshold is used to compare schools and classrooms with more than 30% of students from socio-economically disadvantaged homes with schools with up to 30% of such students. Lower thresholds are used with regard to students with migrant backgrounds, students whose first language is different from the language(s) of instruction, students with special education needs (above 10% versus up to 10%) and students who are refugees (above 1% versus none) to account for smaller overall intake of these types of students.
12. The Convention on the Rights of Persons with Disabilities, the Salamanca Declaration, the Educational for All Movement and the Millennium Development Goals have established goals for improving access to education for children with disabilities. Most recently, education for persons with disabilities is specifically referenced in UN SDG Goal 4, Target 4.5: "By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations" (UNESCO, 2016, p. 21[5]).
13. Questions about the share of immigrant students or students with an immigrant background in the school and in the classroom were added to the TALIS 2018 questionnaires relatively late in the design process and were, therefore, not field-trialled. Although analysis of the main survey data did not reveal any particular issue with these questions, they must be interpreted with caution.
14. For the purpose of these trends analyses, only statistically significant differences equal to or greater than 5 percentage points in the proportion of teachers teaching a classroom with a given composition are reported, in order to emphasise deep and rapid changes in the classroom composition. Other education systems often face trends that are similar but of a lower order of magnitude or not statistically significant.
15. Linguistic diversity can evolve due to an influx of foreign migrants or refugees and/or, increased regional mobility in multilingual societies, but also as a result of changes in education policies that have an impact on linguistic grouping of students in schools.

16. The referenced study suggested that almost one out of three (31%) Americans who were in favour of cutting off immigration hid their restrictionist sentiments when asked directly.

17. In the case of Alberta (Canada), caution is required when interpreting these data, given large standard errors relative to other countries.

18. Denmark, the Slovak Republic and Sweden are in the top 20 least unequal countries (as measured by the Gini index, below 30 for the three of them, in 2015), followed by Japan (Gini index: 32, in 2008) and Viet Nam (Gini index: 35, in 2016). Data available at https://data.worldbank.org/indicator/si.pov.gini.

19. As this information derives from principals' reports, the number of observations per country is too low to undertake regression analyses on the factors associated with equity-related policies and practices in schools.

20. Source: OECD, TALIS 2018 Database.

21. In Finland, one explanation for this pattern is that involvement of organisations external to the school to support multicultural activities is less common than in many other countries, and there are not many organisations doing such work.

22. The relevant section of the TALIS questionnaire includes questions about "school policies and practices concerned with diversity, with an emphasis on cultural diversity". It states that: "'Diversity' refers to the recognition of and appreciation for differences in the backgrounds of students and staff. In the case of cultural diversity it refers most notably to cultural or ethnic backgrounds."

23. The scale of self-related efficacy in multicultural classrooms has only reached metric invariance, suggesting that comparisons across countries at item level need to be interpreted cautiously (TALIS 2018 Technical Report).

24. In both the French and Flemish communities of Belgium, the high reports from principals might reflect the national context, with media reports of hidden violence at school in recent years, and extensive training of principals and teachers as a result to identify bullying and act effectively upon it. It is possible that the anti-bullying policies put in place have heightened principals' awareness of these issues.

25. In Australia, insufficient response rates by principals affect comparability of the data, and the figures need to be interpreted with caution.

26. The eight countries are: Alberta (Canada), Chile, Croatia, Estonia, Korea, Latvia, Portugal and Spain.

27. Indeed, the way students whose first language is different from the language of instruction are allocated to classes may be related to unobserved teachers' characteristics.

28. In Norway, a possible explanation may be the emphasis of teachers' professional development activities on classroom management and classroom climate over the last years.

29. See Chapter 2 for more information about this teaching strategy.

30. After controlling for teacher and classroom characteristics, CABA (Argentina) and France no longer belong to the list of country exceptions (Table I.3.62).

31. One possible explanation for this pattern could be that resource shortages are only reported when they are perceived to affect instruction. If principals in countries with fewer economic means have never had certain resources, it would be hard for them to say whether or not having those resources affects instruction, which may obfuscate the relationship between GDP/education expenditure and shortages.

32. In the French Community of Belgium, students who did not pass their primary certificate are formally identified with learning difficulties (although they do not suffer from any kind of disability) and are provided extra support and additional human and financial resources for their lower secondary school. Teachers and principals are likely to have associated these student profiles as special needs students in the TALIS survey, resulting in a large overestimation of this group.

33. This ranking of spending priorities reported in the chapter does not account for any statistical testing of significant differences between the ranks.

34. Chapter 5 shows that these countries also display high levels of participation in professional development.

35. Alberta (Canada) and Finland also have less than half of their teachers rating salary improvements as of high importance, but this issue is nevertheless in their top three priority areas for additional spending.

36. The difference is statistically significant and exceeds 5 percentage points in Belgium, Croatia, the Czech Republic, Estonia, Finland, Georgia, Hungary, Italy, Kazakhstan, Norway, the Slovak Republic and Turkey.

37. The difference in favour of teachers working in schools with large proportions of students from socio-economically disadvantaged homes exceeds 5 percentage points in Hungary and Sweden.

38. In the analyses, class size is measured by the number of students enrolled in a particular class (referred to as target class) that the teacher was asked to identify and describe.

39. There are very few countries with a significant relationship between classroom composition (measured by the concentration of students whose first language is different from the language(s) of instruction, special needs students, students with behavioural problems, students from disadvantaged homes, academically gifted students and students with a refugee status) and a teacher's tendency to report reducing class size as a spending priority.

References

Agencia de Calidad de la Educación, G. (n.d.), *Desarrollo Personal y Social: Otros Indicadores de Calidad Educativa [Personal and Social Development: Other Indicators of Educational Quality]*, Agencia de Calidad de la Educación, Gobierno de Chile, http://archivos.agenciaeducacion.cl/Desarrollo_personal_social_OIC_25_11.pdf (accessed on 9 April 2019). [92]

Alsubaie, M. (2015), "Examples of current issues in the multicultural classroom", *Journal of Education and Practice*, Vol. 6/10, pp. 86-89, https://www.iiste.org/Journals/index.php/JEP/article/view/21441. [62]

American Academy of Arts & Sciences (2017), "I-10b: Gender Distribution of Teachers in Public Primary and Secondary Schools, by Main Teaching Assignment, 2015-2016", *Humanities Indicators*, www.humanitiesindicators.org/content/indicatordoc.aspx?i=168 (accessed on 21 March 2019). [28]

Antecol, H., O. Eren and **S. Ozbeklik** (2012), "The Effect of Teacher Gender on Student Achievement in Primary School: Evidence from a Randomized Experiment", *IZA Discussion Paper Series*, No. 6453, Forschungsinstitut zur Zukunft der Arbeit Institute for the Study of Labor, http://ftp.iza.org/dp6453.pdf. [30]

Banting, K. and **W. Kymlicka** (2004), "Do Multiculturalism Policies Erode the Welfare State?", *Working Paper*, No. 33, School of Policy Studies - Queen's University, Kingston, Ontario, https://qspace.library.queensu.ca/bitstream/handle/1974/14872/Banting_et_al_2004_Do_Multiculturalism_Policies.pdf;jsessionid=31D95A23966274256A801CEC355C4859?sequence=1. [48]

Barber, M. and **M. Mourshed** (2009), *Shaping the Future: How Good Education Systems Can Become Great in the Decade Ahead*, Report on the International Education Roundtable, 7 July 2009, Singapore, McKinsey & Company, London. [6]

Battistich, V. et al. (1997), "Caring school communities", *Educational Psychologist*, Vol. 32/3, pp. 137-151, http://dx.doi.org/10.1207/s15326985ep3203_1. [77]

Beam, A., R. Claxton and **S. Smith** (2016), "Challenges for novice school leaders: Facing today's issues in school administration", *Faculty Publications and Presentations,* 233, http://digitalcommons.liberty.edu/educ_fac_pubs/233/. [21]

Beilock, S. et al. (2010), "Female teachers' math anxiety affects girls' math achievement", *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, Vol. 107/5, pp. 1860-1863, http://dx.doi.org/10.1073/pnas.0910967107. [32]

Bénabou, R., F. Kramarz and **C. Prost** (2009), "The French zones d'éducation prioritaire: Much ado about nothing?", *Economics of Education Review*, Vol. 28/3, pp. 345-356, http://dx.doi.org/10.1016/j.econedurev.2008.04.005. [107]

Borman, G. and **M. Dowling** (2010), "Schools and inequality: A multilevel analysis of Coleman's equality of educational opportunity data", *Teachers College Record*, Vol. 112/5, pp. 1201-1246, www.tcrecord.org/library/abstract.asp?contentid=15664. [49]

Bowen, E. and **F. Salsman** (1979), "Integrating multiculturalism into a teacher-training program", *The Journal of Negro Education*, Vol. 48/3, pp. 390-395, http://dx.doi.org/10.2307/2295055. [63]

Branch, G., E. Hanuschek and **S. Rivkin** (2013), "School leaders matter", *Education Next*, Vol. 13/1, www.educationnext.org/school-leaders-matter. [19]

Bryk, A. and **B. Schneider** (2002), *Trust in Schools: A Core Resource for Improvement*, Russell Sage Foundation, New York, NY. [78]

Chua, S. (2010), "Singapore's language policy and its globalised concept of Bi(tri)lingualism", *Current Issues in Language Planning*, Vol. 11/4, pp. 413-429, http://dx.doi.org/10.1080/14664208.2010.546055. [58]

Clotfelter, C. et al. (2008), "Would higher salaries keep teachers in high-poverty schools? Evidence from a policy intervention in North Carolina", *Journal of Public Economics*, Vol. 92/5-6, pp. 1352-1370, http://dx.doi.org/10.1016/J.JPUBECO.2007.07.003. [108]

Cohen, J. et al. (2009), "School climate: Research, policy, practice, and teacher education", *Teachers College Record*, Vol. 111/1, pp. 180-213. [79]

Cooc, N. (2018), "Who Needs Special Education Professional Development?: International Trends from TALIS 2013", *OECD Education Working Papers*, No. 181, OECD Publishing, Paris, https://dx.doi.org/10.1787/042c26c4-en. [53]

Darling-Hammond, L. and **A. Lieberman** (eds.) (2012), *Teacher Education around the World: Changing Policies and Practices*, Routledge, Abingdon. [101]

de Abreu, G. (2006), "Cultural identities in the multiethnic mathematical classroom", in Bosch, M. (ed.), *Proceedings of the Fourth Congress of the European Society for Research in Mathematics Education, 17-21 February 2005, Sant Feliu de Guíxols, Spain*, FUNDEMI IQS, Barcelona, www.mathematik.uni-dortmund.de/~erme/CERME4/. [75]

Dee, T. (2005), "A teacher like me: Does race, ethnicity, or gender matter?", *American Economic Review*, Vol. 95/2, pp. 158-165, http://dx.doi.org/10.1257/000282805774670446. [33]

Di Ludovico, M. et al. (2018), "Remarks on damage and response of school buildings after the Central Italy earthquake sequence", *Bulletin of Earthquake Engineering*, pp. 1-22, http://dx.doi.org/10.1007/s10518-018-0332-x. [104]

Dieterle, S. (2015), "Class-size reduction policies and the quality of entering teachers", *Labour Economics*, Vol. 36, pp. 35-47, http://dx.doi.org/10.1016/J.LABECO.2015.07.005. [109]

Drudy, S. (2008), "Gender balance/gender bias: The teaching profession and the impact of feminisation", *Gender and Education*, Vol. 20/4, pp. 309-323, http://dx.doi.org/10.1080/09540250802190156. [29]

Echazarra, A. et al. (2016), "How teachers teach and students learn: Successful strategies for school", *OECD Education Working Papers*, No. 130, OECD Publishing, Paris, https://dx.doi.org/10.1787/5jm29kpt0xxx-en. [40]

Ely, R. and **D. Thomas** (2001), "Cultural diversity at work: The effects of diversity perspectives on work group processes and outcomes", *Administrative Science Quarterly*, Vol. 46/2, pp. 229-273, http://dx.doi.org/10.2307/2667087. [71]

Engel, L., D. Rutkowski and **L. Rutkowski** (2009), "The harsher side of globalisation: Violent conflict and academic achievement", *Globalisation, Societies and Education*, Vol. 7/4, pp. 433-456, http://dx.doi.org/10.1080/14767720903412242. [80]

Epstein, J. and **J. McPartland** (1976), "The concept and measurement of the quality of school life", *American Educational Research Journal*, Vol. 13/1, pp. 15-30, http://dx.doi.org/10.3102/00028312013001015. [87]

Estonian Union for Child Welfare (2015), *Kiusamisest vabaks! (Free of Bullying)*, http://kiusamisestvabaks.ee/ (accessed on 12 April 2019). [91]

European Commission/EACEA/Eurydice (2019), "Integrating Students from Migrant Backgrounds into Schools in Europe: National Policies and Measures", *Eurydice Report*, Publications Office of the European Union, Luxembourg, http://dx.doi.org/10.2797/222073. [74]

Federal Ministry for Digital and Economic Affairs, Austria (2019), *Bundesrecht konsolidiert: Gesamte Rechtsvorschrift für Bundes-Gleichbehandlungsgesetz, Fassung vom 22.03.2019 [Consolidated Federal Law: Complete Legal Provision for Federal Equal Treatment Act, version from 22.03.2019]*, www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=10008858 (accessed on 22 March 2019). [36]

Finnan, C., K. Schnepel and **L. Anderson** (2003), "Powerful learning environments: The critical link between school and classroom cultures", *Journal of Education for Students Places At Risk*, Vol. 8/4, pp. 391-418, http://dx.doi.org/10.1207/S15327671ESPR0804_2. [94]

Firmino, J. et al. (2018), "Class Composition and Student Achievement: Evidence from Portugal", *FEUNL Working Paper Series*, No. 624, Universidade Nova de Lisboa - Faculdade de Economia, Lisbon, http://dx.doi.org/10.2139/ssrn.3146904. [50]

Fulton, K., I. Yoon and **C. Lee** (2005), *Induction Into Learning Communities*, National Commission on Teaching and America's Future, Washington, DC, https://files.eric.ed.gov/fulltext/ED494581.pdf. [84]

Gay, G. (2014), "Teachers' beliefs about cultural diversity: Problems and possibilities", in Fives, H. and M. Gregoire Gill (eds.), *International Handbook of Research on Teachers' Beliefs*, Routledge, New York, https://doi.org/10.4324/9780203108437. [45]

Ghaith, G. (2003), "The relationship between forms of instruction, achievement and perceptions of classroom climate", *Educational Research*, Vol. 45/1, pp. 83-93, http://dx.doi.org/10.1080/0013188032000086145. [95]

Government of Alberta (2019), *Bullying prevention for educators: Learn how to recognize, prevent and respond to signs of bullying in school*, www.alberta.ca/bullying-prevention-for-educators.aspx (accessed on 8 April 2019). [93]

Graham, H., R. Minhas and **G. Paxton** (2016), "Learning problems in children of refugee background: A systematic review", *Pediatrics*, Vol. 137/6, http://dx.doi.org/10.1542/peds.2015-3994. [59]

Guo, P. and **A. Higgins-D'Alessandro** (2011), *The place of teachers' views of teaching in promoting positive school culture and student prosocial and academic outcomes*, Paper presented at the Association for Moral Education annual conference, Nanjing, China. [90]

Hallinger, P. and **R. Heck** (2010), "Leadership for learning: Does collaborative leadership make a difference in school improvement?", *Educational Management Administration & Leadership*, Vol. 38/6, pp. 654-678, http://dx.doi.org/10.1177/1741143210379060. [11]

Harris-Van Keuren, C., I. Silova and **S. McAllister** (2015), *Implementing EFA strategy no. 9: The evolution of the status of the teaching profession (2000-2015) and the impact on the quality of education in developing countries: three case studies*, Background Paper for the Global Monitoring Report 2015, ED/EFA/MRT/2015/PI/08, UNESCO, Paris, https://unesdoc.unesco.org/ark:/48223/pf0000232402. [99]

Hart, R. (2009), "Child refugees, trauma and education: interactionist considerations on social and emotional needs and development", *Educational Psychology in Practice*, Vol. 25/4, pp. 351-368, http://dx.doi.org/10.1080/02667360903315172. [60]

Hattie, J. (2009), *Visible Learning: A Synthesis of over 800 Meta-Analyses Relating to Achievement*, Routledge, London. [9]

He, J. and **K. Kubacka** (2015), "Data comparability in the teaching and learning international survey (TALIS) 2008 and 2013", *OECD Education Working Papers*, No. 124, OECD Publishing, Paris, https://dx.doi.org/10.1787/5jrp6fwtmhf2-en. [76]

Holmlund, H. and **K. Sund** (2006), "Is the gender gap in school performance affected by the sex of the teacher?", *Labour Economics*, Vol. 15, pp. 37-53, http://dx.doi.org/10.1016/j.labeco.2006.12.002. [31]

Horng, E. and **S. Loeb** (2010), "New thinking about instructional leadership", *Phi Delta Kappan*, Vol. 92/3, pp. 66-69, http://dx.doi.org/10.1177/003172171009200319. [12]

Hoy, W., J. Hannum and **M. Tschannen-Moran** (1998), "Organizational climate and student achievement: A parsimonious and longitudinal view", *Journal of School Leadership*, Vol. 8/4, pp. 336-359, http://dx.doi.org/10.1177/105268469800800401. [89]

Hoy, W., C. Tarter and **A. Hoy** (2006), "Academic optimism of schools: A force for student achievement", *American Educational Research Journal*, Vol. 43/3, pp. 425-446, https://doi.org/10.3102/00028312043003425. [81]

Hoy, W. and **A. Woolfolk** (1993), "Teachers' sense of efficacy and the organizational health of schools", *The Elementary School Journal*, Vol. 93/4, pp. 355-372, https://doi.org/10.1086/461729. [85]

Jackson, T. and **G. Boutte** (2018), "Exploring culturally relevant/responsive pedagogy as praxis in teacher education", *The New Educator*, Vol. 14/2, pp. 87-90, http://dx.doi.org/10.1080/1547688X.2018.1426320. [64]

Janus, A. (2010), "The influence of social desirability pressures on expressed immigration attitudes", *Social Science Quarterly*, Vol. 91/4, pp. 928-946, http://dx.doi.org/10.1111/j.1540-6237.2010.00742.x. [66]

Jepsen, C. and **S. Rivkin** (2009), "Class size reduction and student achievement", *Journal of Human Resources*, Vol. 44/1, pp. 223-250, http://dx.doi.org/10.3368/jhr.44.1.223. [110]

Jones, S. and **K. Dindia** (2004), "A meta-analytic perspective on sex equity in the classroom", *Review of Educational Research*, Vol. 74/4, pp. 443-471, http://dx.doi.org/10.3102/00346543074004443. [35]

Karsten, S. (2006), "Policies for disadvantaged children under scrutiny: The Dutch policy compared with policies in France, England, Flanders and the USA", *Comparative Education*, Vol. 42/2, pp. 261-282, https://doi.org/10.1080/03050060600628694. [111]

Kielly, M. et al. (2014), "Teachers' beliefs about students with special needs and inclusion", in Fives, H. and M. Gregoire Gill (eds.), *International Handbook of Research on Teachers' Beliefs*, Routledge, New York, https://doi.org/10.4324/9780203108437. [46]

Kraft, M., W. Marinell and **D. Shen-Wei Yee** (2016), "School organizational contexts, teacher turnover, and student achievement", *American Educational Research Journal*, Vol. 53/5, pp. 1411-1449, http://dx.doi.org/10.3102/0002831216667478. [96]

Kuhn, P. and **C. Weinberger** (2005), "Leadership skills and wages", *Journal of Labor Economics*, Vol. 23/3, pp. 395-436, http://dx.doi.org/10.1086/430282. [3]

Kyriakides, L., C. Christoforou and **C. Charalambous** (2013), "What matters for student learning outcomes: A meta-analysis of studies exploring factors of effective teaching", *Teaching and Teacher Education*, Vol. 36, pp. 143-152, http://dx.doi.org/10.1016/j.tate.2013.07.010. [10]

Lai, M. and **L. Lo** (2007), "Teacher professionalism in educational reform: The experiences of Hong Kong and Shanghai", *Compare: A Journal of Comparative and International Education*, Vol. 37/1, pp. 53-68, http://dx.doi.org/10.1080/03057920601061786. [102]

Le Donné, N., P. Fraser and **G. Bousquet** (2016), "Teaching Strategies for Instructional Quality: Insights from the TALIS-PISA Link Data", *OECD Education Working Papers*, No. 148, OECD Publishing, Paris, https://dx.doi.org/10.1787/5jln1hlsr0lr-en. [42]

Lim, J. and **J. Meer** (2017), "The impact of teacher-student gender matches: Random assignment evidence from South Korea", *Journal of Human Resources*, Vol. 52/4, pp. 979-997, http://dx.doi.org/10.3368/jhr.52.4.1215-7585r1. [34]

Lim, S. (2013), "Lehrerausbildung in Deutschland", in *Lehrerausbildung und Abstimmungsprobleme des Lehrermarkts*, Springer Fachmedien Wiesbaden, Wiesbaden, http://dx.doi.org/10.1007/978-3-658-00342-5_1. [23]

Lucas, T., A. Villegas and **A. Martin** (2014), "Teachers' beliefs about English language learners", in Fives, H. and M. Gregoire Gill (eds.), *International Handbook of Research on Teachers' Beliefs*, Routledge, New York, https://doi.org/10.4324/9780203108437. [47]

Martin, M. et al. (2013), "Effective schools in reading, mathematics, and science at the fourth grade", in Martin, M. and I. Mullis (eds.), *TIMSS and PIRLS 2011: Relationships Among Reading, Mathematics, and Science Achievement at the Fourth Grade - Implications for Early Learning*, TIMSS & PIRLS International Study Center, Lynch School of Education, Boston College and International Association for the Evaluation of Educational Achievement (IEA), Chestnut Hill, MA, https://timssandpirls.bc.edu/timsspirls2011/downloads/TP11_Chapter_3.pdf. [82]

Maxwell, S. et al. (2017), "The impact of school climate and school identification on academic achievement: Multilevel modeling with student and teacher data", *Frontiers in Psychology*, Vol. 8, http://dx.doi.org/10.3389/fpsyg.2017.02069. [97]

Nilsen, T. and **J. Gustafsson** (2014), "School emphasis on academic success: Exploring changes in science performance in Norway between 2007 and 2011 employing two-level SEM", *Educational Research and Evaluation*, Vol. 20/4, pp. 308-327, http://dx.doi.org/10.1080/13803611.2014.941371. [83]

Nusche, D. et al. (2016), *OECD Reviews of School Resources: Denmark 2016*, OECD Reviews of School Resources, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264262430-en. [24]

OECD (2019), *Trends Shaping Education 2019*, OECD Publishing, Paris, https://dx.doi.org/10.1787/trends_edu-2019-en. [2]

OECD (2018), *Education at a Glance 2018: OECD Indicators*, OECD Publishing, Paris, https://dx.doi.org/10.1787/eag-2018-en. [15]

OECD (2018), *Education Policy Outlook: Kazakhstan*, OECD, Paris, www.oecd.org/education/Education-Policy-Outlook-Country-Profile-Kazakhstan-2018.pdf. [70]

OECD (2018), *Effective Teacher Policies: Insights from PISA*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264301603-en. [112]

OECD (2018), *Equity in Education: Breaking Down Barriers to Social Mobility*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264073234-en. [69]

OECD (2018), *International Migration Outlook 2018*, OECD Publishing, Paris, https://dx.doi.org/10.1787/migr_outlook-2018-en. [52]

OECD (2018), *The Future of Education and Skills: Education 2030*, OECD, Paris, www.oecd.org/education/2030/E2030%20Position%20Paper%20(05.04.2018).pdf. [4]

OECD (2018), *The Resilience of Students with an Immigrant Background: Factors that Shape Well-being*, OECD Reviews of Migrant Education, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264292093-en. [57]

OECD (2017), *Pensions at a Glance 2017: OECD and G20 Indicators*, OECD Publishing, Paris, https://dx.doi.org/10.1787/pension_glance-2017-en. [22]

OECD (2017), *The Funding of School Education: Connecting Resources and Learning*, OECD Reviews of School Resources, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264276147-en. [103]

OECD (2016), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264267510-en. [44]

OECD (2016), *School Leadership for Learning: Insights from TALIS 2013*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264258341-en. [16]

OECD (2016), *Supporting Teacher Professionalism: Insights from TALIS 2013*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264248601-en. [100]

OECD (2016), *Trends Shaping Education 2016*, OECD Publishing, Paris, https://dx.doi.org/10.1787/trends_edu-2016-en. [1]

OECD (2015), *Immigrant Students at School: Easing the Journey towards Integration*, OECD Reviews of Migrant Education, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264249509-en. [38]

OECD (2014), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264196261-en. [20]

OECD (2013), *PISA 2012 Results: Excellence through Equity (Volume II): Giving Every Student the Chance to Succeed*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264201132-en. [37]

OECD (2012), *Untapped Skills: Realising the Potential of Immigrant Students*, PISA, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264172470-en. [65]

OECD (2009), *Creating Effective Teaching and Learning Environments: First Results from TALIS*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264072992-en. [14]

OECD (2005), *Teachers Matter: Attracting, Developing and Retaining Effective Teachers*, Education and Training Policy, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264018044-en. [25]

OECD (2004), *Learning for Tomorrow's World: First Results from PISA 2003*, PISA, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264006416-en. [41]

Orphanos, S. and **M. Orr** (2014), "Learning leadership matters", *Educational Management Administration & Leadership*, Vol. 42/5, pp. 680-700, http://dx.doi.org/10.1177/1741143213502187. [17]

Peters, S. (2007), "Education for all? A historical analysis of international inclusive education policy and individuals with disabilities", *Journal of Disability Policy Studies*, Vol. 18/2, pp. 98-108, http://dx.doi.org/10.1177/10442073070180020601. [54]

Plaut, V., K. Thomas and **M. Goren** (2009), "Is multiculturalism or color blindness better for minorities?", *Psychological Science*, Vol. 20/4, pp. 444-446, http://dx.doi.org/10.1111/j.1467-9280.2009.02318.x. [73]

Pont, B., D. Nusche and **H. Moorman** (2008), *Improving School Leadership, Volume 1: Policy and Practice*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264044715-en. [18]

Reimers, F. and **C. Chung** (2016), *Teaching and Learning for the Twenty-First Century: Educational Goals, Policies and Curricula from Six Nations*, Harvard Education Press, Cambridge, MA. [7]

Schachner, M. et al. (2016), "Cultural diversity climate and psychological adjustment at school: Equality and inclusion versus cultural pluralism", *Child Development*, Vol. 87/4, pp. 1175-1191, http://dx.doi.org/10.1111/cdev.12536. [72]

Scheerens, J. and **R. Bosker** (1997), *The Foundations of Educational Effectiveness*, Pergamon, Oxford. [13]

Simmonds, S. (2017), "Teachers as curriculum leaders: Towards promoting gender equity as a democratic ideal", *Educational Research for Social Change*, Vol. 6/2, pp. 16-28, http://dx.doi.org/10.17159/2221-4070/2017/v6i2a2. [67]

Sirin, S. (2005), "Socioeconomic status and academic achievement: A meta-analytic review of research", *Review of Educational Research*, Vol. 75/3, pp. 417-453, https://doi.org/10.3102/00346543075003417. [39]

Stanovich, P. and **A. Jordan** (1998), "Canadian teachers' and principals' beliefs about inclusive education as predictors of effective teaching in heterogeneous classrooms", *The Elementary School Journal*, Vol. 98/3, pp. 221-238, http://dx.doi.org/10.1086/461892. [43]

Taylor, S. and **R. Sidhu** (2012), "Supporting refugee students in schools: What constitutes inclusive education?", *International Journal of Inclusive Education*, Vol. 16/1, pp. 39-56, http://dx.doi.org/10.1080/13603110903560085. [61]

Thomas, D. and **G. Bass** (1992), "An analysis of the relationship between school climate and the implementation of middle school practices", *Research in Middle Level Education*, Vol. 16/1, pp. 1-12, http://dx.doi.org/10.1080/10825541.1992.11669998. [98]

UNESCO (2018), *Global Education Monitoring Report Gender Review 2018: Meeting our Commitments to Gender Equality in Education*, UNESCO, Paris, https://unesdoc.unesco.org/ark:/48223/pf0000261593. [68]

UNESCO (2016), *Education 2030: Incheon Declaration and Framework for Action for the Implementation of Sustainable Development Goal 4*, UNESCO, Paris, http://uis.unesco.org/sites/default/files/documents/education-2030-incheon-framework-for-action-implementation-of-sdg4-2016-en_2.pdf. [5]

UNESCO (2016), *Preparing and Supporting Teachers in the Asia-Pacific to Meet the Challenges of Twenty-first Century Learning: Regional Synthesis Report*, ERINet Asia-Pacific Regional Policy Series: 2015 ERINet Regional Study on Transversal Competencies in Education Policy and Practice (Phase III), UNESCO, Paris and Bangkok, https://unesdoc.unesco.org/ark:/48223/pf0000246852. [8]

UNESCO Institute for Statistics (2009), *Global Education Digest 2009: Comparing Education Statistics Across the World*, UNESCO Institute for Statistics, Montreal, https://unesdoc.unesco.org/ark:/48223/pf0000183249. [27]

UNESCO Institute for Statistics (2006), *Teachers and Educational Quality: Monitoring Global Needs for 2015*, UNESCO Institute for Statistics, Montreal, https://unesdoc.unesco.org/ark:/48223/pf0000145754. [26]

United Nations (2015), *Transforming our World: The 2030 Agenda for Sustainable Development*, United Nations, New York, NY, www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E. [56]

Vollmer, G. (2000), "Praise and stigma: Teachers' constructions of the 'typical ESL student'", *Journal of Intercultural Studies*, Vol. 21/1, pp. 53-66, http://dx.doi.org/10.1080/07256860050000795. [88]

Watt, H. and **P. Richardson** (2008), "Motivations, perceptions, and aspirations concerning teaching as a career for different types of beginning teachers", *Learning and Instruction*, Vol. 18/5, pp. 408-428, http://dx.doi.org/10.1016/j.learninstruc.2008.06.002. [106]

Watt, H. et al. (2012), "Motivations for choosing teaching as a career: An international comparison using the FIT-Choice scale", *Teaching and Teacher Education*, Vol. 28/6, pp. 791-805, http://dx.doi.org/10.1016/j.tate.2012.03.003. [105]

Weiss, E. (1999), "Perceived workplace conditions and first-year teachers' morale, career choice commitment, and planned retention: A secondary analysis", *Teaching and Teacher Education*, Vol. 15/8, pp. 861-879, https://doi.org/10.1016/S0742-051X(99)00040-2. [86]

Willms, J. (2010), "School composition and contextual effects on student outcomes", *Teachers College Record*, Vol. 112/4, pp. 1008-1037, www.tcrecord.org/Content.asp?ContentId=15658. [51]

Winzer, M. and **K. Mazurek** (2014), "The Convention on the Rights of Persons with Disabilities: Notes on genealogy and prospects", *Journal of International Special Needs Education*, Vol. 17/1, pp. 3-12, http://dx.doi.org/10.9782/2159-4341-17.1.3. [55]

Attracting and effectively preparing candidates

This chapter examines the process through which in-service teachers were attracted to the profession and describes how teachers and school leaders were prepared for their roles. After analysing the prevalence and features of training programmes identified as effective in the research literature, it examines the relationship between the features of these programmes and a range of quality indicators, including teachers' sense of preparedness, self-efficacy in teaching and job satisfaction. Adopting a model that considers teacher education as a continuum, the chapter also explores the support provided to new teachers in their early career years.

A note regarding Israel

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.

Highlights

- Across the OECD countries and economies that participate in the Teaching and Learning International Survey (TALIS), around 90% of teachers consider the opportunity to influence children's development and contribute to society to be a major motivation for joining the profession. Only 60% to 70% of teachers report that the financial package and working conditions of the teaching profession were important to them, but this share is higher in countries where teachers are highly valued in society and their economic status is better than that of other professions.
- On average across OECD countries and economies in TALIS, two out of three teachers report that teaching was their first choice as a career. While almost 70% of women report teaching as their first choice as a career, only 59% of men do so.
- Other than subject content, pedagogy and classroom practice, teachers' formal education and training tends to include instruction on student behaviour and classroom management (for 72% of all teachers across OECD countries and economies in TALIS), monitoring students' development and learning (70%), teaching cross-curricular skills (65%), teaching in a mixed-ability setting (62%) and use of information and communication technology (ICT) for teaching (56%). In comparison, teaching in a multicultural or multilingual setting (35%) is more rarely included as an element of teachers' formal education or training.
- School leaders have a higher level of educational attainment than teachers, with 63% of school leaders but only 44% of teachers holding a master's degree or equivalent, on average across the OECD countries and economies that participate in TALIS. However, only 54% of school leaders have completed a programme or course in school administration or principal training before taking up their position as principal, with the same share having completed an instructional leadership training programme or course.
- On average across OECD countries and economies in TALIS, novice teachers work one hour less per week in total than teachers with more than five years of experience. This is because novice teachers tend to work part-time more often than experienced teachers do.
- On average across OECD countries and economies in TALIS, only 38% of teachers participated in either formal or informal induction activities in their first employment, and 42% did so at their current school. Nevertheless, teachers who took part in some kind of induction activity tend to feel more confident in their teaching abilities and more satisfied with their job.
- While school principals generally consider mentoring to be important for teachers' work and students' performance, only 22% of novice teachers have an assigned mentor, on average across OECD countries and economies in TALIS.

INTRODUCTION

Many countries grapple with the difficulties of attracting individuals, particularly highly-skilled and motivated candidates, to become teachers and school leaders and training them adequately for their roles. Yet, there is evidence that certain features of initial teacher training systems, such as programme duration, certification or content, do make a difference in teaching quality and student learning (Darling-Hammond, 2000[1]; Hanushek, Kain and Rivkin, 1998[2]). It is, thus, crucial to explore the features of selection (and self-selection) of future teachers and training systems for teachers and principals to help countries to overcome these difficulties.

The second part of this volume, which begins here, examines how initial training for teachers and principals (Chapter 4) and in-service training (Chapter 5) can drive the success of teaching and schooling. This is done by analysing the prevalence and features of training programmes identified as effective in the research literature and the relationship between the features of such programmes and a range of quality indicators, including teachers' sense of preparedness, self-efficacy in teaching and job satisfaction.

This chapter focuses on the mechanisms available to support lifelong learning for teachers and school leaders throughout their careers. In line with the recent OECD report *Flying Start – Improving Initial Teacher Preparation Systems*, this chapter adopts a model that considers teacher education as a continuum (König and Mulder, 2014[3]; Roberts-Hull, Jensen and Cooper, 2015[4]), and examines how teachers new to the profession are supported in their early career years, after initial recruitment, selection and training. The chapter also expands the relatively limited knowledge about the prevalence and features of initial training for principals, in a cross-country comparative perspective.

WHAT MOTIVATES TEACHERS TO CHOOSE THE PROFESSION?

A recent OECD report explored system-level aspects of teacher policies that are common and, in some cases, unique to countries and economies with high performance in the OECD Programme for International Student Assessment (PISA) (OECD, 2018[5]). The report analysed indicators on teachers' careers and teacher-appraisal systems from *Education at a Glance* and expanded

to partner countries and economies participating in PISA 2015, through a special system-level data collection (OECD, 2018, pp. 42-43[5]). It revealed that high-performing countries often use different instruments to select teachers, including competitive examinations for admission, pre-service teacher education to start teaching and successful completion of a probation period. The same diversity of instruments is found among TALIS countries and economies – see Tables II.6.56 and II.6.57 in *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools* (2016[6]).

However, only a few countries seem able to attract into teaching students who perform in the upper part of the school achievement distribution (Blömeke, Kaiser and Lehmann, 2010[7]; Golsteyn, Vermeulen and de Wolf, 2016[8]; Tatto et al., 2012[9]). In PISA 2015, the typical profile of students who expected to work as teachers later in life varies across countries. However, in many countries, students who expect to work as teachers have poorer mathematics and reading skills than those who expect to work in other professions that, like teaching, require at least a university degree (OECD, 2018, p. 130[5]). While factors that shape teenagers' career expectations greatly determine the overall pool of future candidates to enter the teaching profession, PISA results still need to be regarded cautiously, as they are based on the expectations and proficiency of 15-year-old students, rather than those of actual or candidate teachers. One paper has actually used available data from international adult skills surveys to examine the cognitive skills of teachers. Using data for countries that have participated in either the Adult Literacy and Lifeskills (ALL) survey or the OECD Programme for International Assessment of Adult Competencies (PIAAC), Golsteyn, Vermeulen and de Wolf (2016[8]) find that the literacy and numeracy skills of primary and secondary teachers are higher than the average for the overall population and not so different from the proficiency of the average tertiary graduate. Some researchers also looked at whether the cognitive skills of teachers, as measured by PIAAC, can explain between-country differences in student achievement, as measured by PISA, and they found a strong positive association between teachers' skills and students' outcomes in PISA (Hanushek, Piopiunik and Wiederhold, 2014[10]; Meroni, Vera-Toscano and Costa, 2015[11]).

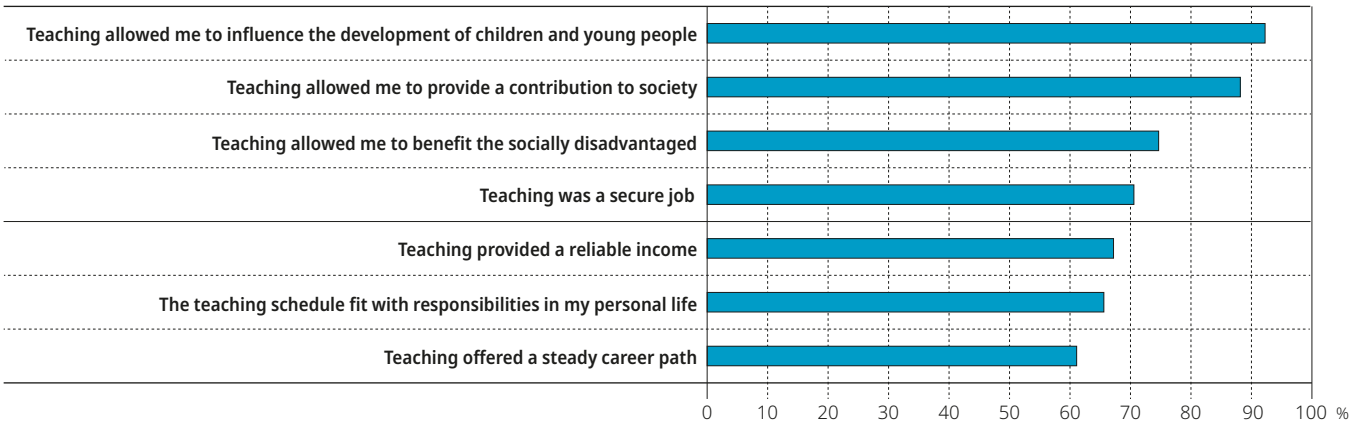
Beyond the system-level approaches for selecting candidates, TALIS can help to better understand the self-selective process through which teachers choose their profession. This step can actually be considered prior to actual teacher selection or recruitment. Logically, individuals must be attracted by a job to apply for it, although the information known about the selection process may affect an individual's occupational interests. Exploring individuals' motivations to become teachers helps to shed light on the aspects of teaching that make the profession attractive. This can help policy makers to design recruitment campaigns or teacher policies to enhance the attractiveness of the profession. However, TALIS data is limited for this purpose, as TALIS questionnaires are administered only to in-service teachers. They do not reach candidates who fail to enter the profession or those who leave it after some initial experience.

TALIS asks teachers how important seven factors were in their motivation to become a teacher, asking them to mark one choice among four options: "not important at all"; "of low importance"; "of moderate importance"; or "of high importance". The most important motivations reported by teachers pertain to a certain sense of self-fulfilment through public service. On average across the OECD[1], around 90% of teachers consider it of moderate to high importance that "teaching allowed [them] to influence the development of children and young people" (92%) and "teaching allowed [them] to provide a contribution to society" (88%). In addition, 75% of teachers report that "benefitting the socially disadvantaged" was a motivating factor of moderate or high importance in their decision to become a teacher. The factors reported least often pertain to the economic characteristics and working conditions of the profession: 1) "teaching offered a steady career path" (61% of teachers across the OECD reported this as a motivating factor of moderate or high importance); 2) "the teaching schedule (e.g. hours, holidays, part-time positions) fits with responsibilities in my personal life" (66%); 3) "teaching provided a reliable income" (67%); and 4) "teaching was a secure job" (71%) (Figure I.4.1, Table I.4.1).

There is little variation across countries in the most frequently reported motivating factors to join the teaching profession. Influencing the development of children and young people is the most frequently reported factor in 37 countries and economies and the second most frequently reported factor in 10 countries. But there are some notable exceptions, countries where the economic and working conditions of teachers' jobs weigh particularly heavily in the decision to become a teacher. Job security is the most cited factor by teachers in Latvia (93% of teachers find it of moderate or high importance in deciding to become a teacher) and the second most cited factor in Japan (86%) and Korea (88%). That teaching offered a steady career path (95%) and a secure job (93%) are also as frequently reported as more altruistic motives by teachers in Shanghai (China). Finally, that teaching provided a reliable income and offered a steady career path are the second and third most cited factors by teachers in Finland (reported by about 75% of teachers) (Table I.4.1). These few exceptions are in countries where the teaching profession is typically highly valued in society (OECD, 2014[12]). Interestingly, these countries and economies also are among the top-performing systems in PISA. All this suggests that high-performing systems have developed both an efficient workforce and an economically attractive profession, factors that work together to attract quality candidates to the ranks of future generations of teachers. The challenge for policy makers is to understand how to initiate this positive spiral of change. The second volume of this report will delve deeper into some of these issues to better understand what is distinctive about other aspects of teacher professionalism in high-performing systems.

Figure I.4.1 **Motivations to become a teacher**

Percentage of lower secondary teachers who report that the following elements were of "moderate" or "high" importance in becoming a teacher (OECD average-31)



Values are ranked in descending order of the importance of the motivation for becoming a teacher.

Source: OECD, TALIS 2018 Database, Table I.4.1.

StatLink http://dx.doi.org/10.1787/888933932475

Motivations to become a teacher do not differ greatly between novice teachers (teachers with up to five years of teaching experience) and more experienced teachers (those with more than five years of experience). On average in OECD countries and economies, novice teachers are more likely to consider benefitting the socially disadvantaged as a factor of moderate or high importance. This holds true in 12 countries and economies, particularly in European Nordic countries (Finland, Iceland, Norway), Estonia and New Zealand, where there is a difference of 10 or more percentage points between the shares of novice teachers and experienced teachers citing the importance of benefitting the socially disadvantaged (Table I.4.1). Across the OECD, novice teachers are less likely to consider job security a factor of moderate or high importance. This holds true in 18 countries and economies, especially in Portugal, where 71% of experienced teachers and only 39% of novice teachers report job security as an important factor.

These differences between novice and experienced teachers may result from generational effects, whereby those who grew up before the years of mass unemployment and mass migration are less concerned with benefit to the socially disadvantaged than those who grew up more recently, for whom unemployment and diversity have always been part of their experience (Heath et al., 2016[13]). Given that teachers are asked to respond retrospectively about their initial motivations for joining the profession, the gap should not result from any age effect, but it may be the case that older people with additional family responsibilities retrospectively value job security more highly. It may also result from a period effect, whereby there is less and less job security in the education sector. Faced with teacher shortages, some education systems (particularly in developing countries) have accepted lower certification and educational requirements, eliminated teacher tenure, hired inexperienced teachers on a contract basis and curtailed teacher salaries to fill vacant teaching positions (Chudgar, Chandra and Razzaque, 2014[14]). By contrast, some other education systems, such as the Netherlands, may have improved contract modalities by offering higher salaries, thanks to a combination of government contributions to labour cost development and additional investments.

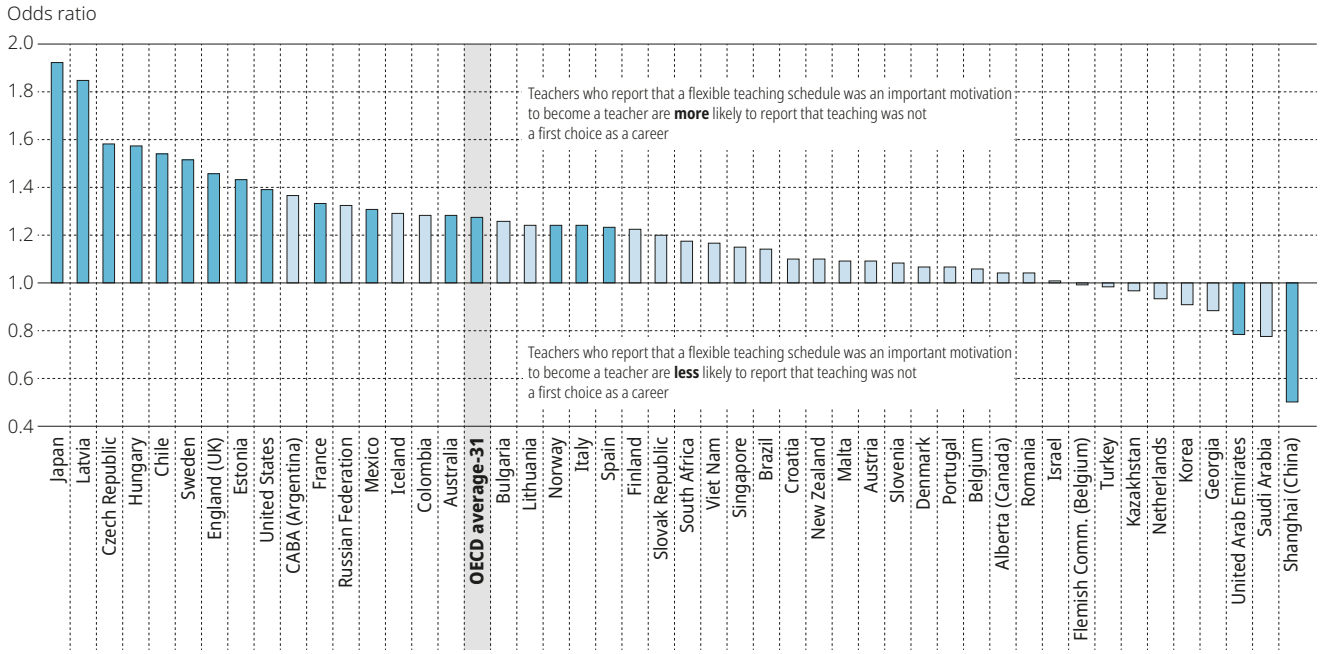
TALIS also asks teachers whether teaching was their first choice as a career, defined as having a paid job that one regarded as likely to form one's life's work. On average across the OECD, two out of three teachers did report that teaching was their first choice as a career (Table I.4.4). But there are important cross-country variations. Fewer teachers report teaching as their first career choice in English-speaking countries, including England (United Kingdom) and the United States (both 59%), Australia (58%), New Zealand (55%), and some European countries, including Finland and Sweden (both 59%) and the Netherlands (53%), in Ciudad Autónoma de Buenos Aires (hereafter CABA) (Argentina) (53%), as well as in South Africa (49%). More teachers report teaching as their first career choice in the eastern part of the globe, including Viet Nam (93%), Georgia (89%), Shanghai (China) (87%), Saudi Arabia (83%), Japan (82%) and Korea (80%), but also in Portugal (84%) and Slovenia (82%). These cross-country variations may reflect institutional differences in the selection and certification processes of teacher candidates, with more selective and lengthy systems leading to higher shares of first-choice vocations. They could also result from cultural differences in the way individuals view their working life and in national job markets, with possibly more flexibility and mobility across sectors in English-speaking and European Nordic countries, and more stability in the eastern countries. The likelihood of reporting teaching as a first career choice also varies greatly by teacher gender. In almost all TALIS countries and economies, significantly fewer male teachers report teaching as their first career choice than their female counterparts. The largest gender differences are observed

in Eastern European countries, especially in Estonia (41% of male teachers versus 69% of female teachers) and Latvia (55% versus 76%) (Table I.4.4). This global gender difference is consistent with that found in professional aspirations reported by 15-year-old students in PISA (OECD, 2018[5]). In 2006 and 2015, on average across OECD countries and economies, 15-year-old boys were less likely than girls to expect to work as teachers by the time they are 30 years old, suggesting that teaching was more often envisaged by girls as a first career choice than by boys.

Motivations to become a teacher differ depending on whether or not one considered teaching a first career choice. In quite a few countries and economies participating in TALIS, teachers whose main motivation to enter the profession is to have a steady career path or a secure job, to influence the development of children or to contribute to society, also tend to make teaching their first career choice. However, in around one-third of the countries and economies participating in TALIS, teachers for whom teaching was not a first choice tend to be motivated by the work schedule of the profession (Figure I.4.2, Table I.4.5). This suggests that later vocations are, perhaps, motivated by the possibility of better reconciling work life with the responsibilities of personal life.

Figure I.4.2 **Relationship between teaching as a career choice and motivation to become a teacher**

Likelihood of teaching not being a first choice as a career related to the teaching schedule fitting responsibilities in the personal life reported as being of "moderate" or "high" importance in the decision to become a teacher[1, 2]



1. Results of binary logistic regression based on lower secondary teachers' reports. The regression model also included six other explanatory variables referring to different motivations to become a teacher and was controlled for the following teacher characteristics: gender and age.

2. An odds ratio indicates the degree to which an explanatory variable is associated with a categorical outcome variable. An odds ratio below one denotes a negative association; an odds ratio above one indicates a positive association; and an odds ratio of one means that there is no association.

Note: Statistically significant coefficients are marked in a darker tone (see Annex B).

Countries and economies are ranked in descending order of the likelihood of teaching not being a first choice as a career, related to the teaching schedule fitting responsibilities in the teacher's personal life reported as being of "moderate" or "high" importance in the decision to become a teacher.

Source: OECD, TALIS 2018 Database, Table I.4.5.

StatLink http://dx.doi.org/10.1787/888933932494

The desire of teachers to make teaching their first choice as a profession is also related to job satisfaction and reported self-efficacy. Regression analysis shows that, after controlling for teacher characteristics, such as gender and teaching experience, and for teachers' self-efficacy, those teachers whose first career choice was teaching are also more likely to be satisfied with their job (Table I.4.6). The relationship holds in all but three countries with available data participating in TALIS (Lithuania, Portugal and the United States). Similarly, irrespective of gender and teaching experience, teachers for whom teaching was their first career choice also tend to report higher self-efficacy in around two-thirds of countries and economies participating in TALIS (Table I.4.7).

This may derive from the fact that teachers for whom teaching was their first career choice pursued a more linear study and career path, which brings along a higher sense of purpose and individual performance. Nevertheless, regression results need to be interpreted with caution, as the explanatory power of the model is limited (the coefficients of determination R^2 are low).

Box I.4.1 Motivations to join the teaching profession for primary and upper secondary teachers

TALIS findings suggest that primary, lower secondary and upper secondary teachers have somewhat different reasons for joining the profession. Overall, in the 13 countries and economies with data for ISCED 1 and 2, there is a greater prevalence of altruistic motives among primary teachers than among lower secondary teachers, such as wanting to "benefit the socially-disadvantaged", "contribute to society" and "influence the development of children and young people", with these considered to be of "moderate" or "high importance" (Table I.4.2). In 7 of the 13 countries and economies, significantly more primary teachers than lower secondary teachers cite at least two out of these three aspects as important factors for them in deciding to become teachers. With respect to job security as a factor of moderate or high importance for motivating teachers to join the profession, more primary teachers in Japan (+6 percentage points), Korea (+4 percentage points) and Viet Nam (+3 percentage points) cite it than their lower secondary counterparts. However, in Spain (44%, -14 percentage points) and France (59%, -6 percentage points), job security is cited significantly less frequently as an important motivating factor among primary teachers than among lower secondary teachers.

Among upper secondary teachers from the 11 countries with ISCED 3 data, the most common motivating factor remains "to influence the development of children and young people" across all countries with available data (Table I.4.3). Yet, in 6 of the 11 countries with ISCED 2 and 3 data, fewer upper secondary teachers than their lower secondary counterparts consider this factor to be moderately or highly important. In Denmark, Slovenia and Viet Nam, in particular, all of the altruistic motives ("benefiting the socially-disadvantaged", "contributing to society" and "influencing the development of children and young people") are cited by fewer upper secondary teachers than lower secondary teachers. Factors pertaining to the economic and working conditions of the profession, such as job security and teaching as a source of "reliable income", are more prevalent among upper secondary teachers than lower secondary teachers in Croatia (up to +4 percentage points) and Denmark (up to +10 percentage points). The opposite pattern is observed in Portugal and Turkey.

HOW READY ARE TEACHERS FOR TEACHING?

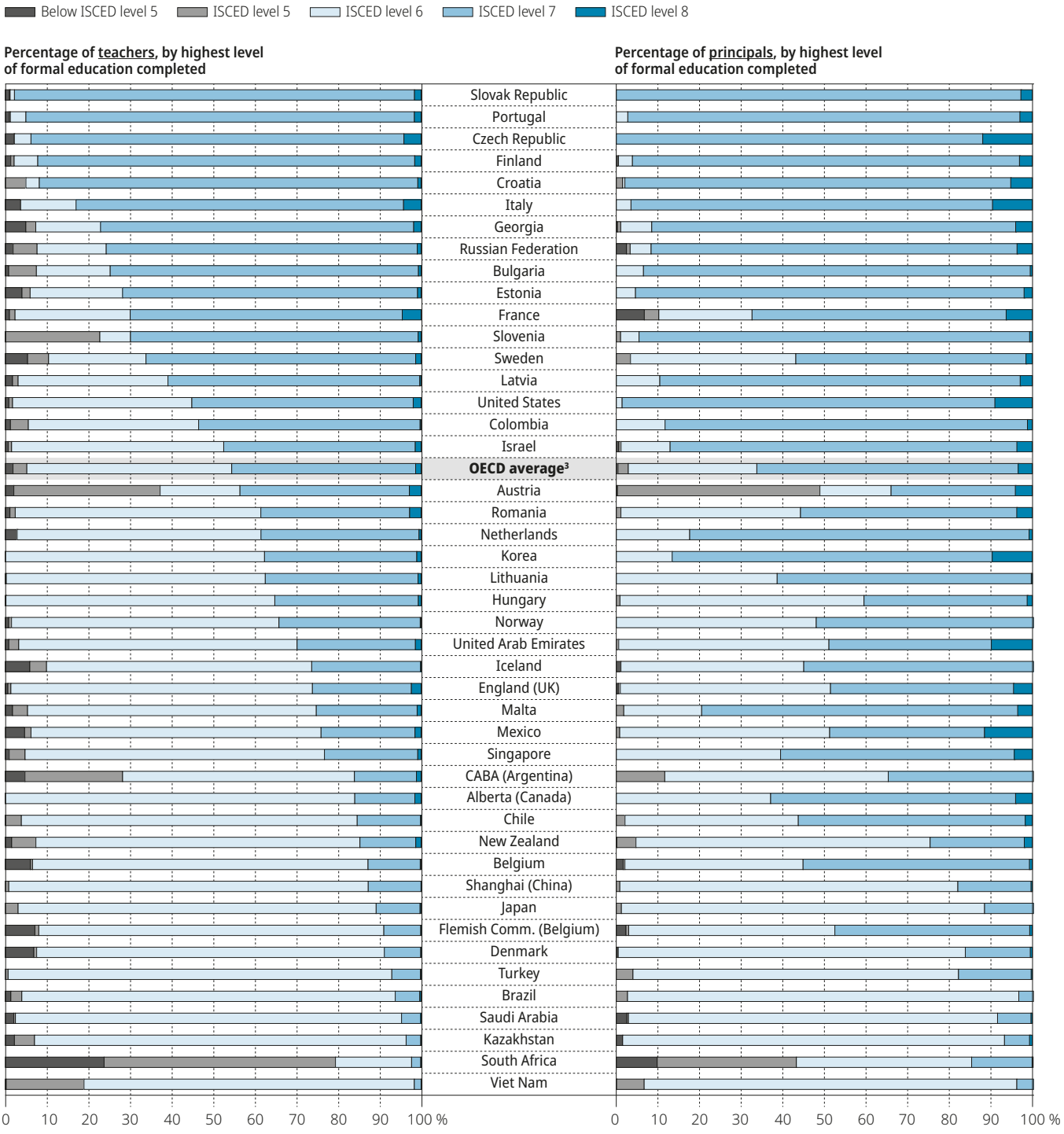
Once motivated and selected into the teaching profession, future teachers need to be trained in the best possible manner to deliver quality teaching to their future students. Indeed, opportunities to learn during teacher education contribute to specific types of teacher knowledge. That knowledge has an effect on the teaching strategies adopted by teachers and the quality of their instruction (Blömeke, Gustafsson and Shavelson, 2015[15]), which are, in turn, significantly related to student achievement (Baumert et al., 2010[16]; Hill, Rowan and Ball, 2005[17]; Kersting et al., 2012[18]). A closer look at teacher education can help understand the outcomes of teacher education and where potential starting points for reforms may lie. We can regard opportunities to learn in teacher education as deliberately developed by educational policy makers and teacher education institutions to achieve the specific goals of an education system (Stark and Lattuca, 1997[19]). As such, specifications underpinning initial teacher education programmes reflect the particular visions of knowledge and skills that a country (or an education system) and its teacher education institutions expect teachers to have (Blömeke and Kaiser, 2012[20]; Schmidt, Blömeke and Tatto, 2011[21]).

Initial teacher education

TALIS can support the examination of multiple features of initial teacher education: the typical level of education attained by teachers and the elements included in it, as well as the sequence in which they are presented. To begin with, TALIS 2018 asks teachers about the highest level of formal education they have completed, using the 2011 International Standard Classification of Education (ISCED-2011; see Annex B for more details). The typical level of education attained by teachers varies slightly across countries. On average across OECD countries and economies, the majority of teachers report that they have completed a bachelor's degree or higher, with about 50% of teachers reporting a bachelor's degree or equivalent as their highest educational attainment (ISCED level 6)[2] (Figure I.4.3, Table I.4.8). That is also the highest educational level completed by more than 75% of teachers in Alberta (Canada), Australia, Belgium (including the Flemish Community), Brazil, Chile, Denmark, Japan, Kazakhstan, New Zealand, Saudi Arabia, Shanghai (China), Turkey and Viet Nam. Another, smaller share of teachers (44% in OECD countries and economies) report a master's degree or equivalent, including stronger specialisation and more complex content than a bachelor's degree (ISCED level 7), as their highest level of educational attainment. More than 75% of teachers completed a master's degree as their highest level of education in Croatia, the Czech Republic, Finland, Georgia, Italy, Portugal and the Slovak Republic.[3]

Figure I.4.3 **Highest educational attainment of teachers and principals**

Results based on responses of lower secondary teachers and principals[1, 2]



1. Education categories are based on the International Standard Classification of Education (ISCED-2011). ISCED levels 6 and 7 programmes are generally longer and more theory-based, while ISCED level 5 programmes are typically shorter and more practical and skills-oriented.

2. ISCED level 5 includes bachelor's degrees in some countries.

3. OECD average covers 31 countries for teachers and 30 countries for principals (see Annex B).

Countries and economies are ranked in descending order of the percentage of lower secondary teachers whose highest level of formal education is either ISCED level 7 or ISCED level 8.

Source: OECD, TALIS 2018 Database, Tables I.4.8 and I.4.24.

StatLink http://dx.doi.org/10.1787/888933932513

Across OECD countries and economies, 1.3% of teachers report holding a doctoral degree or equivalent (ISCED level 8), while the highest shares of teachers with doctoral degrees (4% or more) are observed in European countries: the Czech Republic, France and Italy. The share of doctoral degrees among teachers has risen over the past five years in many countries, including France, Italy, and Romania. The rise observed in the share of doctoral-degree holders is not a phenomenon limited to the teacher population. It is also seen in the general adult population aged 25 to 64 of many countries, between 2014 and 2017, according to the OECD series of *Education at a Glance* (OECD, 2018[22]).

Finally, another 5% of teachers across the OECD report having completed, at most, a short-cycle tertiary education programme (ISCED level 5 and below) (Table I.4.8). While the proportion of teachers with a short-cycle tertiary education (ISCED level 5)[4] as their highest level of formal education is negligible in most countries (less than 1%), the share exceeds 20% in a few countries and economies: Austria (35%), CABA (Argentina) (23%), Slovenia (23%), South Africa (56%) and Viet Nam (19%) (Table I.4.8). The fact that the OECD identified four years as the most frequent duration of initial teacher education among countries and economies with high performance on PISA (OECD, 2018, p. 46[5]) may suggest exploring the possibility of extending the duration and content of post-secondary studies for teacher training programmes to at least four years – if this feature is not already enforced. It seems that some systems have already taken action to meet this objective, as the share of teachers without a bachelor's or equivalent degree (ISCED level 5 and below) has decreased in many countries over the past five to ten years. For example, in 2007, Argentina increased compulsory initial teacher training from three to four years (Instituto Nacional de Formación Docente, 2007[23]). A decline by 10 or more percentage points has been observed in Austria, Iceland, Lithuania and Slovenia since 2008 and in Chile and Croatia since 2013 (Table I.4.11). There are likely two factors at play behind this decline: more years needed to obtain qualifications for recent entrants combined with waves of retirements and early departures for teachers who took fewer years to obtain their qualifications.

Past research has identified the advantages and disadvantages of the concurrent model, the consecutive model and the coexistence of the two models of initial teacher education (Musset, 2010[24]). Concurrent programmes, where academic subjects are studied alongside educational and professional studies throughout the duration of the training, allow a more integrated learning experience, as pedagogical and subject-matter (content knowledge) training take place at the same time. But they allow little flexibility in entering the teaching profession, especially for those who have studied something other than education. Consecutive programmes offer specialised courses in pedagogy and in teacher education after completion of another degree in a subject. This allows more flexible entry into the teaching profession, coupled with weaker professional identity, giving teachers strong expertise in a given subject, but weaker knowledge in learning techniques and pedagogy in general. Having both concurrent and consecutive programmes can help to attract different profiles of individuals into the teaching profession, but they can also trigger extra costs for education systems, as they have to maintain two training systems in parallel (Musset, 2010[24]).

Teacher education programmes can vary greatly from one teacher education institution to another and from country to country (Blömeke, Kaiser and Lehmann, 2010[7]; Tatto et al., 2012[9]). TALIS asks teachers how they received their first teaching qualification. Across the 33 countries and economies that administered this optional question, most teachers reported having completed a regular concurrent teacher education or training programme (Table I.4.12) that grants future teachers a single credential for studies in subject-matter content, pedagogy and other courses in education during the first period of post-secondary education. More than 75% of teachers completed a concurrent training programme in Belgium (including the Flemish Community), Finland, Hungary, Korea, Shanghai (China), the Slovak Republic, Turkey and Viet Nam, while less than 25% of teachers did so in Colombia, England (United Kingdom) and France. In these three countries, teachers most frequently received their qualification in a regular consecutive teacher education or training programme, which requires future teachers to complete two phases of post-secondary education: a first phase of university education with the focus on subject matter and a second phase with the focus on pedagogy and practicum. These programmes are mostly prevalent in English-speaking countries, including England (United Kingdom) (75% of teachers completed a consecutive training programme), Alberta (Canada) (53%) and Australia (47%) (Table I.4.12).

Consecutive programmes, which are less common than concurrent programmes, seem to recently be on the rise in many countries and economies, including Alberta (Canada), Croatia, Estonia, Hungary, Iceland, Romania, Saudi Arabia and the United Arab Emirates. In these countries, the share of teachers who completed a regular consecutive teacher education programme in the five years prior to the survey is larger than the total share in the whole teacher population (Table I.4.12). This could potentially be a response to important teacher shortages, whereby teacher candidates who already hold a tertiary education degree in some subject are allowed to only enrol in the second phase of teacher studies with a strong focus on pedagogy and practicum. But increasing shares of teachers who graduated from a consecutive programme could also be the sign that more and more students postpone the time at which they need to make a clear career choice.

Some systems also offer fast-track or specialised education or training programmes.[5] These refer to pathways into a teaching job that are not regular teaching education or training programmes in terms of duration and/or content, but programmes designed for specific groups such as high-profile young graduates, second-career candidates, candidates with some teaching experience, or graduates with high levels of subject knowledge. Countries where the share of teachers receiving their first qualification from such programmes is greater than 10% are the United Arab Emirates (17%) and Colombia (11%).

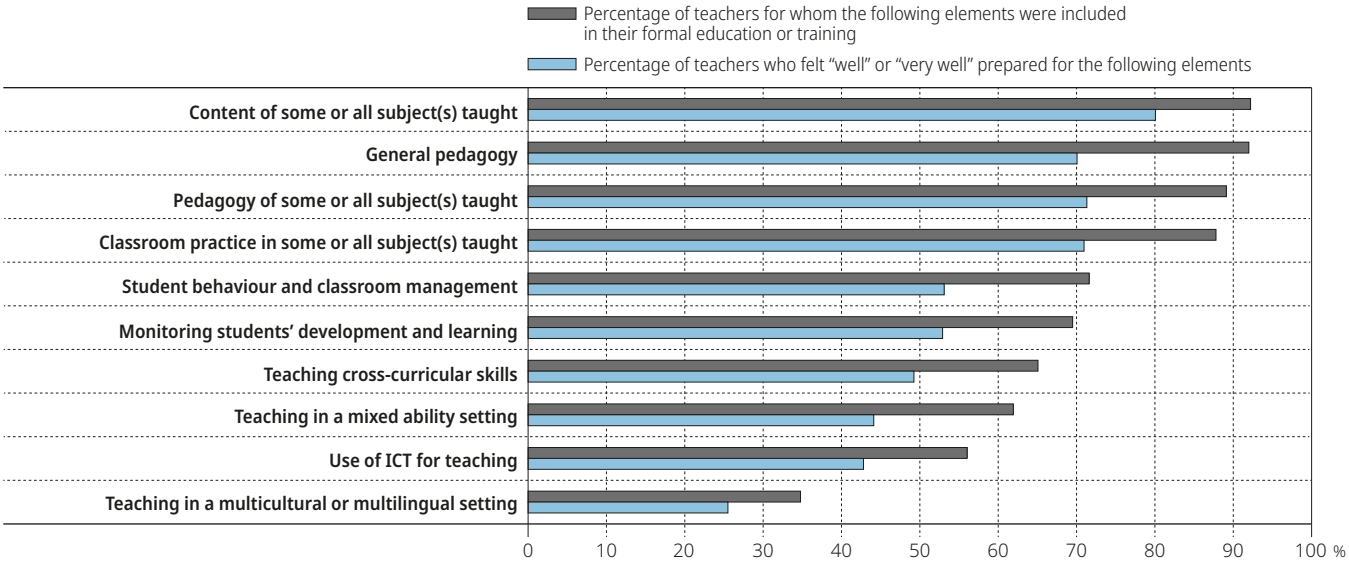
Across all countries and economies participating in TALIS, less than 10% of teachers completed subject-specific education only, except in Romania (23%), Latvia (22%), France (19%), Georgia (18%), Lithuania (16%), Mexico (14%) and CABA (Argentina) (13%). Finally, less than 5% of teachers have not received any formal teacher education or training in all countries with data available, except Saudi Arabia (10%), Mexico (8%) and Estonia (5%) (Table I.4.12). High shares of teachers in the last two categories (subject-specific education only and no formal education related to the subject taught by the teacher or to any type of pedagogical education) are particularly worrying, because these teachers start their jobs without being prepared for the profession. Past studies have highlighted the importance of being trained in subject-related pedagogical knowledge and in general pedagogy for delivering quality instruction and for student learning (Guerriero, 2017[25]). In addition, a mandatory teaching practicum was identified in PISA as a common feature of initial teacher preparation in all high-performing and equitable education systems except Macao (China) (OECD, 2018, p. 50[5]).

TALIS also asks teachers about the elements included in their formal education or training. Subject-content courses deliver the body of deep knowledge that teachers need to create and facilitate effective teaching and learning environments for all students and develop their competences (Guerriero, 2017[25]), to present content to learners in a meaningful way and to connect learning topics to one another, as well as to each student's prior knowledge and future learning objectives (Cochran-Smith and Zeichner, 2005[26]; Wilson, Floden and Ferrini-Mundy, 2001[27]). Across the OECD, almost all teachers (92%) report that their formal education or training included content of some or all the subjects they teach (Figure I.4.4, Table I.4.13). However, 10% to 20% of teachers did not receive training in subject content in Alberta (Canada), Belgium (including the Flemish Community), Iceland, the Slovak Republic and Turkey.[6]

Knowing the content provides only a foundation for teaching. Student achievement is higher when a strong content background is combined with pedagogical and practical training (Clotfelter, Ladd and Vigdor, 2007[28]). Preparation that links content knowledge to an understanding of how learners acquire knowledge, how to teach students who are diverse with respect to achievement, motivation, socio-economic background or language background, and how to use a wide array of instructional strategies was found to be effective (Constantine et al., 2009[29]; National Research Council, 2010[30]). Pedagogy refers to the art and science of teaching and, thus, pedagogical competence refers to knowing how to teach, rather than knowing the content one is expected to teach.

Figure I.4.4 **Content of teacher education and sense of preparedness for teaching**

Results based on responses of lower secondary teachers



Note: ICT: Information and communication technology.
Values are ranked in descending order of the percentage of lower secondary teachers for whom the following elements were included in their formal education or training.
Source: OECD, TALIS 2018 Database, Tables I.4.13 and I.4.20.
StatLink http://dx.doi.org/10.1787/888933932532

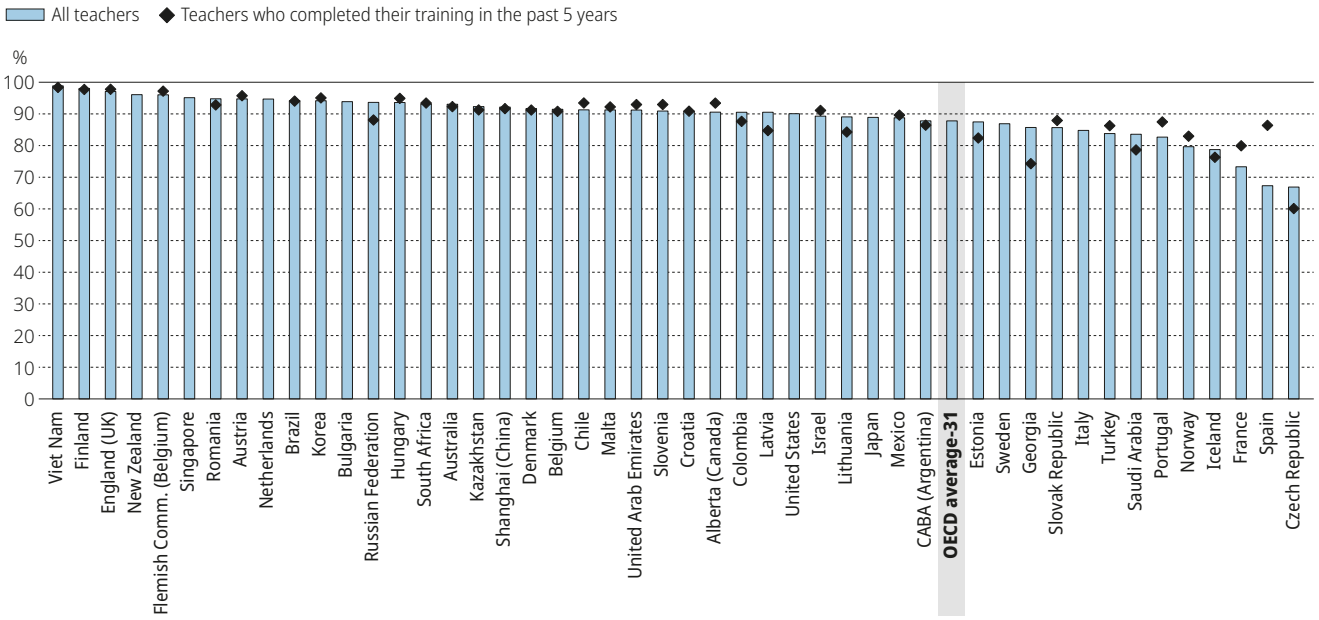
General pedagogical competence is what teachers need as basic knowledge of how to teach, and is the competence needed more often in primary school. Specific pedagogical competence refers to the knowledge of how to teach a particular subject or of a particular group of students. Pedagogical content knowledge links general pedagogical knowledge and content knowledge (Shulman, 1986[31]). Across the OECD and in all countries participating in TALIS, almost all teachers received training in general pedagogy and in the pedagogy of the subjects they teach (Figure I.4.4). However, general and content-specific pedagogy is less prevalent in Southern European countries, where less than 80% of teachers report having received training in these aspects, including France, Italy and Spain (Table I.4.13). However, some countries, such as Italy since the academic year 2018/19, have initiated important reforms to include more training in pedagogy in their teacher education programmes (Ministero della Giustizia, 2017[32]).

The teaching methods that future teachers experience during initial teacher education may also shape the way they will teach. In particular, research highlights the importance of having opportunities to engage in a teaching practicum that requires planning lessons or analysing student work, rather than just listening to lectures (Boyd et al., 2009[33]). Mandatory practicum is a longstanding feature of the initial teacher education system in Australia. A number of countries have recently reformed their initial teacher education systems to make the teaching practicum a mandatory element – such as Estonia (OECD, 2019[34]). Classroom practice in some or all subjects taught by teachers was included in the formal education and training of about 90% of teachers, on average across OECD countries and economies. More than 95% of teachers in England (United Kingdom), Finland, the Flemish Community of Belgium, New Zealand, Singapore and Viet Nam completed such a teaching practicum (Figure I.4.5, Table I.4.13), while less than 75% of teachers did so in the Czech Republic, France, and Spain.

Examining the responses of teachers who completed their formal teacher education and training in the last five years and comparing them to those of the whole population sheds light on the recent changes in teachers' formal training and education (Table I.4.13). An increase in the share of teachers trained in classroom practice is found in some countries, particularly in France, Norway and Spain. By contrast, a worrying downward trend in the share of teachers receiving practical training is observed in some countries, especially in the Czech Republic, Georgia, Estonia and the Russian Federation. The reform in Estonia making the teaching practicum mandatory may be too recent to be reflected in the trend since 2013 but will likely materialise in the coming years. Box I.4.2 sheds light on how initial teacher education is changing through new national teacher standards in Estonia.

Figure I.4.5 **Teacher training in classroom practice**

Percentage of lower secondary teachers for whom classroom practice in some or all subject(s) taught were included in their formal education or training, by year of completion



Countries and economies are ranked in descending order of the percentage of teachers who felt "well" or "very well" prepared for classroom practice in some or all subject(s) taught.

Source: OECD, TALIS 2018 Database, Table I.4.13.

StatLink http://dx.doi.org/10.1787/888933932551

An important consideration for examining the quality of teachers' credentials is to look at the comprehensiveness of teacher education and training programmes. To this end, two indicators are considered: the percentage of teachers trained in all three core elements of a quality teaching preparation (content, pedagogy and classroom practice of some or all subject(s) teachers teach) and the average number of elements included in teachers' formal education or training (Table I.4.14). On average across the OECD, 79% of all teachers report that they were trained in all three core elements (content, pedagogy and classroom practice of some or all subject(s) teachers teach). However, this share amounts to only 48% in Spain and remains below 70% in the Czech Republic, France, Iceland and Italy. Teachers report that they were trained in around seven of the ten elements listed in the questionnaire, on average across the OECD. Through the lens of this indicator as well, teachers in France and Spain report having been trained in fewer aspects than in other countries, with an average number of elements including in their formal education or training comprised between five and six.

Restricting the analysis to teachers who completed their formal teacher education and training in the last five years sheds light on the comprehensiveness of the current teacher education and training systems. Among countries and economies with available data, France and Spain are the two where teacher formal education and training systems have actually become more comprehensive, according to the two examined indicators (Table I.4.14). The changes in Spain are particularly sharp: the share of teachers trained in content, pedagogy and classroom practice in some or all subjects taught amounts to 68% of teachers who completed their teacher formal education or training in the last five years (instead of 48% in the whole teacher population) and an average of 7.4 elements were included in their formal education and training (instead of 5.2 in the whole population).

Box I.4.2 **National standards guiding teacher education in Estonia**

Estonia has identified a strategic approach to improve initial teacher preparation by aligning teacher education programmes to national competency standards. Estonia introduced new teacher standards in 2013 in order to ensure high-quality teacher graduates entering the profession. The function of teacher standards in Estonia is to provide a competency framework for teachers, guide the curriculum of teaching institutions and the assessment of graduating teacher candidates. As an example, there are seven competency areas defined in the Estonian teacher standards, each having "activity parameters" as follows: teachers' tasks in an area; knowledge required to perform those tasks; and evaluation methods used to measure the acquisition of the competencies.

These standards are closely linked to the design of teacher education. The University of Tartu in Estonia is one of the major public institutions of teacher education that revised its curriculum in 2012-13 in parallel with the development of the new teacher standards. The big shift in the curriculum emerged from the identified lack of "professional studies" in the teacher preparation programme. As a result, the curriculum is now focussed on four core pedagogical areas: communication and feedback in school; designing learning and instruction; teaching and reflection; and a teacher's identity and leadership. The University reported that all of the learning outcomes of the curriculum were compared to the national teacher standards' activity parameters and modified accordingly, in order to ensure alignment between envisioned goals and teacher preparation in practice.

In addition to a strong grounding of curriculum in competencybased standards, Estonian initial teacher education contains some other features that are key to providing a strong start to new teachers. These include a minimum 50 days of practicum experience at a school site and a mandatory 12-month induction programme, including the support of a trained mentor who has at least three years of teaching experience. The mentor is responsible for providing feedback on the beginner teacher to the teacher education institution, and the beginner teacher is responsible for self-evaluation exercises during this time period.

Sources: Revai N. (2018[35]), "What difference do standards make to educating teachers?: A review with case studies on Australia, Estonia and Singapore", http://dx.doi.org/10.1787/f1cb24d5-en; Santiago, P. et al. (2016[36]), *OECD Reviews of School Resources: Estonia 2016*, http://dx.doi.org/10.1787/9789264251731-en.

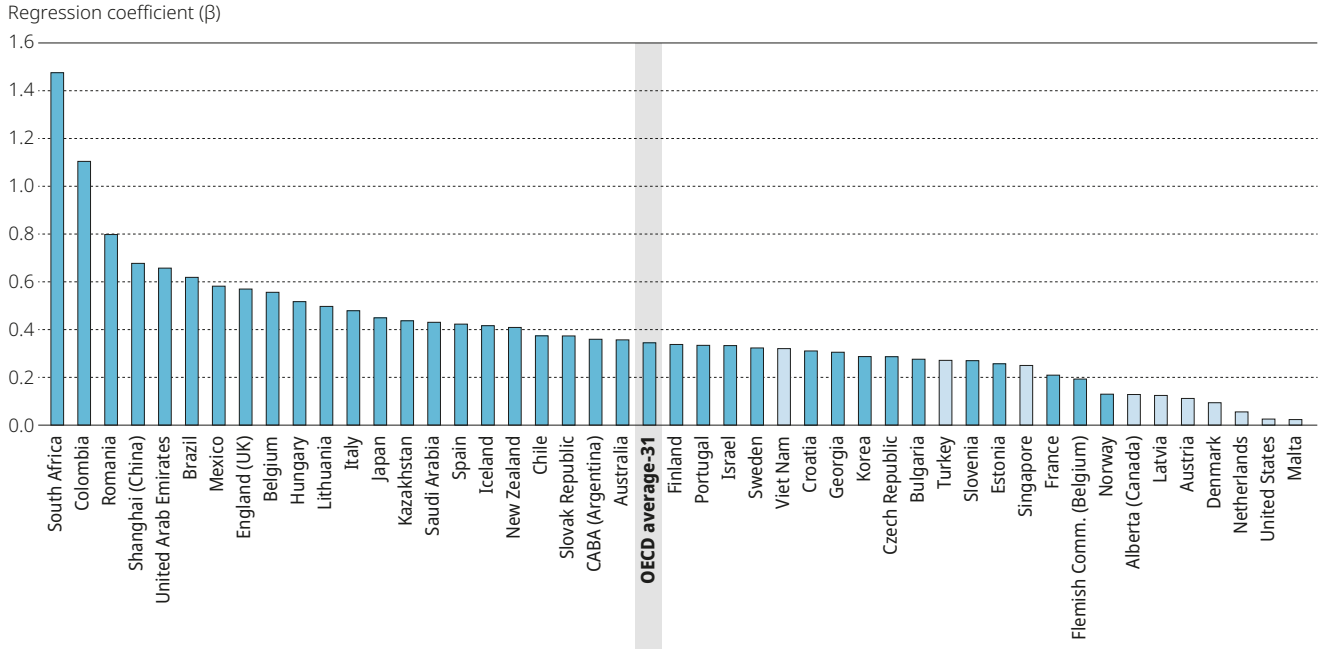
After subject content, pedagogy and classroom practice, the elements often included in teachers' formal education and training are: student behaviour and classroom management (72% of all teachers across OECD countries and economies); monitoring student development and learning (69%); teaching cross-curricular skills (65%); teaching in a mixed-ability setting (62%); and the use of ICT for teaching (56%) (Figure I.4.4, Table I.4.13).[7] In comparison, teaching in a multicultural or multilingual setting is more rarely included as an element of teachers' formal education or training. Indeed, on average across OECD countries and economies, only 35% of all teachers are trained in this area, reflecting the fact that the phenomenon of globalisation of societies

has emerged over the past few decades and was, logically, only recently included in teacher training. The lowest shares are observed in Europe, especially in Croatia (25% of teachers trained in this domain), Lithuania (23%), Portugal (21%), Hungary (19%), the Czech Republic (16%), France (12%) and Slovenia (12%), including in countries with high rates of students with a migrant background, such as France and Portugal (see Chapter 3). However, training in teaching in a multicultural or multilingual setting is common in countries with English as the main national language and those with several official languages and/or a tradition of multiculturalism[8], including Alberta (Canada), Australia, England (United Kingdom), New Zealand, Shanghai (China), Singapore, South Africa, the United Arab Emirates and the United States, where around 60-80% of teachers received training in this domain. In almost all countries with available data, training in this domain is on the rise, with the largest increases observed in European countries, considering that the share of teachers who completed their teacher education or training programme in the five years prior to the survey are more frequently trained in this domain than the rest of the population (Table I.4.13).

Regression analyses based on TALIS data show that, across TALIS countries and economies, the content of teachers' formal education and training is important for teaching quality. After controlling for teacher characteristics, such as gender and teaching experience, teachers who had some training in student behaviour and classroom management as part of their formal education also tend to feel more efficient in their classroom management capabilities in most countries and economies participating in TALIS (Figure I.4.6, Table I.4.17). A similar relation is observed regarding training in and use of ICT for teaching. On average across OECD countries and economies and in the majority of countries and economies participating in TALIS, teachers who were trained in the use of ICT are also more likely to report that they let students use ICT for projects or classwork (Table I.4.18). When it comes to teaching in a diverse classroom, teachers who have been trained in teaching in a multicultural or multilingual environment also tend to report higher self-efficacy in dealing with such a teaching environment in all TALIS participants with available data, except for Alberta (Canada), Chile and Saudi Arabia, where no statistically significant relationship is found (Table I.4.19).

Figure I.4.6 **Relationship between self-efficacy in classroom management and being trained in classroom management**

Change in the index of self-efficacy in classroom management associated with being trained in classroom management[1, 2, 3]



1. Results of linear regression based on responses of lower secondary teachers.
2. The predictor is a dummy variable: the reference category is not having "student behaviour and classroom management" included in formal education or training.
3. Controlling for the following teacher characteristics: gender and years of experience as a teacher.

Note: Statistically significant coefficients are marked in a darker tone (see Annex B).

Countries and economies are ranked in descending order of the change in the index of self-efficacy in classroom management associated with being trained in classroom management.

Source: OECD, TALIS 2018 Database, Table I.4.17.

StatLink http://dx.doi.org/10.1787/888933932570

Additionally, TALIS data makes it possible to identify which element of initial teacher education matters, particularly for teacher self-efficacy. Teacher overall self-efficacy is regressed on indicators of whether the teacher was trained in each of the ten elements potentially included in initial teacher education or training. Results show that, in 37 TALIS countries and economies with available data, teachers who were trained in teaching cross-curricular skills (e.g. creativity, critical thinking, problem solving) are more likely to report higher levels of self-efficacy. Being trained in teaching in a multicultural setting is also conducive to higher self-efficacy in 20 TALIS countries and economies (Table I.4.46). This being said, regression results need to be interpreted with care, as the explanatory power of the estimated models is usually limited (as indicated by low R^2).

Box I.4.3 **Initial teacher training for primary teachers up to upper secondary teachers**

Training in subject-specific content and pedagogy is a prominent feature of the initial teacher education of lower secondary teachers across most countries participating in TALIS. In 6 out 13 countries with available data for ISCED 1 and 2, a significantly higher proportion of primary teachers are trained in subject-specific pedagogy than lower secondary teachers, with the highest differences reported in Spain (26 percentage points) and France (13 percentage points). In contrast, a significantly lower proportion of primary teachers are trained in subject-specific content in Denmark (94%), France (91%) and Spain (86%) than their lower secondary counterparts (Table I.4.15).

Practicum experiences are a crucial part of initial training for teachers of all education levels, but in some countries, there are varied patterns in practicum opportunities across education levels. In 5 out of 13 education systems with available data for ISCED 1 and 2, a greater proportion of primary teachers than of lower secondary teachers receive classroom practice, with the highest differences observed in Spain (19 percentage points) and France (13 percentage points). Practicum experiences for teachers are less common in upper secondary education. In 8 out of 11 education systems with available data for ISCED 2 and 3, fewer upper secondary teachers receive practicum training than lower secondary teachers (Table I.4.16), with the largest differences observed in Slovenia (21 percentage points), Denmark (14 percentage points) and Croatia (13 percentage points).

Within participating countries, the largest differences in initial training of teachers at different education levels lie in areas of teaching in a mixed-ability setting, teaching in multicultural and multilingual settings and monitoring students' development and learning. In 10 out of 13 education systems with available data for ISCED 1 and 2, more primary teachers have undergone training in monitoring students' development and learning than their lower secondary counterparts.

Overall, Japan, Korea and Spain have large differences between formal training of lower secondary teachers and that of primary teachers, indicating that initial teacher preparation for primary teachers is more comprehensive than that of lower secondary teachers in these countries (Table I.4.15). In each of these countries, primary teachers report having received significantly higher levels of training than lower secondary teachers across most of the categories in content of teacher education.

Teachers' sense of preparedness for teaching

Another way to gauge the quality of initial teacher education and training consists of learning from teachers how well prepared they felt for various aspects of their job by the time they completed their education or training. Past research in the United States has indeed shown that the different elements of initial teacher preparation are, very often, related to self-perceived preparedness (Ronfeldt and Reininger, 2012[37]; Ronfeldt, Reininger and Kwok, 2013[38]). With this in mind, TALIS asks teachers the extent to which ("not at all"; "somewhat"; "well"; "very well") they felt prepared for various elements of teaching, the same ten elements as those potentially included in their formal education and training. In line with what previous research found, teachers' reported sense of preparedness for each of these elements aligns well with the prevalence of each element in teacher formal education and training (Figure I.4.4, Table I.4.20). Yet, for all aspects, there are consistently more teachers who received training than teachers who felt well prepared or very well prepared in relation to them.

Among the core components of initial teacher education – subject content, subject pedagogy and classroom practice – more teachers reported having a strong command of subject content (80% of teachers in the OECD felt well or very well prepared for this) than reported having a strong command of subject pedagogy and classroom practice of that subject (71% felt well or very well prepared) (Figure I.4.4). In some countries – Austria, the Czech Republic, France, Iceland, Italy and Japan – more than 50% of teachers felt under-prepared for subject pedagogy or classroom practice. However, newly trained teachers report slightly higher levels of preparedness in one or both elements than the rest of the teacher workforce in some of these countries – in Austria, France and Iceland (Table I.4.20).

The aspect of teaching that shows the largest variation between the training received and teachers' sense of preparedness is teaching in a mixed-ability setting.[9] Moreover, there are important cross-country variations in the share of teachers who felt prepared for this element: it ranges from less than 25% of teachers in the Czech Republic and Estonia to more than 75% in Hungary and Romania and even more than 85% in the United Arab Emirates. In 25 countries and economies participating in TALIS, more than 50% of teachers felt under-prepared for teaching in a mixed-ability setting by the time they completed their teacher education or training. When restricting the analysis to those teachers who completed their teacher education or training in the five years prior to the TALIS survey, the same observation concerns 21 out of 41 countries and economies with available data (Table I.4.20).

All this suggests that some teachers feel that the training they received was not completely successful in preparing them for some aspects of their job. This can point to room for improvement in the training provided, but it can also be a way for teachers to acknowledge the importance of acquiring some teaching experience over a substantial period of time to feel very well prepared. This suggests that more can be done to improve training in this aspect and that actual practice is crucial for developing these skills.

Teachers studying abroad

Besides professional knowledge in a number of areas, and practical experience in the classroom, teachers also need a diverse skill set, including transversal skills such as communication, in order to satisfy the complex expectations they are facing. While spending time abroad as part of their teacher study, student teachers expose themselves to different ways of teaching and this can broaden their pedagogical repertoire as well as their understanding of other cultures. Such experience can be of help when, as in-service teachers, they will need to cope with the challenges of teaching students from multicultural backgrounds. A report on the impact of study abroad for traditional college students found that those who study abroad exhibit greater change in intercultural communication skills after a semester abroad than students who stay on their home campus and that exposure to various cultures is the greatest predictor of intercultural communication skills, cultural adaptability and sensitivity (Rundstrom Williams, 2005[39]).

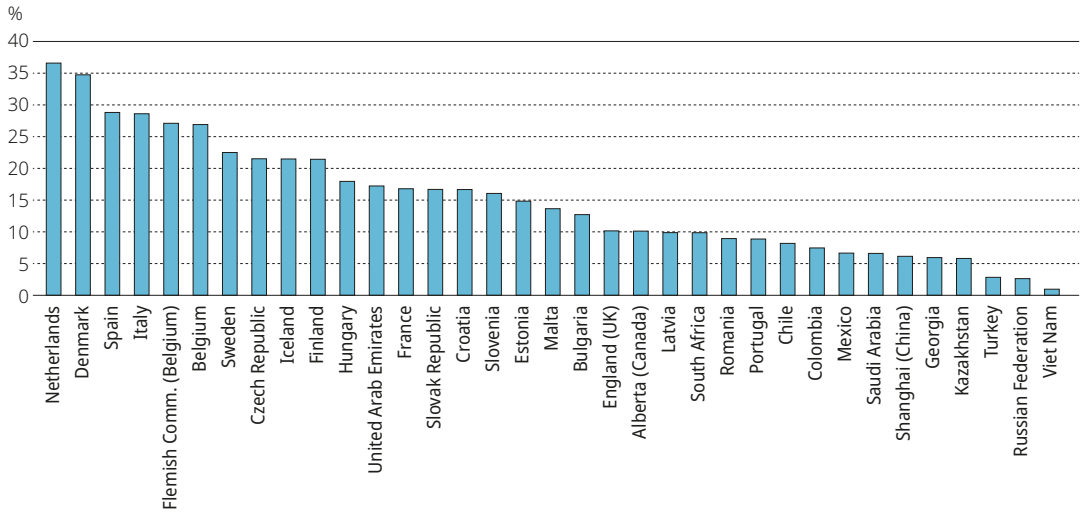
For this reason, TALIS 2018 offered the option of administering several questions about teachers' mobility abroad, including during their initial education. More specifically, TALIS asks teachers whether they have been abroad as a student as part of their teacher education or training. Thirty-seven countries and economies participating in TALIS administered this optional question. The percentage of teachers having been abroad as part of their teacher education or training ranges from 1% in Viet Nam to 37% in the Netherlands (Figure I.4.7 and Table I.4.23). Countries and economies belonging to the European Union present the highest shares. This can partly be explained by the availability of opportunities to study abroad in the European Union, such as Erasmus+, supported by the European Commission, which offers opportunities for students to study abroad and teachers to teach abroad.[10] In interpreting TALIS results, one needs to keep in mind that being abroad as a student teacher can actually refer to a wide range of activities, ranging from short-term excursions to a school abroad, to studying for a full year in another country's teacher education programme.

Past research about the duration of study abroad has concluded that more is better (i.e. that the longer students study abroad, the more significant are the academic, cultural-development and personal-growth benefits that accrue). One study suggests that studying abroad for a full year had a greater impact on students in the areas of continued language use, academic attainment measures, intercultural and personal development and career choices than a short summer programme or a semester (Dwyer, 2004[40]). While this study was not specific to student teachers, these outcomes relate to factors associated with quality teaching, as discussed in other parts of this report.

TALIS provides some partial information about the duration of student teacher stays abroad. TALIS did ask teachers about the total duration ("less than three months"; "three to twelve months" or "more than a year") they stayed abroad, all purposes combined ("as a student, as part of my teacher education or training"; "as a teacher in a European Union programme"; "as a teacher in a regional or national programme"; "as a teacher, as arranged by a school or school district"; and "as a teacher, by my own initiative"). Unfortunately, for teachers who report that they stayed abroad for several purposes, including as part of their teacher education or training, it is not possible to identify the duration of their stay abroad as part of their teacher education or training only. Therefore, to get an idea of the typical duration of a student teacher's stay abroad, the remaining analyses are restricted to those teachers who have been abroad as a student as part of their teacher education or training only. There are some limitations to this approach, as these teachers are likely not representative of the teachers who have been abroad as part of their teacher education; they actually represent only a subset of teachers who have been abroad as students (Table I.4.23). In 27 out of the 30 countries and economies with available data, the most frequent duration of teachers' stays abroad as part of their teacher education is less than three months. In Alberta (Canada) and France, the most frequent duration of teacher studies abroad is three to twelve months. These findings suggest that student teachers' stays abroad are relatively short, on average, and possibly too short to have a substantiated influence on the development of foreign language skills and other intercultural skills.

Figure I.4.7 **Stays abroad during teacher education**

Percentage of lower secondary teachers who went abroad as a student, as part of their teacher education



Countries and economies are ranked in descending order of the percentage of lower secondary teachers who went abroad as a student, as part of their teacher education.

Source: OECD, TALIS 2018 Database, Table I.4.23.

StatLink http://dx.doi.org/10.1787/888933932589

HOW ARE SCHOOL LEADERS TRAINED FOR THEIR WORK AS PRINCIPALS?

In 2018, TALIS makes it possible to not only examine teachers' initial education and training but also the training school leaders undertake before they take up their duties as a principal. As a study on school leadership noted, it is possible to create pre-service programmes that help principals develop the skills to effectively engage in many of the practices associated with school success: cultivating a shared vision and shared practices; leading; instructional improvement; developing organisational capacity; and managing change (Darling-Hammond et al., 2007[41]). Indeed, principals play a vital role in setting the direction for successful schools, but knowledge on how best to prepare and develop highly qualified candidates is still sparse. This section examines the preparation of school leaders for their role as principals, in a cross-country comparative perspective.

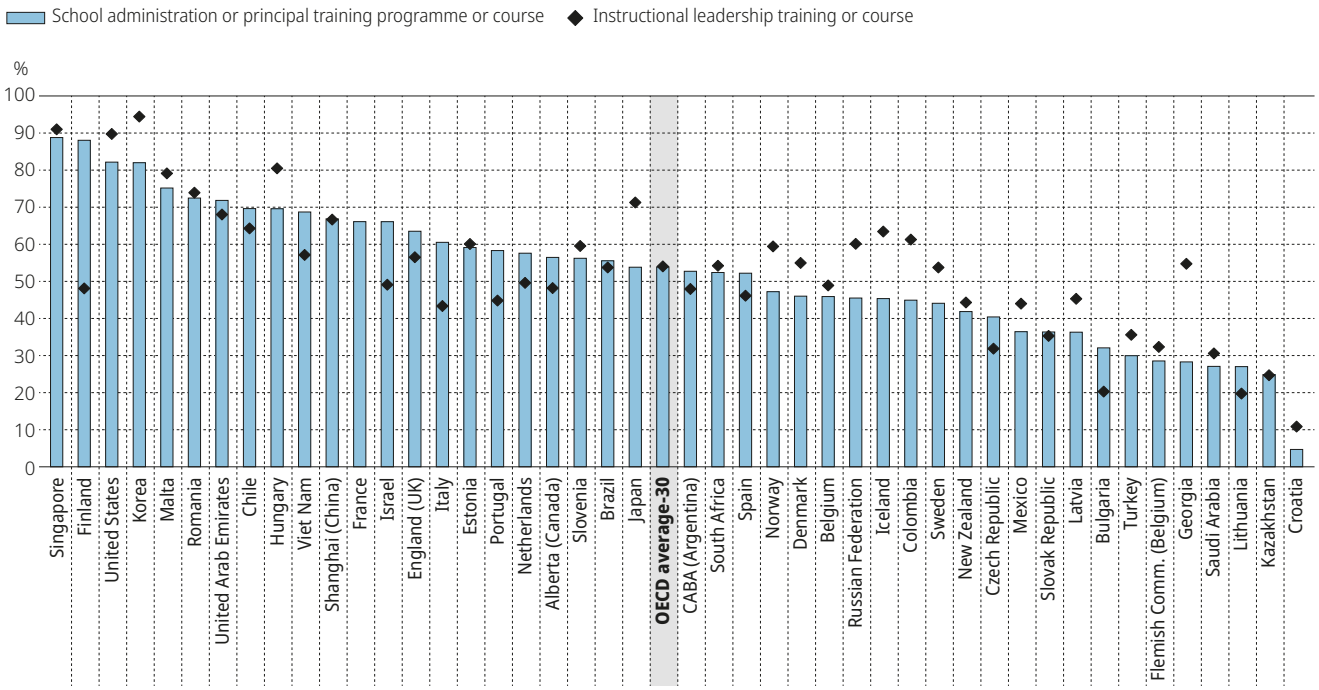
TALIS asks school leaders about the highest level of formal education they have attained, using ISCED-2011 (see Annex B for more information). School leaders generally hold higher degrees than teachers. They typically hold a master's degree (Figure I.4.3), while teachers typically have a bachelor's degree. On average across the OECD, 63% of school leaders (compared to 44% of teachers) reported a master's degree or equivalent, including stronger specialisation and more complex content than a bachelor's degree (ISCED level 7), as their highest level of educational attainment (Table I.4.24). That is also the educational level attained by more than 90% of school leaders in Bulgaria, Croatia, Estonia, Finland, Portugal, the Slovak Republic and Slovenia. About another third (31%) of school leaders in the OECD completed a bachelor's degree or equivalent (ISCED level 6), as their highest level of education. But this is the highest level of formal education completed by more than 75% of school leaders in Brazil, Denmark, Japan, Kazakhstan, Saudi Arabia, Shanghai (China), Turkey and Viet Nam. On average across OECD countries and economies, school leaders are also more than twice as likely as teachers to hold a doctoral degree. At least 10% of school leaders hold doctoral degrees in the Czech Republic, Mexico and the United Arab Emirates, while there are virtually no doctorate holders among principals in Brazil, CABA (Argentina), Iceland, Japan, Norway and Viet Nam. The high shares of doctorates among principals observed in Italy, Korea and Mexico are consecutive to a rise in these degrees between 2008 and 2018, especially since 2013 (Table I.4.24). Finally, the remaining 3% of school leaders across OECD countries and economies completed at most a short-cycle tertiary education programme (ISCED level 5 and below). Austria stands out with almost 50% of its school leaders having completed only a short-cycle education programme. The share of principals reporting a short-cycle education as the highest level of education has significantly decreased in Austria and Brazil since 2008 and in Iceland since 2013 (Table I.4.24).

Beyond the level of formal education completed by school leaders, the content of their training is key for preparing them to become principals. Across OECD countries and economies, 85% of school leaders completed teacher training or an education programme or course before taking up their position as principal. This is aligned with the fact that many of them simultaneously serve as teachers or have served as teachers before. Another 5% did receive some training in teaching, but only after becoming

principal, and the remaining 10% never did so. More than 15% of school leaders report never having being trained for teaching at the time of survey completion in Italy, Lithuania and Saudi Arabia, as do more than 25% of school leaders in Croatia, the Czech Republic, Mexico and Portugal (Table I.4.28). This may be the result of a deliberate country policy of recruiting school leaders from a different track than that of teachers and of viewing their role more as managers, but it may also be a sign of recruitment challenges in these countries. Furthermore, this seems to point to the different roles principals have in different countries, whether they are pedagogical and administrative leaders or administrative leaders only. In the cases of the Czech Republic, Italy and Portugal, these findings are unexpected as, by law, all principals have been trained as teachers. This may suggest that school principals responded about the training they received specifically on their path to becoming a principal.

Figure I.4.8 **Principals' formal training before taking up their role as a principal**

Percentage of lower secondary principals for whom the following elements were included in their formal education before taking up their role as a principal[1]



1. Data refer to the the sum of the percentages of school leaders trained "before taking up a position" and "before and after taking up a position" as principal.

Countries and economies are ranked in descending order of the percentage of lower secondary principals for whom school administration or a principal training programme or course were included in their formal education.

Source: OECD, TALIS 2018 Database, Table I.4.28.

StatLink http://dx.doi.org/10.1787/888933932608

An emerging issue across many countries is the growing challenge of recruiting people willing to work as school principals and properly training them for their role. Studies from the United States about the effects of leadership preparation programmes reveal that principals who were trained more thoroughly in instructional and organisational leadership more often engaged in these leadership practices in their schools (Orr and Orphanos, 2011[42]). These leadership practices are, in turn, associated with more teacher collaboration, higher qualifications of teams of teachers in the school (Fuller, Young and Baker, 2011[43]) and school improvement progress (Orphanos and Orr, 2014[44]). The TALIS 2013 report, *School Leadership for Learning,* also found that principals who attended training or a course in instructional leadership were, on average, more frequently involved in educational leadership actions in their school (OECD, 2016, p. 66[45]).

TALIS asks school leaders whether their formal education or training included additional useful elements for their position as principal, in the form of a school administration or principal training programme or course or an instructional leadership training programme or course. Since this chapter is concerned with initial preparation and training, the following analyses mainly focus on the total share of school leaders who received some specific training at least once before becoming principals (i.e. either only before or both before and after taking up their position). Yet, specific training provided to new principals is also of interest and is also examined, although TALIS results do not allow identification of the timing of this training.

On average across OECD countries and economies, slightly more than half of school leaders (54%) report having completed a programme or course in school administration or principal training at least once before taking up their position as principal, with the same share having completed an instructional leadership training programme or course (Figure I.4.8). This figure is quite low, compared to the immense majority of teachers who receive formal education specific to their profession (subject training, pedagogical training, etc.). There are large cross-country variations in the extent to which school leaders were trained in these domains at least once before becoming principal. Rates of training at least once before taking up duties as a principal in both domains are 75% or above in Korea, Malta, Singapore and the United States and below 35% in Bulgaria, Croatia, the Flemish Community of Belgium, Kazakhstan, Lithuania and Saudi Arabia (Table I.4.28). On average across OECD countries, about 33% of school leaders were trained in school administration or principal work only after becoming a principal. While it may be the case that such training took place shortly after they became principals, TALIS findings do not allow this to be asserted. In addition, about 13% reported that they had never had such training at the time of survey completion. More principals – 17% on average across the OECD – report never having been trained in instructional leadership. This share amounts to at least 30% of principals in CABA (Argentina), Croatia, the Czech Republic, England (United Kingdom), Israel, Italy and Lithuania. Box I.4.4 sheds light on how new principals in Singapore are trained to lead school-level improvements and innovations.

Box I.4.4 **Leaders in Education programme in Singapore**

In Singapore, various national education bodies, including the Ministry of Education, offer and incentivise teachers to develop management and leadership competencies at several stages in their career. Singapore sets its teachers on the path to prepare for leadership roles early in their career, through an identified leadership track. Teachers who aim to be school leaders in future years can take up specific roles and responsibilities in the school improvement cycle. Therefore, identification of potential leaders and opportunities to demonstrate leadership are important precursors to selecting and providing required skills and knowledge for principalship in Singapore.

For new principals, the National Institute of Education in Singapore, in collaboration with the Ministry of Education, has designed Leaders in Education (LEP) as a 6-month pre-service programme. "The programme aims to develop principalship capability that is values-driven, purposeful, innovative and forward-looking, anchored on both strong people and instructional leadership, strategic management skills, and an appreciation of how principals could work effectively in a complex environment." The programme was introduced in 2001 to replace the Diploma to Educational Administration, in order to provide a more robust, hands-on and relevant preparation for principals to lead schools. A key focus of the LEP is on innovation and the creation of new knowledge, where the principal is seen as instrumental in driving collective and collaborative knowledge creation tailored to their school's context. As an illustration, the Creative Action Projects (CAP), led by participants in the 2017 graduating class, included student-led toolkits to drive socio-emotional learning in the school and an "Empathy" project to develop students' competencies in leadership and character development.

The design of the LEP focuses on engaging and project-based modules, such as a school action research project mentored by principal candidates at their schools, case studies, school and industrial site visits, sessions in management, dialogues with the Ministry of Education and a two-week international visit. As a policy instrument, the programme is mandated to be undertaken by all specially selected vice-principals before they take up duty as school leaders. That the participants are both salaried and fully funded indicates the country's huge investment in human capital development.

Source: National Institute of Education (n.d.[46]), *Leaders in Education Programme*, www.nie.edu.sg/our-people/academic-groups/policy-and-leadership-studies/programmes/leaders-education-programme-lep.

Looking at trends over time, principals' training is rather steady over the past five years in most of the countries with data available since 2013 (Table I.4.31). Yet, the total share of principals trained in instructional leadership has risen in a few countries – Finland, Latvia, Portugal, Singapore, the Slovak Republic and Spain – and so, in some countries, has the share of principals trained in school administration – Denmark, Finland, Latvia, New Zealand, Portugal and Romania.

HOW ARE NOVICE TEACHERS SUPPORTED DURING THE FIRST YEARS OF THEIR CAREERS?

Along with initial teacher training and certification, teachers' work experience helps shape their skills and competencies. Years of experience might be particularly important early in a teacher's career. Some evidence shows that each additional year of experience is related to higher student achievement, with gains being especially large during the first five years in the profession (Harris and Sass, 2011[47]; Rivkin, Hanushek and Kain, 2005[48]; Rockoff, 2004[49]). Most importantly, the working conditions, support and early professional development that novice teachers experience in their first years are important elements in helping them to confirm their career choice and remain in the teaching profession (Paniagua and Sánchez Martí, 2018[50]).

In most of the 15 studies they reviewed, Ingersoll and Strong (2011[51]) found empirical evidence for the claim that support and assistance for beginning teachers have a positive influence on outcomes such as commitment and retention of teachers, classroom teaching practices and student achievement. At the system level, it is crucial that investments made in initial teacher education provide positive returns in the mid- to long-term. This is only possible if novice teachers feel successful at delivering quality instruction and so pursue their career in the profession. Therefore, education systems and their schools need to provide strong support to teachers in their first years of teaching.

This section examines how novice teachers (defined as teachers with up to five years of teaching experience) feel about their work, in terms of both self-efficacy and satisfaction and what support they receive from their schools during the first years of their career. Novice teachers represent 19% of the teacher population across OECD countries and economies, but less than 10% in three countries: Viet Nam (9%), Lithuania (7%) and Portugal (3%) (Table I.4.32). The following sections compare novice teachers with the rest of the teacher population.

Novice teachers' self-efficacy and job satisfaction

Analyses reported in Chapter 2 indicated that novice teachers are, in general, less likely to feel confident in their teaching skills than their more experienced peers (teachers with more than five years of experience), particularly in their ability to manage their classroom and to use of a variety of practices (Table I.2.20). In addition, on average across the OECD, novice teachers tend to be slightly less satisfied with their performance in their school than more experienced teachers (90% of novice teachers compared to 93% of more experienced teachers) (Table I.4.33).

Furthermore, TALIS actually asks questions about the extent to which teachers tend to disagree or agree ("strongly disagree"; "disagree"; "agree"; "strongly agree") with statements relative to their satisfaction with their work environment and their profession. Results show that novice teachers are generally slightly more satisfied with their career choice and with the teaching profession than more experienced teachers (Table I.4.34). However, there is one working environment dimension that shows a different pattern: teachers who would like to change to another school (Table I.4.33). More specifically, on average across OECD countries and economies, 22% of novice teachers and 19% of more experienced teachers would like to change to another school if that were possible. A significant gap is found in favour of novice teachers in 14 countries and economies and is especially pronounced in Austria, France, Korea, Latvia, Mexico, Saudi Arabia, Slovenia, Turkey and the United Arab Emirates. This might be related to novice teachers having limited choices regarding which school they work in and the fact that they often work in more challenging schools (Mostafa and Pál, 2018[52]) (Table I.4.32). Nevertheless, wishing to change schools is not necessarily a signal of dissatisfaction with the school environment but can also be the expression of teachers' aspirations to career progression.

The remainder of this section examines how novice teachers are supported to best cope with their new duties. It explores, in particular, four potential levers to achieve this support: teachers' school assignments; supply of induction activities; reduced teaching load; and mentoring.

Novice teachers' school assignments

Novice teachers tend to work in more challenging schools that have higher concentrations of students from socio-economically disadvantaged homes and immigrant students (Figure I.4.9 and Table I.4.32). On average across the OECD, in schools with high concentrations of students from socio-economically disadvantaged homes, 22% of teachers are novice teachers, and in schools with high concentrations of immigrant students, the share of novice teachers is 23%. In schools with low concentrations of students from socio-economically disadvantaged homes, 19% of teachers are novices, the same share as in schools with low concentrations of immigrant students.

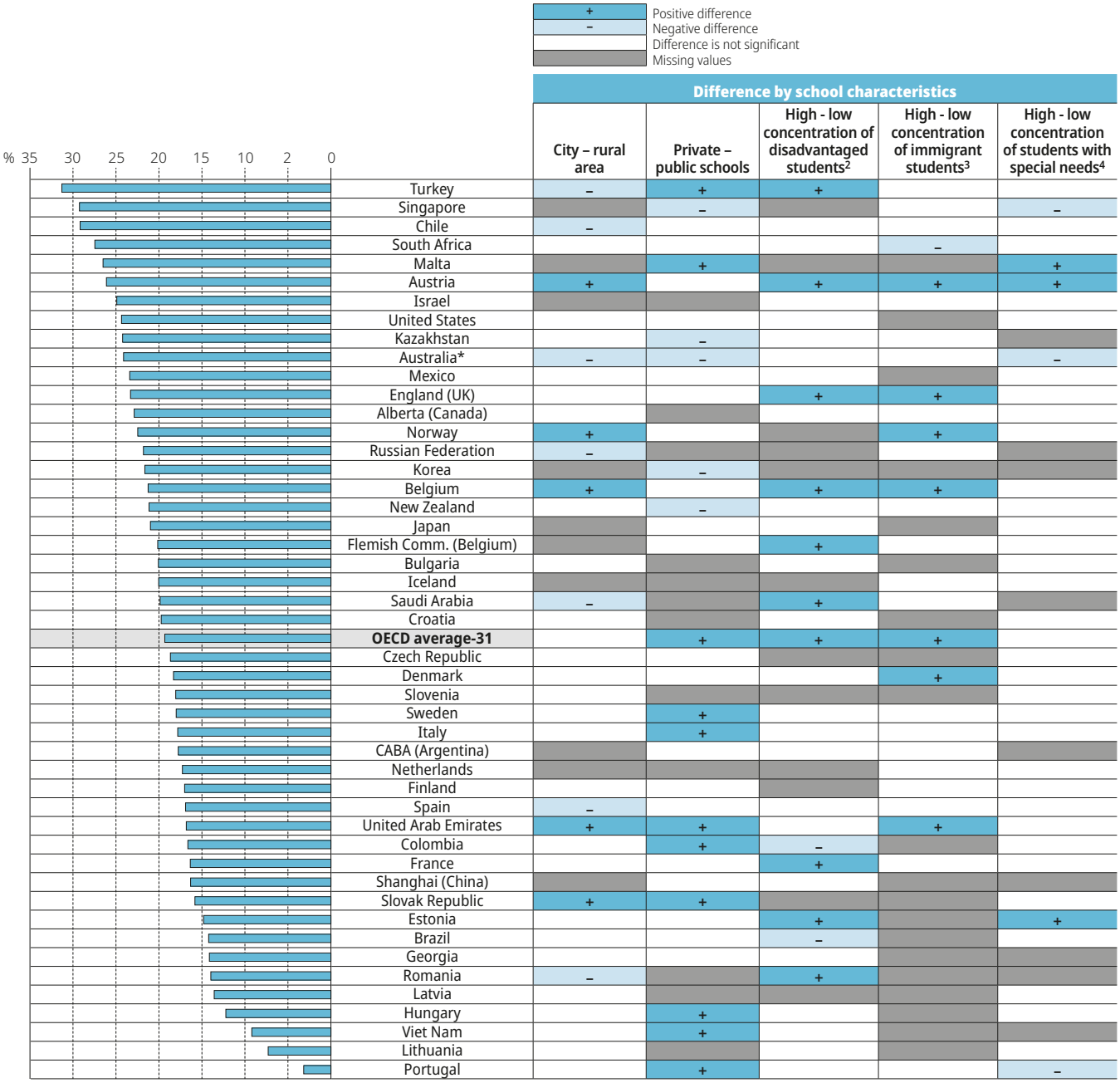
This points to a more general issue of teacher allocation across schools. The unequal access of disadvantaged students to experienced teachers is a real concern. A recent OECD report concluded that gaps in student performance related to socio-economic status are wider in countries where socio-economically disadvantaged schools employed fewer qualified and experienced teachers than advantaged schools. This tendency might result from different teacher retention rates across schools or mobility schemes through which teachers with more years of service have more chances to move to their preferred school through job mobility (OECD, 2018, p. 101[5]).

Induction programmes

No matter how good initial teacher education is, it cannot be expected to prepare teachers for all the challenges they face during their first regular employment as a teacher. Among the three aspects that stand out as common to all high-performing and equitable education systems, the recent OECD report on effective teacher policies identified a mandatory and extended period of classroom practice as part of pre-service teacher education or of the induction period. Indeed, "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." (OECD, 2018, p. 45[5]).

Figure I.4.9 **Novice teachers, by school characteristics**

Percentage of novice[1] lower secondary teachers



	Difference by school characteristics				
	City – rural area	Private – public schools	High - low concentration of disadvantaged students[2]	High - low concentration of immigrant students[3]	High - low concentration of students with special needs[4]
Turkey	–	+	+		
Singapore		–			–
Chile	–				
South Africa				–	
Malta		+			+
Austria	+		+	+	+
Israel					
United States					
Kazakhstan		–			
Australia*	–	–			–
Mexico					
England (UK)			+	+	
Alberta (Canada)					
Norway	+			+	
Russian Federation	–				
Korea		–			
Belgium	+		+	+	
New Zealand		–			
Japan					
Flemish Comm. (Belgium)			+		
Bulgaria					
Iceland					
Saudi Arabia	–		+		
Croatia					
OECD average-31		+	+	+	
Czech Republic					
Denmark				+	
Slovenia					
Sweden		+			
Italy		+			
CABA (Argentina)					
Netherlands					
Finland					
Spain	–				
United Arab Emirates	+	+		+	
Colombia		+	–		
France			+		
Shanghai (China)					
Slovak Republic	+	+			
Estonia			+		+
Brazil			–		
Georgia					
Romania	–		+		
Latvia					
Hungary		+			
Viet Nam		+			
Lithuania					
Portugal		+			–
Education systems with a positive difference	5	10	9	6	3
Education systems with no difference	25	20	24	20	32
Education systems with negative difference	7	5	2	1	3

* For this country, estimates for sub-groups and estimated differences between sub-groups need to be interpreted with great care. See Annex A for more information.

1. Novice teachers are teachers with up to five years of teaching experience.

2. High concentration of disadvantaged students refers to schools with more than 30% of students from socio-economically disadvantaged homes.

3. High concentration of immigrant students refers to schools with more than 10% of immigrant students.

4. High concentration of students with special needs refers to schools with more than 10% of students with special needs.

Countries and economies are ranked in descending order of the average proportion of novice teachers.

Source: OECD, TALIS 2018 Database, Table I.4.32.

StatLink http://dx.doi.org/10.1787/888933932627

TALIS 2013 results also showed that participation in induction activities was positively related to acting as a mentor and to participation in in-service professional development[11], suggesting a virtuous cycle for teacher continuous learning – see Chapter 4 of the *TALIS 2013 Results* report (OECD, 2014[12]).

Results from the last two cycles of TALIS showed that, in a small number of countries, provision of induction activities for teachers at the system or local school level (or both) was either absent or very limited. However, the positive impact of induction activities for teachers on teaching quality and student learning has been shown in various studies (Ingersoll and Strong, 2011[51]). In particular, empirical evidence shows that students taught by teachers who receive comprehensive induction support demonstrate learning gains larger than those experienced by students taught by teachers who do not receive such support – see, for instance, Glazerman et al. (2010[53]) and Helms-Lorenz, Slof and van de Grift (2013[54]).

The definition of induction in TALIS 2018 is a refinement of the definition used in TALIS 2013. The new definition considers that induction activities are designed not only to support new teachers' introduction into the teaching profession but also to support experienced teachers who are new to a school. Induction activities might be presented in formal, structured programmes (for example, regular supervision by the principal, a reduced teaching load or formal mentoring by experienced teachers), or they might be informally arranged as separate activities available to support new teachers.[12]

Based on principals' reports, access to informal induction activities in their school is more common than access to formal activities. On average across the OECD, 54% of school leaders report that new teachers have access to formal induction activities, while 74% of school leaders report that they have access to informal induction activities (Table I.4.35). On average across OECD countries and economies, 13% of schools do not offer teachers access to any kind of induction. This share ranges from less than 1% of schools in England (United Kingdom), the Flemish Community of Belgium, the Netherlands, New Zealand, Shanghai (China) and Singapore, to more than 30% of schools in CABA (Argentina), Chile, Lithuania, Mexico and Spain, and to more than 40% of schools in Brazil, Georgia and Hungary. In Chile, since April 2016, a new System for Teacher Professional Development was created by law (Law 20.903). Among other aspects, it encompasses the launch of the National Induction System for beginning teachers, the benefits of which should be seen in the years to come (Santiago et al., 2017, p. 228[55]).

TALIS also asks all teachers whether they took part in induction activities during their first employment and at their current school. About 62% of teachers, on average across OECD countries and economies, report that they did not participate in any induction activities, formal or informal, during their first employment (Table I.4.38). This share drops to 58% of teachers when referring to participation in any type of induction at a teacher's current school (Table I.4.39).

When referring to their first employment, teachers report that they more frequently participated in formal induction activities (34% of teachers across the OECD) than in informal activities (24%) (Table I.4.38). When referring to their current school, the opposite pattern is observed: teachers report having more often taken part in informal induction activities (35%) than in a formal induction programme (29%) (Table I.4.39). These patterns remain similar when restricting the analyses to teachers new to teaching, suggesting that these differences are not attributable to any recent changes in school-level induction practices. This could mean that formal induction is more reserved for teachers new to teaching, while informal induction to the specificities of a school is more typical only for teachers who are new to a school. In addition, novice teachers are more likely to participate in both formal and informal induction activities at their current school than are more experienced teachers (Table I.4.39).

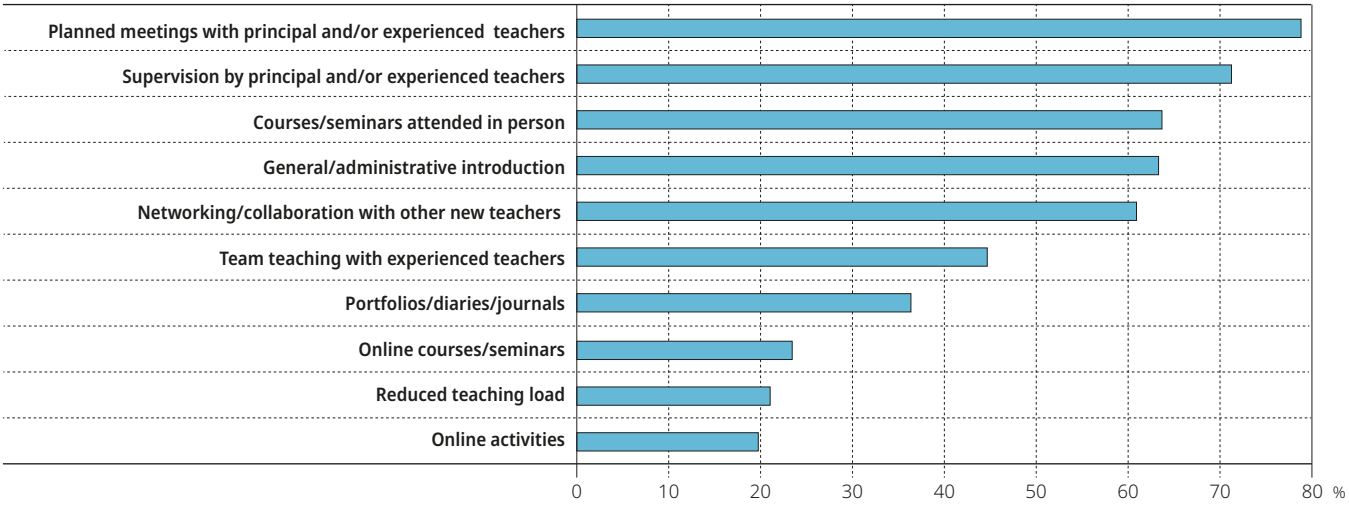
The apparent discrepancy between the common availability of induction programmes, as reported by principals (Table I.4.35), and the actual participation of teachers in these programmes, as reported by teachers (Tables I.4.38 and I.4.39), was commented on in the *TALIS 2013 Results* report (OECD, 2014, pp. 88-93[12]) and is still seen in 2018. This discrepancy could result from several factors. It can first stem from different timescales for teachers and principals' responses. Principals are describing current provision at the school, while teachers are describing what happened when they started at the school. Also, not all provisions are necessarily available to all teachers new to a school. For example, a reduced teaching load could be standard for novice teachers in their first years, but not for other teachers. School leaders or school staff may not sufficiently inform all their staff about the existence of such programmes or may not encourage all of them to participate (particularly the most experienced teachers), or teachers may be aware of the existence of such programmes but may not be able to participate or decide not to participate for various reasons.

TALIS also asks teachers who participated in induction at their current school[13] about which provisions were included in their induction (Figure I.4.10 Table I.4.42). According to teachers, induction typically includes: planned meetings with the school principal and/or with experienced teachers (79% of teachers across the OECD); supervision by the school principal and/or with experienced teachers (71%); courses or seminars attended in person by the teacher (64%); a general or administrative introduction (63%); and networking or collaborating with other new teachers (61%). On average across the OECD, induction provisions more rarely include: team teaching with experienced teachers (45% of teachers across the OECD); and the existence or use of portfolios, diaries or journals (36%). Team teaching (teaching by a team of teachers working together) with experienced teachers during teacher

induction is particularly rare in Europe, including in Belgium (and the Flemish Community), England (United Kingdom), Finland, France, the Netherlands and Sweden. In general, very few teachers have taken part in induction that includes online courses and seminars (23%) or online activities (20%), but online induction is quite common in the Eastern part of the globe, including in Israel, Kazakhstan, Korea, the Russian Federation, Shanghai (China), Turkey, the United Arab Emirates and Viet Nam. Finally, only 21% of teachers across the OECD report that induction at their current school includes a reduced teaching load for them, with the exception of New Zealand, Saudi Arabia and Singapore, where slightly more than 50% of teachers so report.

Figure I.4.10 **Induction activities for teachers**

Percentage of lower secondary teachers reporting that the following provisions were included in their teacher induction at their current school[1] (OECD average-30)



1. The sample is restricted to teachers who took part in induction acivities at the current school based on teachers' responses and also have access to induction activities based on principals' responses.

Values are ranked in descending order of the percentage of lower secondary teachers reporting that the following provisions were included in their teacher induction at their current school.

Source: OECD, TALIS 2018 Database, Table I.4.42.

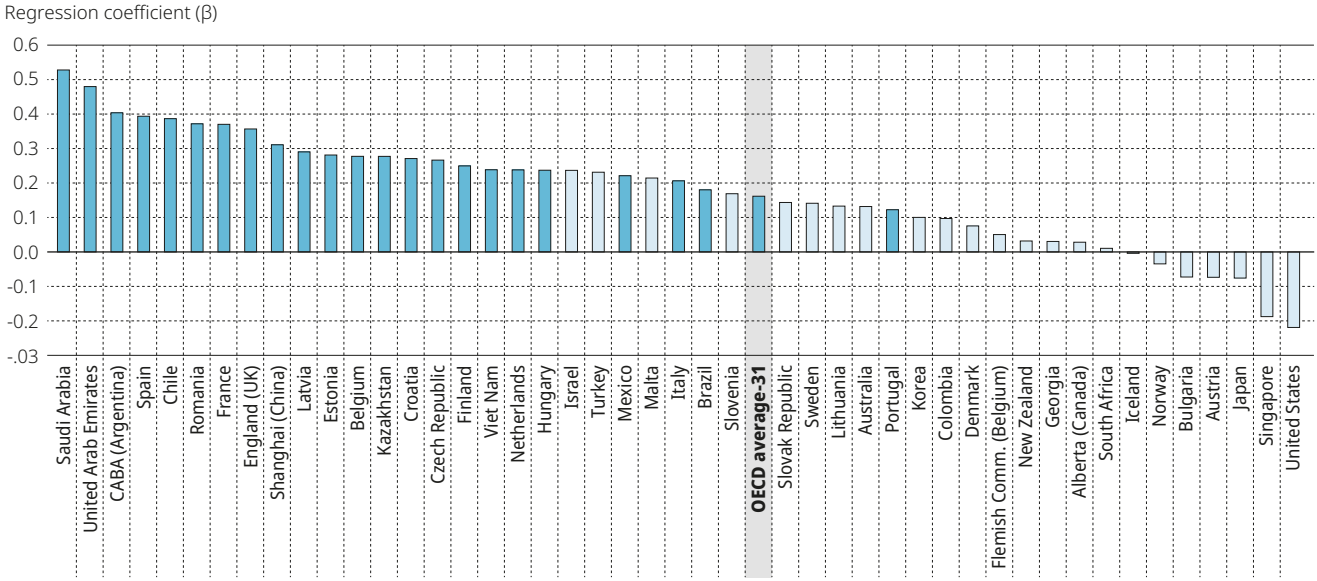
StatLink http://dx.doi.org/10.1787/888933932646

Teacher induction is important to promote teaching quality and job satisfaction. Evidence from the United States shows that comprehensiveness of induction programmes is associated with higher teacher retention among new teachers (Box I.4.5). Regression analysis based on TALIS data shows that teachers who took part in some kind of induction activity, formal or informal, also tend to report higher self-efficacy (Tables I.4.45 and I.4.47) and job satisfaction (Tables I.4.49 and I.4.51) on average across OECD countries and economies. This is consistent with past studies that usually found that beginning teachers who participated in some kind of induction had higher job satisfaction, commitment or retention (Ingersoll and Strong, 2011[51]). Induction is accompanied by an increase in reported self-efficacy in 11 countries and economies participating in TALIS when induction occurs during first employment (Table I.4.45), and in 24 countries and economies when induction is undertaken at the current school (Figure I.4.11, Table I.4.47).[14] A similar and even accentuated pattern is observed in the case of job satisfaction. After controlling for teacher characteristics, there are 12 countries and economies participating in TALIS where teachers who undertook induction during first employment also tend to be more satisfied with their job (Table I.4.49). A similar relationship between induction at the current school and job satisfaction is found in most countries and economies participating in TALIS (Table I.4.51). Induction at the school where teachers are currently working seems, therefore, to matter for them to be satisfied with their current job. However, once again, regression results need to be interpreted with care, as the explanatory power of the estimated models remains limited (with the coefficients of determination – R^2 – having low values).

Moreover, regression analysis also supports the idea that some induction provisions may be particularly important for boosting teachers' self-efficacy and job satisfaction. Team teaching with experienced teachers seems to be especially promising. In most countries and economies participating in TALIS, teachers for whom team teaching with experienced teachers was part of their induction activities at their current school also tend to report higher self-efficacy (Table I.4.53) and job satisfaction (Table I.4.54). Teachers who had a reduced teaching load as part of their induction at their current school also tend to report higher levels of self-efficacy (Table I.4.55) and job satisfaction (Table I.4.56), in 12 of the countries and economies participating in TALIS.

Figure I.4.11 **Relationship between self-efficacy and participation in induction at current school**

Change in the index of self-efficacy[1] associated with having participated in induction activities at current school[2, 3, 4]



1. The index of self-efficacy measures teacher self-efficacy in classroom management, instruction and student engagement.
2. Results of linear regression based on responses of lower secondary teachers.
3. The predictor is a dummy variable: the reference category is not having taken part in any induction activities (formal or informal) at the current school.
4. Controlling for the following teacher characteristics: gender and years of experience as a teacher.

Note: Statistically significant coefficients are marked in a darker tone (see Annex B).

Countries and economies are ranked in descending order of the change in the index of self-efficacy associated with having taken part in any induction activity (formal or informal) at the current school.

Source: OECD, TALIS 2018 Database, Table I.4.47.

StatLink http://dx.doi.org/10.1787/888933932665

These findings are very much aligned with those highlighted by past studies. The majority of studies reviewed by Ingersoll and Strong (2011[51]) showed that beginning teachers who participated in some kind of induction performed better at various aspects of teaching, including keeping students on task, developing workable lesson plans, using effective student questioning practices, adjusting classroom activities to meet students' interests, maintaining a positive classroom atmosphere and demonstrating successful classroom management. In addition, almost all of the studies showed that students of beginning teachers who participated in some kind of induction had higher scores or gains on academic achievement tests.

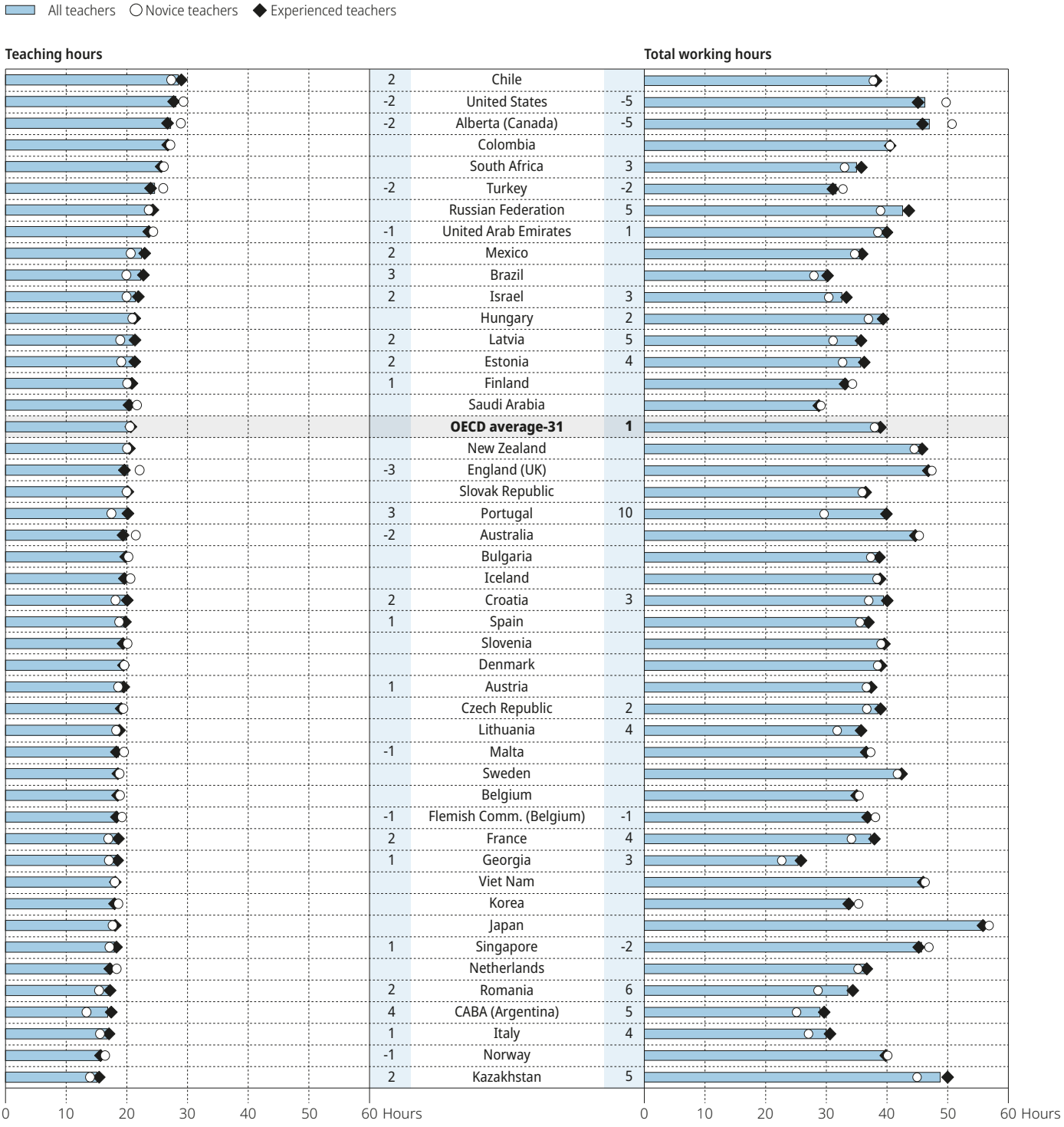
Box I.4.5 **Evidence on beginning teacher induction in the United States**

In the United States, the number of beginning teachers participating in induction or mentoring programmes has increased considerably over the last three decades (from 50% in 1990 to 91% in 2008). One of the most prominent advantages of induction programmes for beginning teachers is early-career retention. Evidence from the United States, based on nationally representative data from the Schools and Staffing Survey, shows that this advantage depends on specific components of the induction that a teacher participated in. Having a mentor or participating in collaborative activities with other teachers as a part of induction has strong positive effects on turnover among beginner teachers. There is also evidence that the most comprehensive induction programmes, which combine a variety of activities (such as communication structures with principals and department heads, common planning time with teachers, participation in seminars, and reduced teaching load in addition to having a mentor) present the largest positive effects on teacher retention.

Sources: Ingersoll, R. and T. Smith (2004[56]), "Do teacher induction and mentoring matter?", *NASSP Bulletin*, Vol. 88/638, pp. 28-40, https://doi.org/10.1177/019263650408863803; Ingersoll, R. (2012[57]), "Beginning teacher induction: What the data tell us", *Phi Delta Kappan*, Vol. 93/8, pp. 47-51, https://doi.org/10.1177/003172171209300811.

Figure I.4.12 **Teachers' workload, by experience**

Average number of 60-minute hours lower secondary teachers spend on working, in total, and on teaching[1]



1. Refers to activities during the most recent complete calendar week. Also includes tasks that took place during weekends, evenings or other out-of-classroom hours.

Note: Statistically significant differences between experienced teachers (with more than 5 years of experience) and novice teachers (with less than or equal to 5 years of experience) are shown next to the country/economy name (see Annex B).

Countries and economies are ranked in descending order of lower secondary teachers' average number of teaching hours during the most recent complete calendar week.

Source: OECD, TALIS 2018 Database, Table I.4.57.

StatLink http://dx.doi.org/10.1787/888933932684

Reduced workload

A reduced workload, whether a formal provision of teacher induction or not, can help teachers new to the profession to cope with their duties. For example, novice teachers can use this spare time for more planning and preparing their lessons or analysing their students' work, resulting in better teaching. At first glance, on average across the OECD, novice teachers work one hour less per week in total than teachers with more than five years of experience (Table I.4.57). However, on average across the OECD, and after adjusting for teachers' full-time or part-time status, there is no longer any difference between the total number of work hours reported by novice and more experienced teachers (Table I.4.59). This is because novice teachers tend to work part-time more often than experienced teachers do. However, the OECD average hides various patterns across countries. Still, after adjusting for teachers' full-time or part-time status, novice teachers work fewer hours than more experienced teachers in 12 countries and economies do. In CABA (Argentina), Kazakhstan and Romania, novice teachers work about 4 hours less a week than more experienced teachers, and almost 7 hours less in Portugal. By contrast, after adjusting for full-time or part-time work, in 10 other countries and economies, novice teachers work one hour or more a week than experienced teachers. In Alberta (Canada) and the United States, novice teachers work 5 hours more a week than experienced teachers, both before and after adjustment (Tables I.4.57 and I.4.59).

On average across OECD countries and economies, novice teachers report teaching about the same number of hours as more experienced teachers (Figure I.4.12 and Table I.4.57). There are also important cross-country variations in this regard. Novice teachers report spending fewer teaching hours a week in 18 countries and economies. In Brazil, CABA (Argentina), Estonia, Latvia, Mexico and Portugal, novice teachers teach two or more hours less a week than their more senior colleagues. In another 10 countries and economies, the opposite pattern is observed. For instance, in Alberta (Canada), Australia, England (United Kingdom) and Turkey, novice teachers teach two or more hours more a week than experienced teachers. A reduced teaching workload usually results in reduced total working hours, but there is an exception to this, Singapore, where novice teachers teach about an hour less a week but work almost two hours more a week in total. This may be because novice teachers are still learning the ropes of the job and would spend more time on performing their professional duties. Additional analyses[15] indicate that, in Singapore, novice teachers spend more time than experienced teachers on marking and correcting student work and engaging in extracurricular activities.

Mentoring

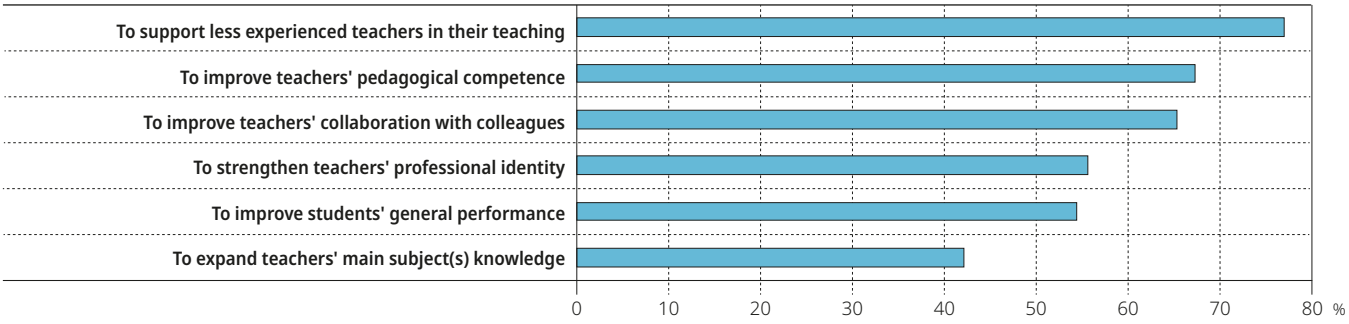
Teachers new to teaching can be supported in their early career by having a mentor assigned to them. TALIS defines mentoring as a support structure in schools where more experienced teachers support less experienced teachers. This structure might involve all teachers in the school or only novice teachers. It is often considered an integral part of teaching. Evidence shows strong relationships between measures of mentoring quality and teachers' assessment of the impact of mentors on their success in the classroom and a moderate association between the number of mentoring hours by the teacher and student achievement. This supports the notion that time spent working with a mentor does improve teaching skills (Rockoff, 2008[58]). In the OECD, about two-thirds of schools provide such a mentoring programme, whether to all of their teachers, only teachers new to the school or only teachers new to teaching (Table I.4.60). There are important cross-country variations in the prevalence of mentoring. Less than 10% of school leaders report that there is no access to a mentoring programme for teachers in their school in Croatia, England (United Kingdom), Israel, Kazakhstan, the Netherlands, the Russian Federation, Shanghai (China), Singapore and the United States, while more than 60% of school leaders so report in Austria, CABA (Argentina), Chile, Finland, Latvia and Saudi Arabia.

TALIS asks school leaders whose school offers mentoring about the general importance of mentoring for teachers and schools, asking them to select one choice among four options: "not important at all"; "of low importance"; "of moderate importance"; or "of high importance". Given the very high percentages obtained when focusing on school leaders who rate mentoring as either moderately or highly important, the following analysis only focuses on school leaders who rate mentoring as highly important. (Figure I.4.13 and Table I.4.63). Across the OECD, many school principals whose school offers mentoring think that mentoring is of high importance to support less experienced teachers in their teaching (77%), to improve teachers' pedagogical competence (67%), to improve teachers' collaboration with colleagues (65%), to strengthen teachers' professional identity (56%) and to improve students' general performance (54%). In addition, across the OECD, only 42% of school principals whose school provides mentoring consider that these activities are of high importance to expand teachers' main subject knowledge.

While a majority of school principals consider mentoring to be highly important for teachers' work and students' performance, only 22% of teachers with up to five years of teaching experience have an assigned mentor, on average across the OECD (Figure I.4.14, Table I.4.64). But there are substantial cross-country variations in the prevalence of mentoring programmes for novice teachers. Only between 5% and 10% of novice teachers have an assigned mentor in CABA (Argentina), Chile, Finland, Italy, Lithuania, Slovenia and Spain. However, in four countries and economies, more than 50% of novice teachers have an assigned mentor: Kazakhstan, New Zealand, Shanghai (China) and Singapore (Figure I.4.14 and Table I.4.64). During the last five years, four countries show a slight increase in the share of mentored teachers, despite the stricter definition of mentoring used in TALIS 2018 compared to the 2013 cycle: the Czech Republic, Georgia, Portugal and Sweden (Table I.4.67).[16]

Figure I.4.13 **Importance of mentoring**

Percentage of lower secondary principals reporting that the following outcomes of mentoring are of "high" importance[1] (OECD average-30)



1. The sample is restricted to principals reporting that teachers have access to a mentoring programme at the school.

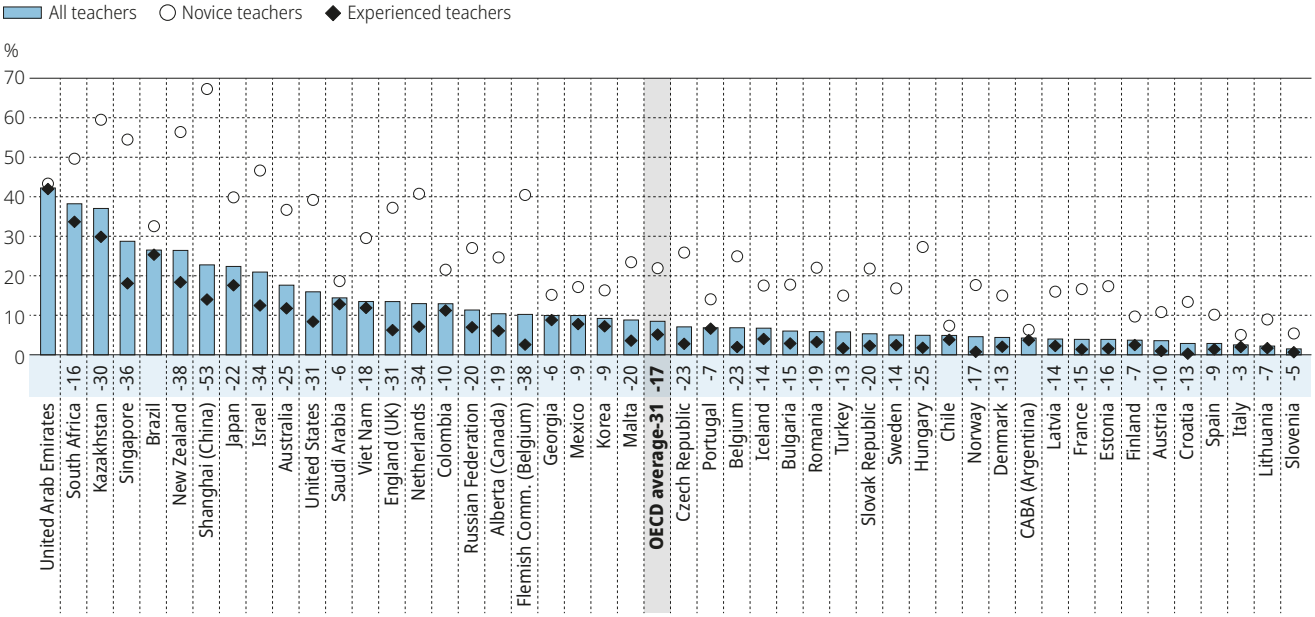
Values are ranked in descending order of the percentage of lower secondary principals reporting that the following outcomes of mentoring are of "high" importance.

Source: OECD, TALIS 2018 Database, Table I.4.63.

StatLink http://dx.doi.org/10.1787/888933932703

Figure I.4.14 **Peer mentoring, by teachers' teaching experience**

Percentage of lower secondary teachers who have an assigned mentor as part of a formal arrangement at the school[1]



1. Mentoring is defined as a support structure in schools where more experienced teachers support less experienced teachers.

Note: Statistically significant differences between experienced teachers (with more than 5 years of experience) and novice teachers (with less than or equal to 5 years of experience) are shown next to the country/economy name (see Annex B).

Countries and economies are ranked in descending order of the percentage of lower secondary teachers who have an assigned mentor.

Source: OECD, TALIS 2018 Database, Table I.4.64.

StatLink http://dx.doi.org/10.1787/888933932722

Evidence shows that the characteristics of a teacher's mentor matter for the quality of mentoring (Simmie et al., 2017[59]; Spooner-Lane, 2017[60]). A study conducted in New York City in the 2000s found strong evidence that retention within a particular school is higher when a mentor has previous experience working in that school, suggesting that an important part of mentoring may be the provision of school-specific knowledge (Rockoff, 2008[58]). TALIS asks teachers if they are an assigned mentor for at least one teacher at the time of the survey. Therefore, it is possible to describe mentors' profiles. On average across the OECD, 13% of teachers with more than five years of experience and 6% of novice teachers act as mentors for at least one teacher. Experienced teachers are, therefore, about two times more likely to be an assigned mentor than novice teachers (Table I.4.64).

As experienced teachers represent more than 80% of the teacher population across the OECD countries and economies participating in TALIS (Table I.4.32), this implies that most mentors are experienced teachers. Yet, it may be also a deliberate and reasonable choice by education systems, by schools or by teachers themselves to assign relatively new teachers to mentor novice teachers, so they can share their recent experience in coping with the challenges of early career years.

Box I.4.6 **Support systems for new teachers from primary to upper secondary education**

TALIS findings indicate differences in availability of support systems (such as induction and mentoring) between education levels for some countries, based on available data from 13 countries on ISCED 1 and 2 and 11 countries on ISCED 2 and 3. Previous OECD evidence suggests that supporting new teachers could be of higher policy priority for secondary school teachers than for primary teachers (OECD, 2017[61]).

In 4 out of 13 education systems with available data, fewer primary schools offer access to some kind of induction activity than lower secondary schools (Table I.4.36), among which France (around 60% of primary schools) has the highest reported difference (23 percentage points). The opposite pattern is observed only in Denmark, where access to induction activities is more prevalent in primary schools (99%) than in lower secondary schools (91%). Overall, induction support for primary teachers is less prevalent in CABA (Argentina) (67%), Spain (61%) and France (59%). However, there is a greater prevalence of reduced teaching load for primary teachers, with more than 21% (the OECD average at the lower secondary level) of primary teachers reporting so in eight education systems (Table I.4.43).

In 7 out of the 11 education systems with available data on ISCED 2 and 3, more upper secondary teachers have participated in some kind of induction activity than their lower secondary counterparts (Table I.4.41). The highest difference is observed in Denmark (24 percentage points), which has one of the highest reported levels of participation in induction activities among upper secondary teachers (61%).

Notes

1. The OECD average corresponds to the arithmetic mean of the estimates of the OECD countries and economies that participate in TALIS, with adjudicated data.
2. According to ISCED-2011, these education programmes, designed to provide participants with intermediate academic and/or professional knowledge, skills and competencies, typically consist of three to four years of full-time study (ISCED level 6).
3. Due to a change in the ISCED classifications between TALIS 2013 and TALIS 2018, it is not possible to disentangle the change in the percentage of teachers holding a bachelor's degree and that of teachers holding a master's degree. However, the percentage of teachers holding a bachelor's degree or a master's degree has risen in more than a third of countries and economies participating in TALIS since 2008 or 2013, depending on the data available.
4. The duration of a short-cycle tertiary education is usually about two years. Yet, in some countries, like Slovenia, this study programme can last three years and is equivalent to a bachelor's degree.
5. Teach for Australia, which trained 800 teachers in 10 years, is an example of this fast-track teacher training programme (more information is available at www.teachforaustralia.org/).
6. Additional analyses, not presented in this report, were conducted on TALIS 2018 data to examine whether those teachers who did not receive content training tended to teach some subjects more than others, compared to the teachers who were trained in subject content. Analyses show that no particular subject really stands out cross-nationally. Teachers who were not trained in the content of the subject they teach are only slightly more likely to teach subjects such as technology and practical and vocational skills than their counterparts, on average across the OECD and TALIS participants. Yet, some subjects stand out nationally as being more likely to be taught by teachers who did not receive training in this subject: for example, mathematics in Alberta (Canada), technology and vocational skills in Belgium, or modern foreign languages in Iceland.
7. Training in all these domains is also more often included in the current education and training programmes received by teachers who completed it in the past five years (i.e. since 2013) than it was in the past. The largest increases are observed for training in the use of ICT.
8. The perspective of multiculturalism acknowledges and recognises expressions of diversity.
9. The markup is estimated as the ratio between 1) the difference between the percentage of teachers who felt "well" or "very well" prepared for an element and 2) the percentage of teachers for whom that element was included in their formal education or training.
10. For more information, see https://ec.europa.eu/programmes/erasmus-plus/opportunities_en.
11. TALIS defines in-service professional development as activities that aim to develop an individual's skills, knowledge and expertise, among other things, and that have been undertaken after initial education or training.
12. While the questionnaire did not include any definition of what informal induction means, examples of informal induction activities could be informal peer work with other new teachers or a welcome handbook for new teachers.
13. TALIS also asks principals about the provisions included in teacher induction in their school, and their reports are relatively consistent with those of teachers (Table I.4.42).
14. One may wonder whether participating in induction adds any value to initial teacher training with regard to teacher self-efficacy. This question is examined by adding the elements included in teacher education or training as controls in the regressions of teacher self-efficacy. The positive relationship found in 11 countries and economies between participation in induction activities during first employment and self-efficacy still holds in 9 countries and economies, after controlling for all the elements included in teacher education or training (Table I.4.46). Similar results are found when replicating this approach for participation in induction activities at the current school, with 21 countries and economies for which the positive relationship found between participation in induction activities at the current school and self-efficacy still holds after controlling for the content of initial teacher education (Table I.4.48).
15. Not presented in this report.
16. Some of the substantial differences between 2013 and 2018 (most of which are negative) observed in Table I.4.67 may have resulted from specifying in 2018 that mentoring activities are "part of a formal arrangement". The lack of this specification in 2013 may have led respondents to also include informal mentoring activities.

References

Baumert, J. et al. (2010), "Teachers' mathematical knowledge, cognitive activation in the classroom, and student progress", *American Educational Research Journal*, Vol. 47/1, pp. 133-180, http://dx.doi.org/10.3102/0002831209345157. [16]

Blömeke, S., J. Gustafsson and **R. Shavelson** (2015), "Beyond dichotomies", *Zeitschrift für Psychologie*, Vol. 223/1, pp. 3-13, http://dx.doi.org/10.1027/2151-2604/a000194. [15]

Blömeke, S. and G. Kaiser (2012), "Homogeneity or heterogeneity? Profiles of opportunities to learn in primary teacher education and their relationship to cultural context and outcomes", *ZDM*, Vol. 44/3, pp. 249-264, http://dx.doi.org/10.1007/s11858-011-0378-6. [20]

Blömeke, S., G. Kaiser and **R. Lehmann** (eds.) (2010), *TEDS–M 2008: Professionelle Kompetenz und Lerngelegenheiten angehender Mathematiklehrkräfte für die Sekundarstufe I im internationalen Vergleich [Cross-National Comparison of the Professional Competency of and Learning Opportunities for Future Secondary School Teachers of Mathematics]*, Waxmann, Münster. [7]

Boyd, D. et al. (2009), "Teacher preparation and student achievement", *Educational Evaluation and Policy Analysis*, Vol. 31/4, pp. 416-440, http://dx.doi.org/10.3102/0162373709353129. [33]

Chudgar, A., M. Chandra and **A. Razzaque** (2014), "Alternative forms of teacher hiring in developing countries and its implications: A review of literature", *Teaching and Teacher Education*, Vol. 37, pp. 150-161, http://dx.doi.org/10.1016/J.TATE.2013.10.009. [14]

Clotfelter, C., H. Ladd and **J. Vigdor** (2007), "Teacher credentials and student achievement: Longitudinal analysis with student fixed effects", *Economics of Education Review*, Vol. 26/6, pp. 673-682, http://dx.doi.org/10.1016/j.econedurev.2007.10.002. [28]

Cochran-Smith, M. and **K. Zeichner** (eds.) (2005), *Studying Teacher Education: The Report of the AERA Panel on Research and Teacher Education*, Lawrence Erlbaum Associates, Inc. [26]

Constantine, J. et al. (2009), *An Evaluation of Teachers Trained Through Different Routes to Certification: Final Report (NCEE 2009-4043)*, National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education, https://ies.ed.gov/ncee/pubs/20094043/pdf/20094043.pdf. [29]

Darling-Hammond, L. (2000), "Teacher quality and student achievement: A review of state policy evidence", *Education Policy Analysis Archives*, Vol. 8/1, pp. 1-44, http://dx.doi.org/10.14507/epaa.v8n1.2000. [1]

Darling-Hammond, L. et al. (2007), *Preparing School Leaders for a Changing World: Lessons from Exemplary Leadership Development Programs*, Stanford University, Stanford Educational Leadership Institute, Stanford, CA, https://edpolicy.stanford.edu/sites/default/files/publications/preparing-school-leaders-changing-world-lessons-exemplary-leadership-development-programs_1.pdf. [41]

Dwyer, M. (2004), "More is better: The impact of study abroad program duration", *Frontiers: The Interdisciplinary Journal of Study Abroad*, Vol. 10/Fall, pp. 151-163, https://frontiersjournal.org/wp-content/uploads/2015/09/DWYER-FrontiersX-MoreIsBetter.pdf. [40]

Fuller, E., M. Young and **B. Baker** (2011), "Do principal preparation programs influence student achievement through the building of teacher-team qualifications by the principal? An exploratory analysis", *Educational Administration Quarterly*, Vol. 47/1, pp. 173-216, http://dx.doi.org/10.1177/0011000010378613. [43]

Glazerman, S. et al. (2010), *Impacts of Comprehensive Teacher Induction: Final Results from a Randomized Controlled Study*, (NCEE 2010-4027) National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S., Washington, DC, https://ies.ed.gov/ncee/pubs/20104027/pdf/20104027.pdf. [53]

Golsteyn, B., S. Vermeulen and **I. de Wolf** (2016), "Teacher literacy and numeracy skills: International evidence from PIAAC and ALL", *De Economist*, Vol. 164/4, pp. 365-389, http://dx.doi.org/10.1007/s10645-016-9284-1. [8]

Guerriero, S. (ed.) (2017), *Pedagogical Knowledge and the Changing Nature of the Teaching Profession*, Educational Research and Innovation, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264270695-en. [25]

Hanushek, E., J. Kain and **S. Rivkin** (1998), "Teachers, Schools, and Academic Achievement", *NBER Working Paper Series*, No. 6691, National Bureau of Economic Research, Cambridge, MA, http://dx.doi.org/10.3386/w6691. [2]

Hanushek, E., M. Piopiunik and **S. Wiederhold** (2014), "The Value of Smarter Teachers: International Evidence on Teacher Cognitive Skills and Student Performance", *NBER Working Paper Series*, No. 20727, National Bureau of Economic Research, Cambridge, MA, http://dx.doi.org/10.3386/w20727. [10]

Harris, D. and **T. Sass** (2011), "Teacher training, teacher quality and student achievement", *Journal of Public Economics*, Vol. 95/7-8, pp. 798-812, http://dx.doi.org/10.1016/J.JPUBECO.2010.11.009. [47]

Heath, A. et al. (2016), "Attitudes towards Immigration and their Antecedents", *ESS Topline Results Series*, No. 7, European Social Survey ERIC, London, www.europeansocialsurvey.org/docs/findings/ESS7_toplines_issue_7_immigration.pdf. [13]

Helms-Lorenz, M., B. Slof and **W. van de Grift** (2013), "First year effects of induction arrangements on beginning teachers' psychological processes", *European Journal of Psychology of Education*, Vol. 28/4, pp. 1265-1287, http://dx.doi.org/10.1007/s10212-012-0165-y. [54]

Hill, H., B. Rowan and **D. Ball** (2005), "Effects of teachers' mathematical knowledge for teaching on student achievement", *American Educational Research Journal*, Vol. 42/2, pp. 371-406, https://doi.org/10.3102/00028312042002371. [17]

Ingersoll, R. (2012), "Beginning teacher induction: What the data tell us", *Phi Delta Kappan*, Vol. 93/8, pp. 47-51, http://dx.doi.org/10.1177/003172171209300811. [57]

Ingersoll, R. and **T. Smith** (2004), "Do teacher induction and mentoring matter?", *NASSP Bulletin*, Vol. 88/638, pp. 28-40, http://dx.doi.org/10.1177/019263650408863803. [56]

Ingersoll, R. and **M. Strong** (2011), "The impact of induction and mentoring programs for beginning teachers: A critical review of the research", *Review of Educational Research*, Vol. 81/2, pp. 201-233, http://dx.doi.org/10.3102/0034654311403323. [51]

Instituto Nacional de Formación Docente (2007), *Lineamientos Curriculares Nacionales para la Formación Docente Inicial, Documentos de Formación Docente [National Curricular Guidelines for Initial Teacher Training, Teacher Training Documents]*, Ministerio de Educación – Presidencia de la Nación, Buenos Aires, https://cedoc.infd.edu.ar/upload/lineamientos_curriculares_formacion_docente.pdf. [23]

Kersting, N. et al. (2012), "Measuring usable knowledge: Teachers' analyses of mathematics classroom videos predict teaching quality and student learning", *American Educational Research Journal*, Vol. 49/3, pp. 568-589, http://dx.doi.org/10.3102/0002831212437853. [18]

König, C. and **R. Mulder** (2014), "A change in perspective: Teacher education as an open system", *Frontline Learning Research*, Vol. 2/5, pp. 26-45, http://dx.doi.org/10.14786/flr.v2i4.109. [3]

Meroni, E., E. Vera-Toscano and **P. Costa** (2015), "Can low skill teachers make good students? Empirical evidence from PIAAC and PISA", *Journal of Policy Modeling*, Vol. 37/2, pp. 308-323, http://dx.doi.org/10.1016/J.JPOLMOD.2015.02.006. [11]

Ministero della Giustizia (2017), "Decreto Legislativo 13 aprile 2017 , n. 59", *Gazzetta Ufficiale della Repubblica Italiana, Decreti legislativi attuativi della legge 13 luglio 2015, n. 107*, Vol. 112/Supplemento ordinario N. 23/L, pp. 1-27, www.gazzettaufficiale.it/eli/gu/2017/05/16/112/so/23/sg/pdf. [32]

Mostafa, T. and **J. Pál** (2018), "Science teachers' satisfaction: Evidence from the PISA 2015 teacher survey", *OECD Education Working Papers*, No. 168, OECD Publishing, Paris, https://dx.doi.org/10.1787/1ecdb4e3-en. [52]

Musset, P. (2010), "Initial Teacher Education and Continuing Training Policies in a Comparative Perspective: Current Practices in OECD Countries and a Literature Review on Potential Effects", *OECD Education Working Papers*, No. 48, OECD Publishing, Paris, https://dx.doi.org/10.1787/5kmbphh7s47h-en. [24]

National Institute of Education, Singapore (n.d.), *Leaders in Education Programme (LEP)*, www.nie.edu.sg/our-people/academic-groups/policy-and-leadership-studies/programmes/leaders-education-programme-lep (accessed on 4 April 2019). [46]

National Research Council (2010), *Preparing Teachers: Building Evidence for Sound Policy*, The National Academies Press, Washington, DC, http://dx.doi.org/10.17226/12882. [30]

OECD (2019), *A Flying Start: Improving Initial Teacher Preparation Systems*, OECD Publishing, Paris, https://dx.doi.org/10.1787/cf74e549-en. [34]

OECD (2018), *Educational attainment and labour-force status*, Education at a Glance (database), http://stats.oecd.org/Index.aspx?datasetcode=EAG_NEAC (accessed on 2 April 2019). [22]

OECD (2018), *Effective Teacher Policies: Insights from PISA*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264301603-en. [5]

OECD (2017), *Education at a Glance 2017: OECD Indicators*, OECD Publishing, Paris, https://dx.doi.org/10.1787/eag-2017-en. [61]

OECD (2016), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264267510-en. [6]

OECD (2016), *School Leadership for Learning: Insights from TALIS 2013*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264258341-en. [45]

OECD (2014), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264196261-en. [12]

Orphanos, S. and **M. Orr** (2014), "Learning leadership matters: The influence of innovative school leadership preparation on teachers' experiences and outcomes", *Educational Management Administration & Leadership*, Vol. 42/5, pp. 680-700, http://dx.doi.org/10.1177/1741143213502187. [44]

Orr, M. and **S. Orphanos** (2011), "How Graduate-level preparation influences the effectiveness of school leaders: A comparison of the outcomes of exemplary and conventional leadership preparation programs for principals", *Educational Administration Quarterly*, Vol. 47/1, pp. 18-70, http://dx.doi.org/10.1177/0011000010378610. [42]

Paniagua, A. and **A. Sánchez-Martí** (2018), "Early Career Teachers: Pioneers Triggering Innovation or Compliant Professionals?", *OECD Education Working Papers*, No. 190, OECD Publishing, Paris, https://dx.doi.org/10.1787/4a7043f9-en. [50]

Révai, N. (2018), "What difference do standards make to educating teachers?: A review with case studies on Australia, Estonia and Singapore", *OECD Education Working Papers*, No. 174, OECD Publishing, Paris, https://dx.doi.org/10.1787/f1cb24d5-en. [35]

Rivkin, S., E. Hanushek and **J. Kain** (2005), "Teachers, schools, and academic achievement", *Econometrica*, Vol. 73/2, pp. 417-458, http://dx.doi.org/10.1111/j.1468-0262.2005.00584.x. [48]

Roberts-Hull, K., B. Jensen and **S. Cooper** (2015), *A new approach: Reforming teacher education*, Learning First, Melbourne, Australia, https://learningfirst.com/wp-content/uploads/2017/12/Anewapproach.pdf. [4]

Rockoff, J. (2008), "Does Mentoring Reduce Turnover and Improve Skills of New Employees? Evidence from Teachers in New York City", *NBER Working Paper Series*, No. 13868, National Bureau of Economic Research, Cambridge, MA, http://dx.doi.org/10.3386/w13868. [58]

Rockoff, J. (2004), "The impact of individual teachers on student achievement: Evidence from panel data", *American Economic Review*, Vol. 94/2, pp. 247-252, http://dx.doi.org/10.1257/0002828041302244. [49]

Ronfeldt, M. and **M. Reininger** (2012), "More or better student teaching?", *Teaching and Teacher Education*, Vol. 28/8, pp. 1091-1106, http://dx.doi.org/10.1016/j.tate.2012.06.003. [37]

Ronfeldt, M., M. Reininger and **A. Kwok** (2013), "Recruitment or preparation? Investigating the effects of teacher characteristics and student teaching", *Journal of Teacher Education*, Vol. 64/4, pp. 319-337, http://dx.doi.org/10.1177/0022487113488143. [38]

Rundstrom Williams, T. (2005), "Exploring the impact of study abroad on students' intercultural communication skills: Adaptability and sensitivity", *Journal of Studies in International Education*, Vol. 9/4, pp. 356-371, http://dx.doi.org/10.1177/1028315305277681. [39]

Santiago, P. et al. (2017), *OECD Reviews of School Resources: Chile 2017*, OECD Reviews of School Resources, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264285637-en. [55]

Santiago, P. et al. (2016), *OECD Reviews of School Resources: Estonia 2016*, OECD Reviews of School Resources, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264251731-en. [36]

Schmidt, W., S. Blömeke and **M. Tatto** (2011), *Teacher Education Matters: A Study of Middle School Mathematics Teacher Preparation in Six Countries*, Teachers College Press, New York, NY, www.tcpress.com/teacher-education-matters-9780807751626. [21]

Shulman, L. (1986), "Those who understand: Knowledge growth in teaching", *Educational Researcher*, Vol. 15/2, pp. 4-14, https://doi.org/10.3102/0013189X015002004. [31]

Simmie, G. et al. (2017), "Discursive positioning of beginning teachers' professional learning during induction: A critical literature review from 2004 to 2014", *Asia-Pacific Journal of Teacher Education*, Vol. 45/5, pp. 505-519, http://dx.doi.org/10.1080/1359866X.2017.1280598. [59]

Spooner-Lane, R. (2017), "Mentoring beginning teachers in primary schools: Research review", *Professional Development in Education*, Vol. 43/2, pp. 253-273, http://dx.doi.org/10.1080/19415257.2016.1148624. [60]

Stark, J. and **L. Lattuca** (1997), *Shaping the College Curriculum: Academic Plans in Action*, Allyn & Bacon, Boston, MA. [19]

Tatto, M. et al. (2012), *Policy, Practice, and Readiness to Teach Primary and Secondary Mathematics in 17 Countries: Findings from the IEA Teacher Education and Development Study in Mathematics (TEDS–M)*, International Association for the Evaluation of Educational Achievement (IEA), Amsterdam. [9]

Wilson, S., R. Floden and **J. Ferrini-Mundy** (2001), *Teacher Preparation Research: Current Knowledge, Gaps, and Recommendations: A Research Report*, Center for the Study of Teaching and Policy, University of Washington, Seattle, WA, www.education.uw.edu/ctp/sites/default/files/ctpmail/PDFs/TeacherPrep-WFFM-02-2001.pdf. [27]

Providing opportunities for continuous development

Continuous professional development is a vital element of the career path of teachers and principals, providing training that can affect both classroom and school practices. This chapter examines participation rates in in-service training for teachers and principals and discusses the different types of development opportunities available to them. It also reports teachers' views on the characteristics of impactful training. After exploring the content of training activities attended by teachers and principals, it contrasts levels of participation with needs for further training. The chapter concludes by examining barriers to participation in training and the support received by teachers and principals to overcome them.

A note regarding Israel

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.

Highlights

- Participation in some kind of in-service training is commonplace among teachers and principals in the OECD countries and economies participating in TALIS, with more than 90% of teachers and principals attending at least one continuous professional development (CPD) activity in the year prior to the survey.
- The type of training attended by teachers and principals varies across OECD countries and economies participating in TALIS. Only 44% of teachers participate in training based on peer learning and networking, which is relatively modest compared to participation rates of over 70% in out-of-school types of training, such as attending courses or seminars.
- More than 80% of teachers report that their training had a positive impact on their teaching practices. The characteristics of training that teachers found most impactful are those based on strong subject and curriculum content, collaboration and incorporation of active learning and collaborative approaches to instruction.
- Teachers who report participating in impactful training tend to display higher levels of self-efficacy and job satisfaction. Furthermore, teachers participating in training focused on teaching in diverse classrooms tend to report high levels of self-efficacy in teaching in diverse environments. In addition, teachers participating in training focusing on the implementation of pedagogical practices tend to report a more frequent implementation of effective practices.
- Since more than 70% of teachers already attend training focused on building knowledge (both subject-based and pedagogical), there is not a particularly high need for training of this kind in OECD countries and economies participating in TALIS. Instead, teachers report a high level of need for training in advanced information and communication technology (ICT) skills, teaching methods for multicultural/multilingual settings and teaching methods for students with special needs. Both the participation rate and the need for training in these areas have increased over the last five years.
- Principals in OECD countries and economies in TALIS report a great interest in improving both their school organisation and the practices of their teachers, with more than 70% of them attending training to become an instructional and/or pedagogical leader. Their main needs for training range from using data to make informed decisions, to improving collaboration among their teachers.
- Around half of teachers and principals report that participation in professional development is restricted by schedule conflicts and a lack of incentives to engage in these activities. While support mechanisms in some TALIS countries and economies are associated with higher participation rates, in other contexts, the support still seems insufficient.

INTRODUCTION

A pressing concern of education systems today is to ensure that students acquire the skills and competences they need to succeed in today's society. This task is challenging in our rapidly changing world, where labour instability, migration, demographic transformation and the globalised economy are constantly redefining the needs and demands of society (OECD, 2018[1]). In the face of these changes, teachers must continuously validate and update their skills to help students become competent, competitive and socially integrated adults (OECD, 2005[2]). Education systems have sought to support their teachers by designing, implementing and promoting diverse forms of continuous professional development (CPD) (Akiba, 2013[3]; Villegas-Reimers, 2003[4]).

A broad definition of professional development includes activities "…that develop an individual's skills, knowledge, expertise and other characteristics as a teacher [or principal]." (OECD, 2009, p. 49[5]). This definition encompasses all the stages of training for teachers and principals, ranging from initial education to in-service training opportunities. This chapter examines *continuous professional development*, understood to be activities in the form of in-service training activities beyond initial education and induction programmes.[1]

Concepts underlying the idea of effective CPD are based on the assumption that teachers and principals are lifelong learners, with different professional needs through their careers. It is the task of stakeholders and responsible authorities acting within education systems to accurately identify these needs and secure access to relevant training (OECD, 2005[2]). At the same time, teachers and school leaders have the professional responsibility to seek, identify and engage in these training activities, when available. Therefore, it is crucial to identify the type of training that has the greatest impact on teachers' and principals' practices, the areas where teachers and principals feel the greatest need for training, and the barriers to participation.

CPD activities allow teachers to develop skills that will be beneficial for their learning, their teaching practices and their students' development (Desimone, 2009[6]; Hattie, 2009[7]). Indeed, effective CPD programmes can have an impact on teachers' skills and

dispositions (Borko, 2004[8]; Garet et al., 2016[9]; Youngs, 2001[10]), their classroom practices (Fischer et al., 2018[11]) and their beliefs (Guskey, 2002[12]; Nir and Bogler, 2008[13]; OECD, 2014[14]), and they can help build professional learning communities (Darling-Hammond, Hyler and Gardner, 2017[15]; OECD, 2013[16]). It has even been found that professional development is an effective mechanism to prevent burnout among teachers (Kyriacou, 2001[17]). Teachers' participation in CPD can also have a modest but direct positive impact on boosting student achievement (Yoon et al., 2007[18]) and reducing the performance gap among students (Meissel, Parr and Timperley, 2016[19]).

CPD that takes place in the school has been found crucial to create a culture of improvement and to develop a shared vision of learning across the teaching and management staff (Jensen et al., 2016[20]; OECD, 2013[16]). Principals must not only provide opportunities for CPD training but also participate in these activities, to reinforce their managerial and leadership skills (Sparks, 2002[21]; Zepeda, Parylo and Bengtson, 2013[22]; OECD, 2016[23]).

Furthermore, CPD activities are a fundamental element for the success of any major educational reform in OECD countries (OECD, 2015[24]). CPD helps teachers acquire the necessary skills to be informed and critical receptors of such policy efforts (Kennedy, 2005[25]). Recent policy reviews have, in fact, identified CPD strategies as a key attribute of high-achieving education systems (Darling-Hammond, 2017[26]; Jensen et al., 2016[20]; OECD, 2018[27]).

Given CPD's relevance for improving the teacher and principal workforce, this chapter seeks to provide insights on the participation of teachers and principals in CPD activities. It starts by examining participation rates, the type of training attended by teachers and how these participation rates change based on the characteristics of teachers and schools. Next, it explores the characteristics of training activities that teachers rate as having a positive impact on their teaching and to what extent they are associated with their self-efficacy and job satisfaction. The chapter then looks at the content of CPD activities attended by both teachers and principals and describes their needs for further training. Finally, the chapter examines the barriers to and overall support for teachers' and principals' participation in CPD activities.

PROVIDING LEARNING OPPORTUNITIES FOR TEACHERS AND SCHOOL LEADERS

In-service training, through CPD activities, is an integral part of the professionalisation of the teaching workforce, as it provides teachers with opportunities for further learning and improvement throughout their careers (Guerriero, 2017[28]). The inclusion of participation in CPD as an indicator for the United Nations (UN) Sustainable Development Goals (SDGs) is evidence of the increasing relevance that continuous training has on the development of teachers (United Nations, 2015[29]).

More specifically, UNESCO has defined participation in CPD activities as a way to monitor the achievement of Goal 4.c: "By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States"[2] (United Nations, 2015, p. 17[29]). The TALIS indicator of participation in CPD activities aligns well with the SDG indicator (see Box I.5.1 for details).

This section starts by looking at overall participation in CPD training for both teachers and principals. Next, it assesses whether participation rates differ, examining a series of characteristics of teachers and schools. The section concludes by examining the type of CPD training attended by teachers and principals.

Participation in continuous professional development

An indicator for total participation in CPD was constructed from teachers and principals who attended at least one of the ten possible types of training listed in the teacher and principal questionnaires (Box I.5.1). This indicator shows an undeniable spread of participation in professional development across countries and economies. On average across OECD countries and economies,[3] 94% of teachers participated in at least one type of professional development in the 12 months prior to the survey (Figure I.5.1, Table I.5.1). TALIS countries and economies with 99% of teachers participating in CPD are Alberta (Canada), Australia, Austria, Latvia, Lithuania and Shanghai (China). Even countries with comparatively lower shares of teachers participating in CPD, such as Saudi Arabia (86%) and France (83%), still show quite high levels of participation.

For principals, participation in in-service training is almost universal: on average across the OECD, 99% of principals report engaging in these activities (Table I.5.10). TALIS countries and economies where 100% of principals report that they have participated in at least in one professional development activity in the past 12 months are: Austria, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Italy, Kazakhstan, Latvia, Lithuania, Malta, the Netherlands, New Zealand, the Russian Federation, Shanghai (China), Singapore, Slovenia, Spain, Sweden, the United States and Viet Nam.

These results reflect the fact that professional development has become a crucial step in the career paths of both principals and teachers. For teachers, many systems have actually transformed professional development into a mandatory component embedded in the professional career structure for teachers (Box I.5.2).

Box I.5.1 **The SDG and TALIS 2018 indicators for teachers' professional development**

The UN SDGs have acknowledged the importance of implementing adequate CPD as a crucial policy lever for ensuring teachers' learning and improvement throughout their career. Consequently, UNESCO defined the following strategy for educational systems: "Review, analyse and improve the quality of teacher training (pre-service and in-service) and provide all teachers with quality pre-service education and continuous professional development and support" (p. 55).

To help systems fulfil this strategy, SDG Goal 4.c. encompasses a series of measurable indicators on teachers' work and development. The indicator on professional development, aligned with the TALIS indicator, is defined as: "Percentage of teachers who received in-service training in the last 12 months, by type of training".

In TALIS 2018, the percentage of participation in training is derived from teachers who have at least attended one of the following types of professional development in the 12 months prior to the survey:

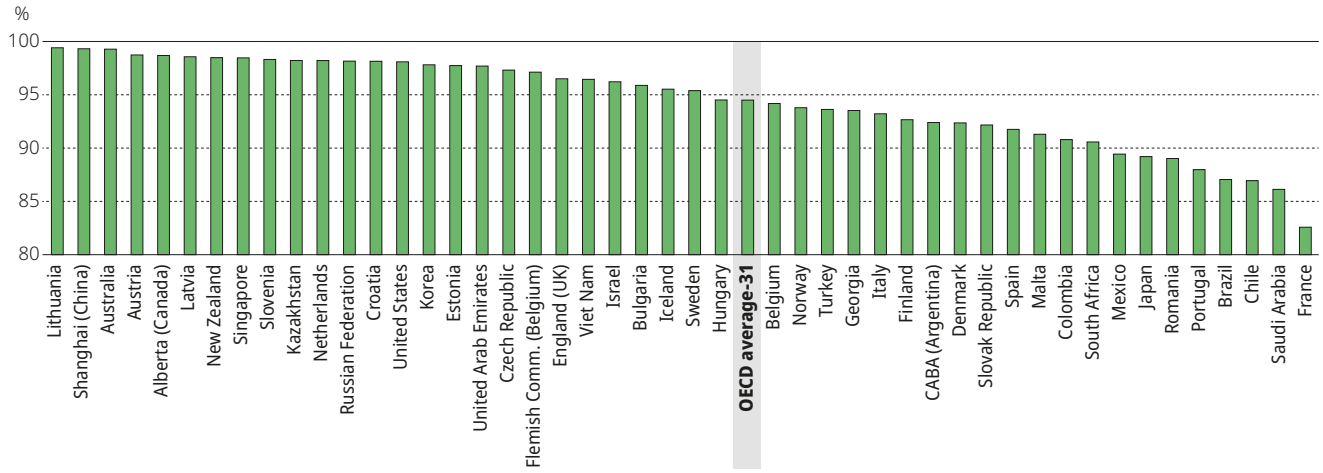
- courses/seminars attended in person
- online courses/seminars
- education conferences
- formal qualification programmes
- observation visits to other schools
- observation visits to business premises, public organisations, or non-governmental organisations
- peer and/or self-observation and coaching
- participation in a network of teachers
- reading professional literature
- other types of professional development activities

Through its indicator on professional development, TALIS is committed to helping countries monitor and report their work towards achieving and sustaining the SDGs.

Source: UNESCO (2016[30]), *Education 2030: Incheon Declaration and Framework for Action for the Implementation of Sustainable Development Goal 4*, http://uis.unesco.org/sites/default/files/documents/education-2030-incheon-framework-for-action-implementation-of-sdg4-2016-en_2.pdf.

Figure I.5.1 **Participation in professional development activities**

Percentage of lower secondary teachers who participated in professional development activities[1]



1. Refers to professional development activities in which teachers participated in the 12 months prior to the survey.

Countries and economies are ranked in descending order of the percentage of teachers who participated in professional development activities in the 12 months prior to the survey.

Source: OECD, TALIS 2018 Database, Table I.5.1.

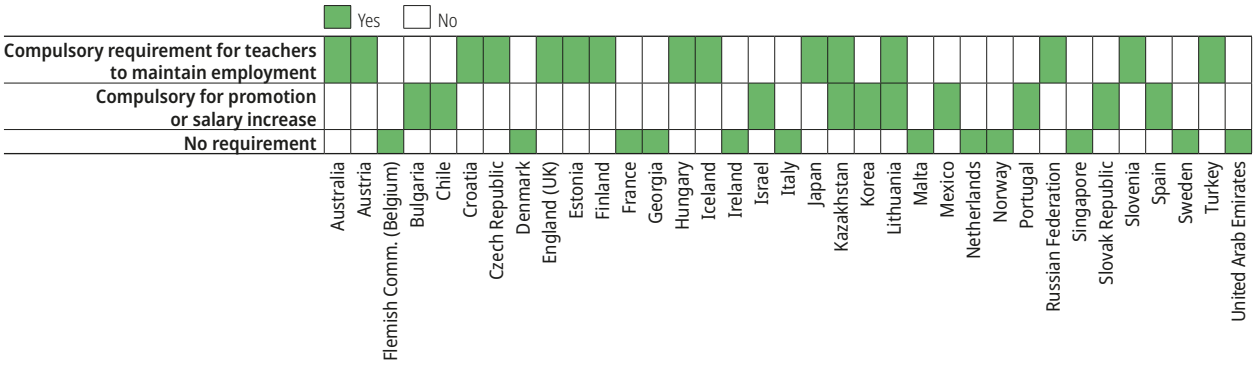
StatLink http://dx.doi.org/10.1787/888933932741

Box I.5.2 **Requirements for participation in professional development**

CPD is compulsory for lower secondary teachers, either to maintain employment or for promotion/salary increases, in 23 of the 35 participating countries and economies with available data (Figure I.5.2).

Figure I.5.2 **Requirements for teachers' professional development in public institutions**

For teachers teaching general subjects in public institutions, lower secondary education, 2013



Note: Data collected by the PISA 2015 study.

Source: Based on OECD (2016[31]), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools,* PISA, http://dx.doi.org/10.1787/9789264267510-en, Table II.6.57.

StatLink http://dx.doi.org/10.1787/888933932760

Policies requiring compulsory participation in CPD may reflect the efforts of a particular system to ensure that every member of their workforce has access to these opportunities. For example, Lithuania is one of only two countries where CPD is mandatory for both maintaining employment and for the purposes of promotion. It is also the country with the highest share of teachers accessing training activities (Figure I.5.1). However, compulsory policies can also signal a highly centralised training system, with little room for teachers' own discretion in choosing the type of CPD that suits their needs and preferences (Scheerens, 2010[32]; Scribner, 1999[33]).

In addition, compulsory policies should not be considered the only way to secure participation in CPD. Singapore does not have a policy of compulsory CPD activities, but it is one of the countries with the highest levels of participation in training (Figure I.5.1). One possible explanation is that, in Singapore, CPD is ingrained in a school's shared vision of professional learning. Teachers are given 100 hours per year to invest in training, with guidance for their development decisions and access to teacher networks (OECD, 2011[34]). As a result, CPD activities are more than a mechanism for the renewal or promotion of teachers; they are part of teachers' day-to-day work and regular school tasks.

Participation in continuous professional development, by teacher and school characteristics

Given that participation in CPD activities is almost universal in the majority of countries and economies participating in TALIS, the next question is whether there is any difference in CPD participation based on the type of school in which teachers are currently working. Regardless of the type of school in which they are enrolled, all students should have equal access to well-qualified teachers in order to ensure the quality of the education system as a whole (OECD, 2018[27]). Equitable distribution of CPD opportunities across schools is an important consideration for ensuring equitable provision of quality instruction throughout the education system (Darling-Hammond and Sykes, 2003[35]). Providing learning opportunities to teachers across a wide range of schools ensures that students from different backgrounds benefit from their training.

This section also explores whether there is any difference in CPD participation across the socio-demographic characteristics of the teaching workforce. Empirical evidence has found that, in some countries and economies, access to different forms of professional training is associated with teachers' gender and completion of initial training (Barrera-Pedemonte, 2016[36]). As discussed in Chapter 3, teachers' profiles are varied with respect to age, experience and gender. It is relevant to determine if a similar distribution of characteristics can be observed for teachers participating in CPD training. Finally, this section concludes with an exploration on the association of teachers' motivation to become a teacher and their participation in different forms of CPD activities.

Regarding differences in participation based on school characteristics, it is reassuring to observe from TALIS results that, in the vast majority of countries and economies, there are no significant differences in CPD participation across school types, locations or socio-demographic composition (Table I.5.2). These results may reflect that, for the most part, the characteristics of the school where teachers work do not translate into barriers to participation.

However, for a few selected countries, some interesting patterns are worth highlighting. In Chile, teachers in schools with a relatively high concentration of students from socio-economically disadvantaged homes (over 30%) display a higher level of participation in CPD opportunities than teachers in schools with lower concentrations of students from socio-economically disadvantaged homes. Brazilian teachers in schools with a relatively high concentration of students with special needs (over 10%) participate more in CPD training than colleagues from schools with low concentrations of students with special needs (Table I.5.2). Teachers in these types of schools experience more teaching and learning challenges than those in other schools, as they serve a vulnerable student population. This may push teachers to seek additional training (Choy et al., 2006[37]).

Regarding socio-demographic differences in accessing CPD activities, in general across the OECD, there are no major differences in CPD participation by teachers' gender, age or experience (Table I.5.1). These outcomes echo the results found in the 2013 cycle of TALIS: gender, experience, school type and location were significant factors of participation for only a few countries. Although, on average across OECD countries and economies, female teachers participate more frequently in in-service training than their male colleagues and more experienced teachers participate more often than novice teachers, these differences are marginal (around 1 percentage point).

Another key teacher characteristic acting as a driver for teachers' participation in CPD training is their level and type of motivation for their work (Scribner, 1999[33]). Educational systems have usually made use of career progression incentives (i.e. promotion, salary increases, bonuses) to promote participation in CPD training (OECD, 2013[38]). Although these incentives have shown a degree of success, they run the risk of transforming CPD training into just a means to ensure work stability. Moreover, "external" intervention to improve performance, such as financial incentives, can actually decrease participation, since they could be perceived as controlling programmes that are disruptive to teachers' work (Jacobsen, Hvitved and Andersen, 2014[39]). Empirical research has found that a heavy reliance on external rewards, such as monetary incentives, can actually affect the intrinsic motivation of employees, specifically their need for relatedness, competence and autonomy (Kohn, 1998[40]).

Participation in CPD is driven not only by this "utilitarian" view, but also by a genuine desire among teachers to get better skills to help and support their students (Scribner, 1999[33]). Public service motivation – that is, motivation aimed at doing good for others and society (Perry, Hondeghem and Wise, 2010[41]) – can improve individual performance in the workplace, as it increases teachers' commitment to and engagement with their tasks (Andersen, Heinesen and Pedersen, 2014[42]). People showing high levels of public service motivation are willing to make extra efforts to improve the quality of their work, as they perceive that the outcomes have implications for the improvement of others and of society as a whole (Perry and Wise, 1990[43]). Under the frame of CPD participation, these extra efforts related to work could be interpreted as participation in in-service training. As such, it is relevant to observe how different types of motivation relate to participation in CPD training.

The following analysis examines the relationship between the motivation to become a teachers and participation in a number of different CPD activities (Table I.5.5 and Table I.5.6). The 2018 cycle of TALIS asks teachers about their main motivations for becoming a teacher (see Chapter 4 for a detailed description of the results). Two indices were constructed from teachers' answers: a personal utility value index and a social utility value index. The personal utility value index includes motivations for being a teacher, such as "teaching offered a steady career path" and "teaching provided a reliable income". The social utility value index aligns with the public service motivation concept, as it includes motivations such as "teaching allowed me to influence the development of children and young people" and "teaching allowed me to benefit the socially disadvantaged".

On average across the OECD, after controlling for teachers' characteristics, individuals with higher values in the social utility index (teachers who were motivated to become teachers because of the social contribution teaching represented) tend to participate in more CPD activities. This holds true for all countries and economies participating in TALIS except Alberta (Canada), Saudi Arabia and South Africa (Table I.5.5). Inversely, the relationship between teachers' personal utility motivations to enter their careers and their level of participation in CPD activities is statistically significant in only about a quarter of TALIS countries and economies (Table I.5.6). Furthermore, no clear pattern can be identified within this group since, in six of these countries and economies, teachers with higher values in the personal utility index are more likely to participate in more CPD activities while, for the seven other countries, teachers with higher values in the personal utility index report participating in fewer CPD activities.

These results stress the importance of societal motivation for teachers to participate in further training. Even more, teachers' social utility motivation can be affected and encouraged by management staff (Jacobsen, Hvitved and Andersen, 2014[39]).

As such, school and management staff should have the responsibility of nourishing this intrinsic motivation, while governments and institutions providing CPD training should take into account these motivational aspects when seeking to promote participation across teachers and designing corresponding incentives.

Types of continuous professional development activities

The breakdown of the TALIS indicator for CPD participation presents relevant information about the format of this training (see Box I.5.1 for the ten types of CPD activities). These formats range from formally structured activities (e.g. conferences, workshops, participating in a formal qualification programme) to informal activities (e.g. networking, within-school peer collaboration, reading professional literature) (Avalos, 2011[44]).

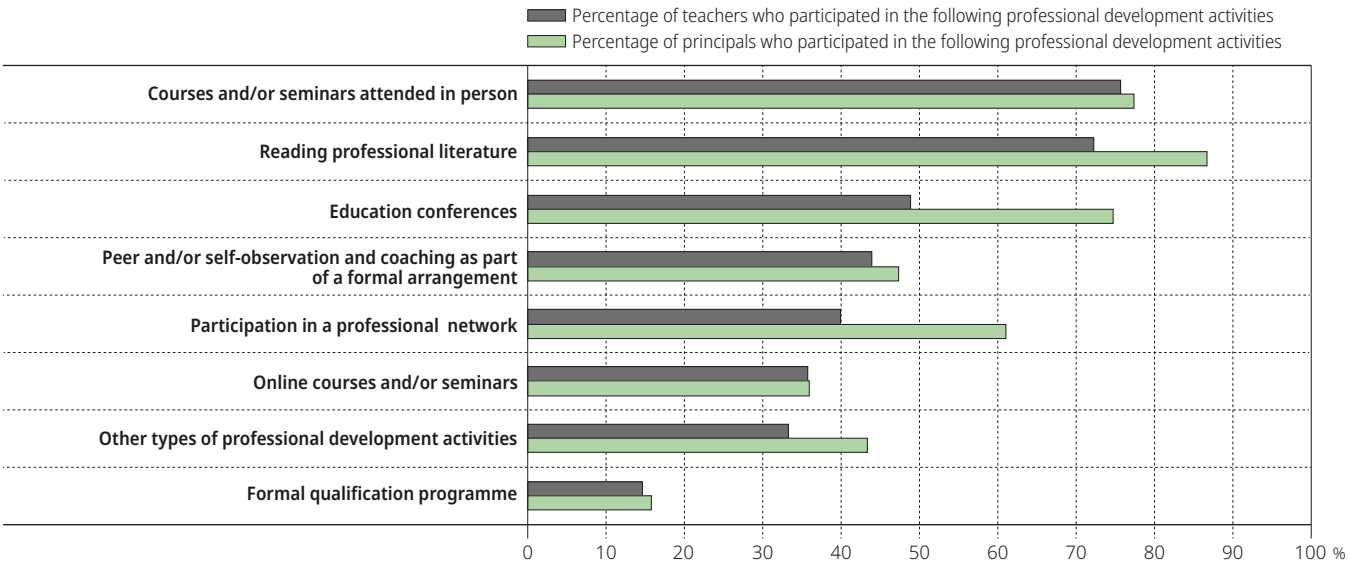
The literature indicates that training is potentially more effective when teachers are able to participate in a wide range of formats (Jensen et al., 2016[20]; Hoban and Erickson, 2004[45]; Scheerens, 2010[32]). Some formats, such as participation in courses or seminars or reading professional literature, may develop knowledge-based skills (Hoban and Erickson, 2004[45]), while others, like participation in professional networks or coaching, foster collaborative and social skills (Kraft, Blazar and Hogan, 2018[46]). These characteristics help to build a more rounded profile of teachers and principals (Chen and McCray, 2012[47]).

On average across the OECD, teachers attended about four different types of CPD activities in the 12 months prior to the survey (Table I.5.7). There are important cross-country variations across TALIS countries and economies regarding the number of activities in which teachers participate. On average, teachers attend six different CPD activities in Kazakhstan, Lithuania, the Russian Federation and Shanghai (China), but less than three activities in Chile, France and Portugal (Table I.5.7). Participation in multiple forms of CPD is higher for principals. On average across the OECD, principals participated in about six different forms of CPD training in the 12 months prior to the survey. On average among TALIS countries and economies, principals in Kazakhstan, Korea, the Russian Federation and Shanghai (China) attended more than seven different types of training, while principals in France, Japan and Sweden attended less than five activities (Table I.5.10).

On average across the OECD, the most common forms of professional development, according to teachers, are: "courses/seminars attended in person" (76%); "reading professional literature" (72 %); and "education conferences where teachers, principals and/or researchers present their research or discuss educational issues" (49%) (Figure I.5.3).

Figure I.5.3 **Type of professional development attended by teachers and principals**

Results based on responses of lower secondary teachers and principals (OECD average)[1, 2]



1. OECD average covers 31 countries for teachers and 30 countries for principals (see Annex B).
2. Refers to professional development activities in which teachers participated in the 12 months prior to the survey.

Note: The figure only includes those items that were common both for the teacher and the school leader questionnaire.
Values are ranked in descending order of the percentage of teachers who participated in the following professional development activities.
Source: OECD, TALIS 2018 Database, Tables I.5.7 and I.5.10.
StatLink http://dx.doi.org/10.1787/888933932779

As was the case for TALIS 2013 results (OECD, 2014[14]), participation in these forms of CPD varies considerably across participating countries and economies. In Australia, Austria, Latvia, Lithuania, Singapore and Slovenia, over 90% of teachers participate in "courses/seminars attended in person", while less than or equal to 50% of teachers do so in France, Japan and Romania. In Alberta (Canada), Croatia, Latvia and Shanghai (China), 70% or more of teachers participate in "education conferences where teachers and/or researchers present their research or discuss educational issues", while less than 30% of teachers do so in the Czech Republic, Georgia, Saudi Arabia and the Slovak Republic. Finally, in Croatia, Estonia, Lithuania, the Russian Federation, Shanghai (China), Slovenia and Viet Nam, 90% or more of teachers engage in "reading professional literature", but less than 50% do so in Chile, France, Italy, Malta, Saudi Arabia and Spain (Table I.5.7).

Attendance at courses and seminars has often been criticised as a traditional approach to teachers' development, since such programmes tend to view teachers as passive recipients of knowledge rather than co-constructors of their own development (Avalos, 2011[44]; Clarke and Hollingsworth, 2002[48]). Although these types of programmes are necessary and have been found to be effective in providing teachers with the content and subject knowledge required to improve their skills (Hoban and Erickson, 2004[45]), they are usually disconnected from the context of the schools where teachers work and from the daily reality of their classrooms (Borko, 2004[8]).

Instead, critics have proposed a school-embedded approach to CPD activities. School-embedded professional development is able to incorporate the teaching experience, the school context and teachers' collegiality to improve teachers' instruction (Borko, 2004[8]; Opfer, 2016[49]; Opfer and Pedder, 2011[50]). CPD training is more likely to affect teaching practices if teachers can relate the content of their training to their everyday work in their schools and classrooms. Furthermore, since school-embedded professional development relies on capacities and know-how within schools (e.g. school climate, networking, quality relationships), it can be a cost-efficient way to support teachers and principals (Kraft, Blazar and Hogan, 2018[46]).

Box I.5.3 **Coaching as an effective form of professional development: Evidence from Brazil and South Africa**

Brazil

The *Ceará* programme in Brazil was conceived as a response to two key issues affecting the quality of teaching and learning in Brazil: limited instructional time and low levels of student engagement. The nine-month-long coaching programme for secondary education teachers provided support and practical strategies on lesson planning, classroom management and keeping students engaged. The programme also consisted of school-level pedagogical co-ordinators providing feedback to teachers, based on classroom observations and self-help resources, such as books and online video examples. Moreover, it uses one-on-one coaching for pedagogical co-ordinators via Skype, a video-conferencing software, which makes the programme highly cost-effective. An impact evaluation of the programme revealed that the intervention resulted in: 1) teachers gaining more instructional time in the classroom by reducing the time spent on classroom management; 2) more frequent use of interactive strategies to improve student engagement; and 3) and an overall improvement in the academic outcomes of students in state and national tests.

South Africa

An experimental study from South Africa compared the effects of two forms of in-service teacher development on changes in primary education teachers' practices and student outcomes. The two forms of professional development were: 1) training at a centralised venue (training); and 2) classroom visits by coaches who observe teaching, provide feedback and demonstrate corrective actions (coaching). In addition, both of these forms of professional development included complementary resources, such as grade-reading booklets and lesson plans. The results showed that teachers whose professional development was in the form of coaching were more likely to implement "group-guided reading" (a difficult strategy to put in place) than teachers whose professional development was in the form of training or teachers who did not receive either form of professional development. Furthermore, students whose teachers received professional development in the form of coaching improved their reading proficiency by a considerable margin compared to teachers who participated in professional development in the form of training. The results show that a structured pedagogical programme based on in-person coaching was instrumental in enabling teachers to effectively use the resources available to them and inducing behavioural change in their instructional practices.

Sources: Bruns B., L. Costa and N. Cunha (2018[52]), "Through the looking glass: Can classroom observation and coaching improve teacher performance in Brazil?", *Economics of Education Review, Vol. 64, pp. 214-250,* https://doi.org/10.1016/j.econedurev.2018.03.003; Cilliers, J. et al. (2019[53]), "How to improve teaching practice? An experimental comparison of centralized training and in-classroom coaching", *The Journal of Human Resources*, https://doi.org/10.3368/jhr.55.3.0618-9538r1.

On average across the OECD, participation in school-embedded professional development is lower than in traditional approaches to training. This is the case for "peer and/or self-observation and coaching as part of a formal school arrangement" (44%) (Figure I.5.3). "Peer/self-observation and coaching" is an effective form of collaboration among teachers that is embedded in the school culture (OECD, 2016[23]). It can be part of regular school tasks requiring the involvement of all members of the school community (Borko, 2004[8]; Villegas-Reimers, 2003[4]). Indeed, evidence has shown that teachers who engage in collaboration at their work are more receptive of further CPD activities (Loxley et al., 2007[51]). Like the other types of CPD described, "peer/ self-observation and coaching" shows a great degree of cross-country variation in participation, ranging from more than 85% of teachers in Kazakhstan, Shanghai (China) and the United Arab Emirates to less than 20% of teachers in Finland, France and Spain (Table I.5.7). Box I.5.3 describes initiatives from Brazil and South Africa of CPD activities that are anchored in a coaching approach.

TALIS shows a mixed global trend on whether experienced or novice teachers participate more frequently in "Peer/self-observation and coaching". The share of less experienced teachers participating in this type of training is significantly lower than among their more experienced counterparts in 9 countries and economies. However, in 11 countries and economies, the share of novice teachers participating in "peer/self-observation and coaching" is significantly higher than among more experienced teachers (Table I.5.7). For these 11 countries and economies, the difference could be explained by the fact that training in the form of coaching and peer-observation is often an element of induction or mentoring initiatives. Indeed, as shown in Chapter 4, "supervision by principal and/or experienced teachers" and "networking collaborating with other new teachers" are among the most common provisions of induction reported by teachers. Also, novice teachers, especially if they are new to a school, may be more inclined to request support from management staff and/or experienced teachers (OECD, 2017[54]).

Like school-embedded professional development, participation in professional networks has also been identified as an innovative and effective form of professional development (Trust, Krutka and Carpenter, 2016[55]). This type of training creates a collegial environment, where teachers and principals are encouraged to collaborate and share ideas. Networking opportunities allow for co-construction of knowledge, provide support that better fits the actual needs of teachers and encourage pedagogical innovation (Paniagua and Istance, 2018[56]).[4]

Box I.5.4 **Participation in and types of professional development from primary to upper secondary education**

Teachers' participation in CPD is almost universal, regardless of the level of education they teach. However, primary teachers tend to participate slightly more often in CPD activities than lower secondary teachers in 6 out of 13 countries and economies with available data for ISCED 1 and 2 (Table I.5.3). The largest difference in favour of primary teachers in CPD participation is found in France (14 percentage points). Also in France, the percentage of lower secondary teachers (83%) participating in CPD is the lowest of all TALIS countries and economies (the participation rate exceeds 90% in most of them) (Table I.5.2).

By contrast, when comparing CPD participation rates of upper secondary teachers with those of their lower secondary peers, there is not much difference in the 11 countries and economies with available data for ISCED 2 and 3 (Table I.5.4).

CPD activities encompass various types of activities. By far, the most popular are "courses/seminars attended in person" and "reading professional literature", in which about three out of four teachers across the OECD participated. By contrast, less than half of teachers report that they have participated in one of the other eight types of CPD activities (Table I.5.7). In the 13 countries and economies with available data for ISCED 1 and 2, primary teachers tend to participate more often in the different types of CPD activities than their lower secondary peers. In 8 out of 11 countries, more primary teachers than lower secondary level teachers report having frequently attended courses/seminars in person, with the largest differences in France (21 percentage points) and England (United Kingdom) (15 percentage points) (Table I.5.8). Depending on the type of CPD format, the same tendency is found in 7 of these 13 countries for participation in education conferences where teachers and/or researchers present their research or discuss educational issues, observation visits to other schools, peer and/or self-observation and coaching as part of a formal school arrangement and participation in a network of teachers formed specifically for the professional development of teachers.

At the upper secondary level, some types of CPD are more popular. For instance, in 10 out of 11 countries and economies with available data for ISCED 2 and 3, upper secondary teachers do more observation visits to business premises, public organisations, or non-governmental organisations (Table I.5.7 and Table I.5.9). In Croatia and Sweden, the frequency increased by more than 15 percentage points. Despite the high increase, the percentage of teachers at the upper secondary level having done this activity remains below 40% in the majority of countries.

However, on average across the OECD, only 40% of teachers state that they participated "in a network of teachers formed specifically for the professional development of teachers" (Figure I.5.3). Among TALIS countries and economies, at least 65% of teachers participate in networks in Kazakhstan, Korea, the Russian Federation, Singapore, the United Arab Emirates and Viet Nam, while less than 25% do so in Austria, CABA (Argentina), Chile, the Czech Republic, Portugal, the Slovak Republic and Spain. Results indicate that, for 20 countries and economies, experienced teachers participate more in this type of training than novice teachers. This could be explained by the fact that networks rely on professional contacts that are acquired with years of experience at work. However, novice teachers participate more in networks than their more experienced counterparts in Alberta (Canada), England (United Kingdom), Malta and Shanghai (China) (Table I.5.7).

Among principals, as for teachers, the most frequent types of CPD activities are: "reading professional literature" (87%); "courses and/or seminars attended in person" (77%); and "education conferences where teachers, principals and/or researchers present their research or discuss educational issues" (75%) (Figure I.5.3). Comparing the participation of teachers and principals in each type of training reveals that teachers participate less than principals in every form of CPD. It is interesting to observe that, for some types of training, the share of principals' participation is quite high compared to that of teachers. That is the case of participation in "education conferences" (75% of principals compared to 49% of teachers) and "participation in a network formed specifically for their professional development" (61% of principals compared to 40% of teachers). For professional development networks, the difference could be because school leaders have more years of experience than teachers and have, thus, accumulated more professional contacts to network with (Sparks, 2002[21]). In Croatia, Israel, Kazakhstan, Korea, the Netherlands, the Russian Federation, Singapore and Slovenia, at least 80% of principals have participated in professional networks. Participation of principals in "peer/self-observation and coaching" is lower (47%). However, in Hungary, Kazakhstan, Korea and the Russian Federation, more than 80% of principals have participated in coaching (Table I.5.10).

Overall, it seems that principals are given more opportunities than teachers for in-service training or take greater advantage of it. This can be observed through wide gaps of participation in certain types of activities (participation in networks and education conferences), the fact that principals participate in more CPD activities than teachers (on average, four activities for teachers compared to six activities for principals) and that overall participation in CPD is higher for principals (95% of teachers compared to 99% of principals [see the section *Participation in continuous professional development*]).[5]

EXPLORING IMPACTFUL FORMS OF PROFESSIONAL DEVELOPMENT

Around the world, education systems strive to find the most cost-effective mechanisms to deliver professional training (Kraft, Blazar and Hogan, 2018[46]). As a result, there is high policy interest in assessing whether participation in CPD is affecting teaching practices and student achievement and whether some types of activities are more effective than others (Desimone, 2009[6]; Hattie, 2009[7]; Ingvarson, Meiers and Beavis, 2005[57]; Timperley et al., 2007[58]; Yoon et al., 2007[18]).

TALIS provides evidence of the impact of CPD activities by giving teachers the opportunity to voice their opinions on their training. This section starts by describing the share of teachers who report a positive impact of their training activities and the extent to which this perceived impact is associated with three professional outcomes of teachers: self-efficacy, job satisfaction and cognitive activation practices. It then discusses the characteristics that made the training effective.

Impact of continuous professional development activities

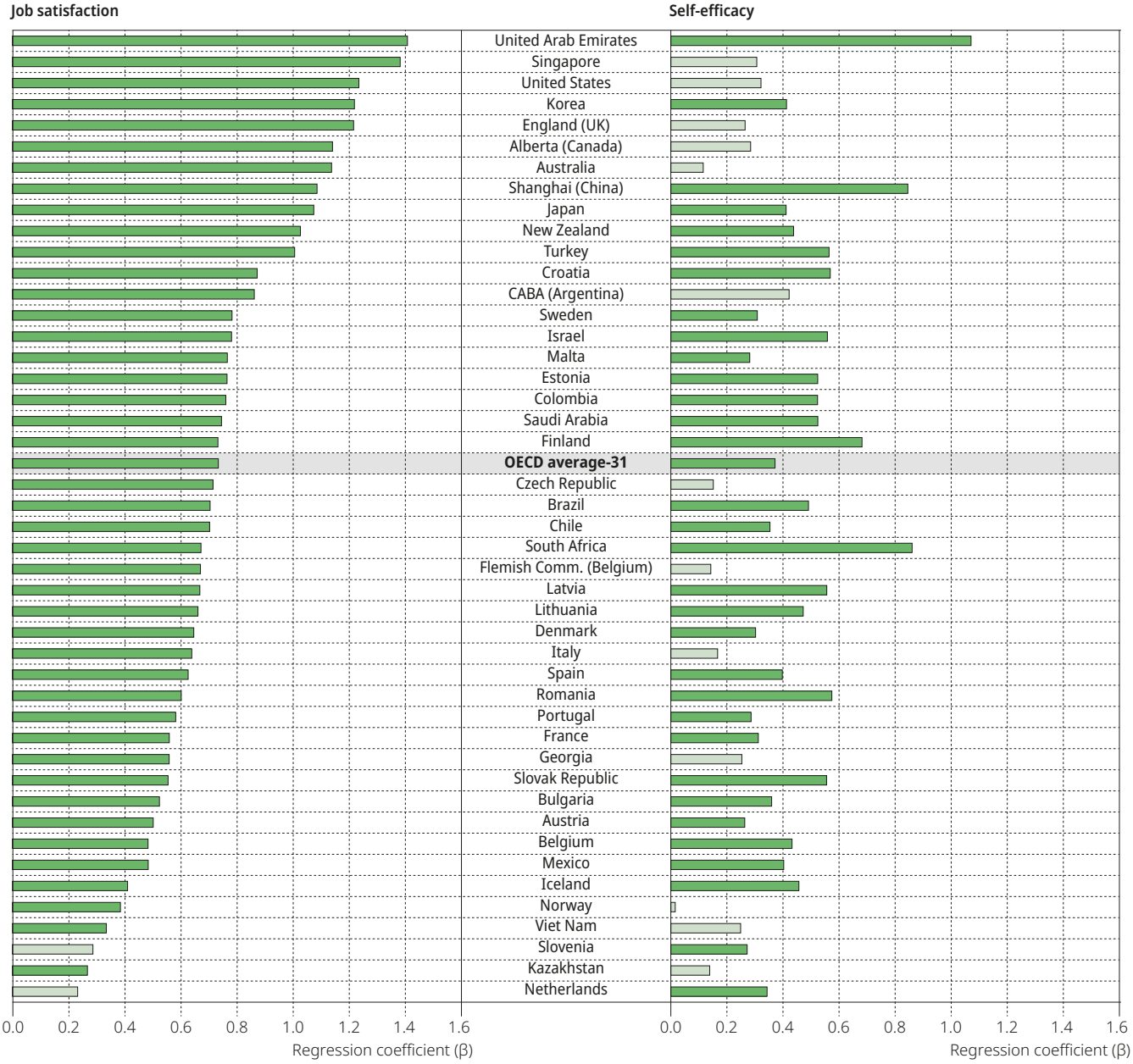
Teachers were asked whether any of the CPD activities they took in the 12 months prior to the survey had an impact on their teaching practices. It is important to ask teachers themselves about the impact of their training, as they need to understand and believe that their training matters for CPD activities to be effective (Scribner, 1999[33]).

On average across the OECD, 82% of teachers report a positive impact on their teaching practices from their participation in CPD activities (Table I.5.15). However, there are important cross-country variations among TALIS countries and economies. More than 90% of teachers report that their training had a positive impact on their teaching practices in Alberta (Canada), Australia, CABA (Argentina), Japan and Singapore. Inversely, less than 75% of teachers report a positive impact in Belgium, Bulgaria, Denmark, France, Malta, Saudi Arabia, Sweden and Turkey.

Previous OECD research has shown that CPD activities not only provide teachers with necessary skills, but also improve their sense of confidence and satisfaction (OECD, 2016[59]; OECD, 2014[14]). As such, by boosting both self-efficacy and job satisfaction, CPD activities can also be effective mechanisms for the retention of teachers. TALIS 2018 results show that, on average across the OECD, after controlling for teachers' characteristics, teachers who state that their training in the 12 months prior to the survey had an impact on their teaching practices have higher levels of job satisfaction than those teachers reporting that their training had no impact on their teaching practices (Figure I.5.4, Table I.5.13). This holds true for 46 TALIS countries and economies. The association is particularly strong in England (United Kingdom), Korea, Singapore, the United Arab Emirates and the United States.

Figure I.5.4 **Relationship between teachers' job satisfaction and self-efficacy and participation in impactful professional development**

Change in the index of self-efficacy[1] and the index of job satisfaction[2] associated with having participated in impactful professional development[3, 4, 5]



1. The index of self-efficacy measures teacher self-efficacy in classroom management, instruction and student engagement.

2. The index of job satisfaction measures teachers' satisfaction with their current work environment and satisfaction with the profession.

3. Results of linear regression based on responses of lower secondary teachers.

4. The predictor is a dummy variable: the reference category is "professional development activities in the 12 months prior to the survey did not have a positive impact on teaching practice".

5. Controlling for the following teacher characteristics: gender, working full-time, years of experience as a teacher; and for the following classroom characteristics: share of low academic achievers, share of students with behavioural problems and class size.

Note: Statistically significant coefficients are marked in a darker tone (see Annex B).

Countries and economies are ranked in descending order of the change in the index of job satisfaction associated with having participated in impactful professional development.

Source: OECD, TALIS 2018 Database, Tables I.5.13 and I.5.14.

StatLink http://dx.doi.org/10.1787/888933932798

Regarding the relationship with self-efficacy, on average across the OECD, after controlling for teachers' characteristics, it can be observed that teachers who state that their training in the 12 months prior to the survey had an impact on their teaching practices have higher levels of self-efficacy. It is possible to observe this positive association in 33 TALIS countries and economies, with Shanghai (China), South Africa and the United Arab Emirates showing the strongest association (Figure I.5.4, Table I.5.14).

Although caution against causal arguments is recommended, these results may hint that teachers who report a positive impact from their training also tend to be more content with their work and have stronger confidence in conducting their classroom instruction. As such, these results add evidence of the importance of professional development for increasing teachers' level of satisfaction with their work and boosting their self-confidence.

Characteristics of impactful continuous professional development activities

Identifying the characteristics or combinations of characteristics that define effective CPD activities is one of the major policy challenges in ensuring continuous quality training. Policy reviews often tend to highlight the limited effects of professional development programmes on teacher practices by criticising flaws of design or adequacy (Garet et al., 2001[60]). TALIS makes it possible to ask the professionals who participate in this training – teachers themselves – about the characteristics of the programme that had the largest positive impact on their teaching. Teachers were asked to select the pertinent characteristics from a list of 12 elements identified in the specialised literature as key attributes of effective training. These characteristics were classified into four comprehensive and distinctive groups; "content focus", "active learning and collaboration", "sustained length" and "school-embedded training" (Figure I.5.5). Only teachers who reported that their training had a positive impact were asked to rate these characteristics (83% of the original sample from TALIS countries and economies) (Table I.5.15).

Among teachers reporting that their training had a positive impact, one of the most frequent characteristics mentioned relates to the content of the training. The specialised literature agrees that effective CPD programmes should be content-driven, with strong subject and curriculum-based components that help teachers have a better grasp of their subject (Borko, 2004[8]; Guskey and Yoon, 2009[61]). These programmes should also take into account the experience and be consistent with the previous knowledge and learning experiences of teachers, along with their specific needs for training (Desimone, 2009[6]). Furthermore, it is important that the training have a coherent structure connecting the previous experience of teachers with classroom practices and measurable outcomes (Clarke and Hollingsworth, 2002[48]). On average across the OECD, among teachers who found their training impactful, such characteristics correspond to four elements: 1) "built on [the teacher's] prior knowledge" (91%); 2) "adapted to [the teacher's] personal development needs" (78%); 3) "had a coherent structure" (76%); and 4) "appropriately focused on content needed to teach [the teacher's] subjects" (72%) (Figure I.5.5, Table I.5.15). TALIS countries and economies displaying, on average, the highest share of teachers reporting these four content-related characteristics as part of their impactful training are Shanghai (China), South Africa and Viet Nam, while Bulgaria and Japan have the lowest share of teachers reporting these characteristics as part of their training (Table I.5.15).

Another set of characteristics mentioned by teachers who found their training impactful relates to active learning and collaboration. Active learning refers to pedagogical approaches that put learners at the centre of instruction (OECD, 2014[14]). Policy reviews and research literature have recommended incorporating this approach into CPD training, as it envisions teachers as co-constructors of their own learning and provides interactive strategies to contextualise teaching instruction to their local settings (Desimone, 2009[6]; Garet et al., 2001[60]; Villegas-Reimers, 2003[4]). In addition, a crucial component of active-learning approaches is collaboration between peers (OECD, 2014[14]). Collaboration incentivises peer learning and coaching modalities that allow for a more flexible and efficient learning experience for teachers. (Avalos, 2011[44]; Cordingley et al., 2003[62]; Jensen et al., 2016[20]). Collaboration is often considered a more cost-effective approach to professional development than other initiatives, such as courses or seminars, since it allows for teachers' learning to be based on informal networking within schools (Trust, Krutka and Carpenter, 2016[55]).

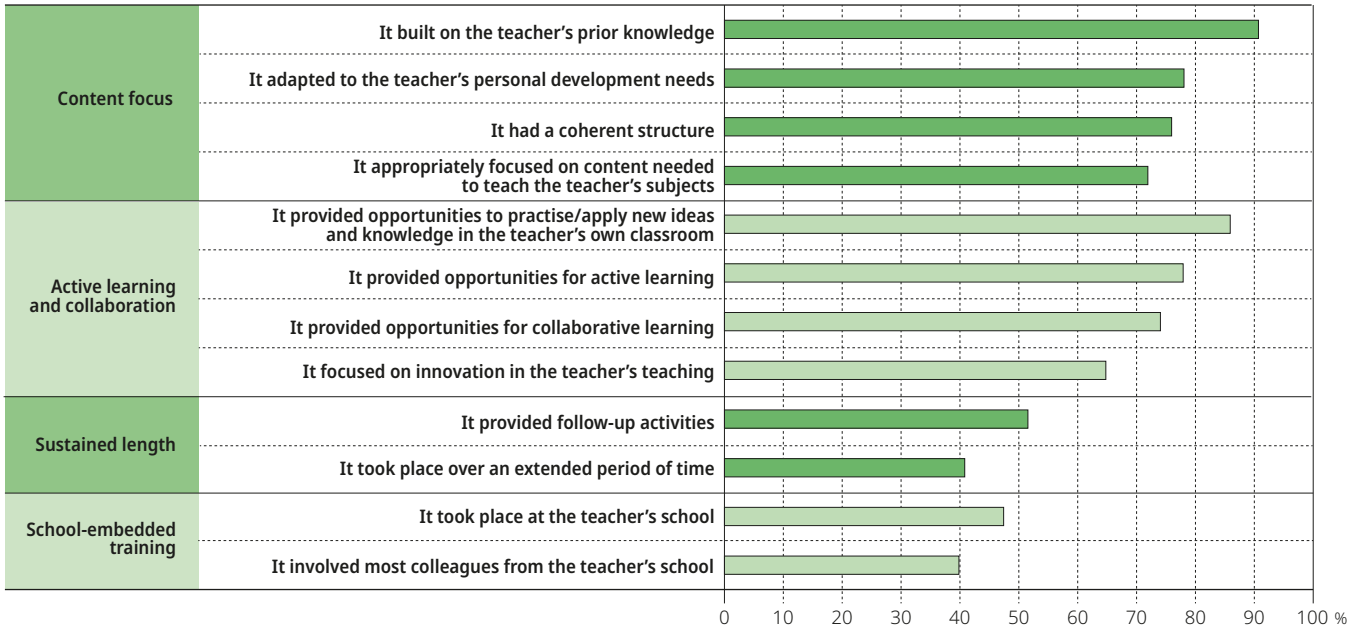
On average across the OECD, among teachers who report that their training was impactful, the characteristics of this dimension were that the training: 1) "provided opportunities to practise/apply new ideas and knowledge in [their] own classroom" (86%); 2) "provided opportunities for active learning" (78%); 3) "provided opportunities for collaborative learning" (74%); and 4) "focused on innovation in [their] teaching" (65%) (Figure I.5.5). Among the TALIS countries and economies with the highest concentration of teachers reporting, on average, these four characteristics of active learning and collaboration as part of their impactful training are Colombia, South Africa, the United Arab Emirates and Viet Nam. The countries and economies with the lowest share of teachers reporting these characteristics as part of their impactful training are the Czech Republic, Denmark, Iceland and Japan (Table I.5.15).

Sustained length of professional development has been identified as one of the main characteristics of CPD programmes that have been able to affect teaching practices (Darling-Hammond, Hyler and Gardner, 2017[15]; Desimone, 2009[6]; OECD, 2014[14]; Villegas-Reimers, 2003[4]). Across OECD countries and economies, among teachers who reported impactful training, only 41% of teachers report that their CPD "took place over an extended period of time", and only 52% report that "it provided follow-up

activities" (Figure I.5.5). TALIS countries and economies with a comparatively higher share of teachers reporting characteristics of sustained length as elements of their impactful training are Israel and Viet Nam, while Belgium, France and Japan are among the systems with the lowest share of teachers reporting these elements as part of their training (Table I.5.15).

Figure I.5.5 **Characteristics of effective professional development, according to teachers**

Percentage of lower secondary teachers for whom the most effective professional development activities had the following characteristics[1] (OECD average-31)



1. Includes teachers who report on the professional development activity that had the greatest positive impact on their teaching in the 12 months prior to the survey. Teachers declaring that none of the professional development taken in the last 12 months had a positive impact in their teaching practice were filtered out and are not covered in the figure.

Values are ranked in descending order of the characteristics of the most effective professional development activities as reported by teachers.

Source: OECD, TALIS 2018 Database, Table I.5.15.

StatLink http://dx.doi.org/10.1787/888933932817

Box I.5.5 **Characteristics of effective continuous professional development activities from primary to upper secondary education**

Across OECD countries and economies, teachers report that the most effective professional development activity is content driven: "built on [the teacher's] prior knowledge" (91%); "provided opportunities to practise/apply new ideas and knowledge in [the teacher's] own classroom" (86%); or "adapted to [the teacher's] personal development needs" (78%) (Table I.5.15). The proportion of teachers reporting these characteristics as elements of an impactful professional development tends to decrease as the level of education they teach rises. Depending on the characteristic concerned, in 7 to 9 out of 13 countries and economies with available data for ISCED 1 and 2, teachers at the primary level are more likely than their peers at the lower secondary level to signal one of the content-driven components of CPD as an important characteristic of effective training (Table I.5.16). Moreover, in 9 to 10 countries and economies, CPD providing "opportunities for collaborative learning" or "follow-up activities", as well as CPD involving "most colleagues from the teacher's school" are more often highlighted as effective by primary teachers than their lower secondary peers.

The views of upper secondary teachers on the important characteristics of CPD tend to be more similar to those of lower secondary teachers in the 11 countries and economies with available data for ISCED 2 and 3. However, there are still some slight differences. For instance, in 7 out of 11 countries and economies with available data for ISCED 2 and 3, the share of teachers highlighting the importance of the provision of "opportunities to practise/apply new ideas and knowledge in the teacher's own classroom" decreased between the lower and upper secondary level (Table I.5.17).

As discussed in the previous section, offering CPD activities in the teacher's school is another key attribute of effective CPD (Opfer, 2016[49]). Since school context and teacher background characteristics shape classroom practices, they should be ingrained in the content of effective CPD (Fischer et al., 2018[11]). On average across the OECD, only 47% of teachers report that their training "took place at the teachers' school", and only 40% that "it involved most colleagues from the teacher's school" (Figure I.5.5). TALIS countries and economies with an exceptionally high share of teachers reporting school-embedded characteristics as part of their impactful training are the United Arab Emirates and Viet Nam, while Austria, Croatia and France are among the countries and economies with the lowest share of teachers reporting these characteristics (Table I.5.15).

It is interesting to observe the relatively low reporting of characteristics related to sustained length and school-embedded professional development. It may be that these characteristics were not present at all in their training or that teachers did not consider these attributes as impactful training. Yet, what these results show clearly is that teachers more frequently mention characteristics linked to content, active learning and collaboration than those linked to sustained duration or school-embedded approaches as the main attributes of training that had the most impact for them.

EXPLORING THE CONTENT OF PROFESSIONAL DEVELOPMENT AND THE NEED FOR IT

Collecting information about the content of the CPD activities attended by teachers and principals can provide policy makers with valuable information on issues teachers face in their schools and classrooms. In addition, identification of needs is a crucial prerequisite for implementation of effective professional development, as it allows for the design of training opportunities aligned to teachers' requests (Opfer and Pedder, 2011[50]). This section provides information on both of these areas. After describing the content of training and the specific needs for further development, it assesses whether participation in training on certain topics or the need for it are related to differences among teachers and school characteristics. This is followed by an analysis of changes over time in CPD content and needs, and an examination of how participation in specific CPD content is associated with self-efficacy and implementation of teaching practices.

Content of teachers' continuous professional development and need for it

TALIS asked teachers to select the topics that were covered in their CPD activities from a list of 14 items. For each of the items, teachers were also asked to indicate their level of need for training, choosing among: "no need"; "low level of need"; "moderate level of need"; and "high level of need" (Figure I.5.6). On average across OECD countries, teachers tend to take part in subject or content-oriented CPD activities that focus on specific subject areas, pedagogy of the subject and general pedagogic topics. Participation is less frequent for CPD programmes focusing on the practical skills and tools to address concrete situations in their classrooms.

On average across the OECD, teachers report more frequent participation in CPD activities consisting of "knowledge and understanding of my subject field(s)" (76%) and "pedagogical competencies in teaching my subject field(s)" (73%) (Figure I.5.6). More than 90% of teachers report participating in training on each of these topics in Latvia, Shanghai (China) and Viet Nam (Table I.5.18). These two topics also concentrated the highest share of teachers in the 2013 cycle of TALIS (OECD, 2014[14]). A possible explanation for the popularity of these programmes is that CPD training is often linked with large-scale educational reforms that have put forward changes in subject and pedagogical content (Avalos, 2011[44]; Kennedy, 2005[25]; Little, 1993[63]).

At the low end of participation rates are CPD activities covering "teaching in a multicultural or multilingual setting" (22%) and "communicating with people from different cultures or countries" (19%) (Figure I.5.6). These results may reflect the struggle of education systems to tackle increased diversity related to the expansion of educational coverage and migration flows (OECD, 2010[64]).[6] In fact, countries with a longer tradition of tackling instruction in diverse settings have comparatively higher rates of participation in multicultural or multilingual training (OECD, 2015[65]). That is the case in Alberta (Canada), New Zealand, Shanghai (China), South Africa, the United Arab Emirates, the United States and Viet Nam, where more than 40% of teachers participate in these activities. Teachers in the United Arab Emirates show exceptionally high participation, with 65% reporting participating in multicultural or multilingual training (Table I.5.18). It is particularly relevant to explore the high need for CPD, because it provides access to first-hand knowledge of the training requests of teachers. On average across the OECD, the three areas where large shares of teachers report a high need are: "teaching students with special needs" (22%); "ICT skills for teaching" (18%); and "teaching in a multicultural or multilingual setting" (15%) (Figure I.5.6). The highest share of teachers was concentrated on the same needs in the 2013 cycle of TALIS (OECD, 2014[14]). These results on "teaching students with special needs" and training to "teach in a multicultural or multilingual setting" could reflect the pressure and the demands on teachers to teach in increasingly diverse classrooms[7] (Table I.5.21) (UNESCO, 2016[30]; OECD, 2018[1]). In particular, the recent migration trends have affected the school composition of several European OECD countries. A few of them, like Italy and Spain, which were traditionally countries from which immigrants originated, have become destination countries for immigrants and refugees (OECD, 2018[66]).

The need for training for "teaching special needs students" seems to be particularly urgent in Latin American countries, since all of the five TALIS participants from that region show exceptionally elevated shares of teachers reporting high needs: Brazil (58%),

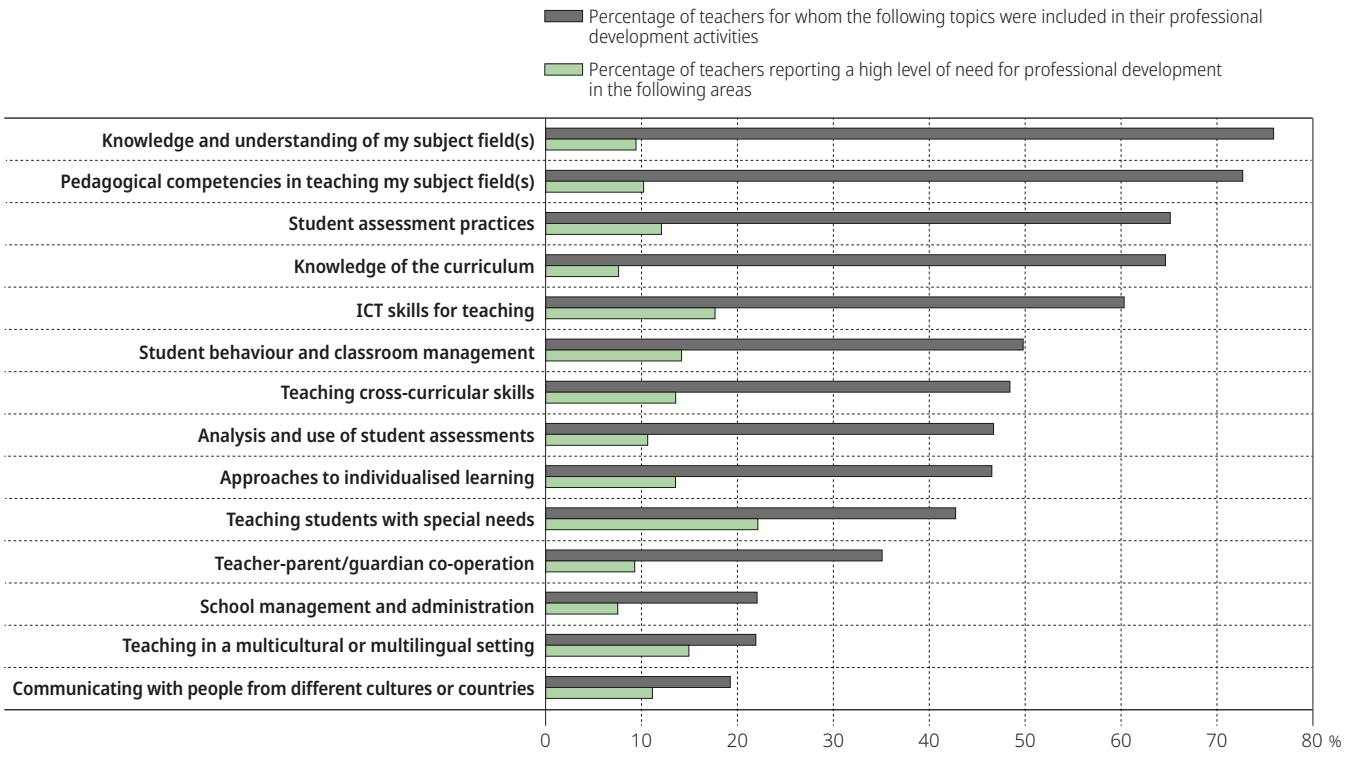
Colombia (55%), Mexico (53%), Chile (38%), and CABA (Argentina) (36%). High values can also be observed for Japan (46%) and South Africa (39%), as well as Croatia (36%), Romania (35%) and France (34%). Almost the same group of Latin American countries, with the exception of CABA (Argentina), also exhibit the highest values for needs in "teaching in multicultural and multilingual settings" (Table I.5.21). There may be two explanations for the high priority of needs in these areas in Latin American countries and economies. First, in recent decades there has been a proliferation in the region of inclusive school programmes targeted at building more diverse classrooms, which have translated into an increasing need for teachers to get training on managing diverse classrooms (OECD, 2016[67]; OECD, 2018[68]; Santiago et al., 2017[69]). Second, countries in Latin America have recently seen a notable increase in the cultural diversity of their classrooms, due to the recent influx of migrants (OECD, 2015[65]).

Incorporation of information and communication technologies (ICT) into the classroom is another of the major challenges currently facing education systems (OECD, 2018[1]). OECD results have shown that being exposed to technology will not improve student learning without the mediation and training of teachers (OECD, 2015[70]). Training in this area seems to be a major request for Vietnamese teachers, as 55% of teachers in Viet Nam report a high need for training in ICT. Other TALIS countries and economies showing high shares of teachers reporting high needs in this area are: Japan (39%), Colombia (34%), Georgia (33%), South Africa (32%), Shanghai (China) (30%) and Kazakhstan (30%) (Table I.5.21).

The contrast between shares of participation and shares of high need for CPD activities allows for further insights (Figure I.5.6). Topics with high shares of participation also display lower shares of high need, such as: training in "knowledge and understanding of my subject field(s)" (9% of teachers report a high need, while 76% report having participated in this training); and "pedagogical competencies in teaching my subject field(s)" (10% report a high need, while 73% report having participated in this training). Inversely, topics such as "teaching in a multicultural and multilingual setting" display low levels of participation but comparatively high levels of need (15% of teachers report a high level of need in this area while 22% report participation in training). A possible explanation is that topics with the highest levels of participation are also those with lower levels of need, as participation in a single session of CPD could satisfy the need, and no more demand for it would be observed.

Figure I.5.6 **Participation in professional development for teachers and need for it**

Results based on responses of lower secondary teachers (OECD average-31)



Note: ICT: Information and communication technology.
Values are ranked in descending order of the percentage of teachers for whom the above topics were included in their professional development activities.

Source: OECD, TALIS 2018 Database, Tables I.5.18 and I.5.21.

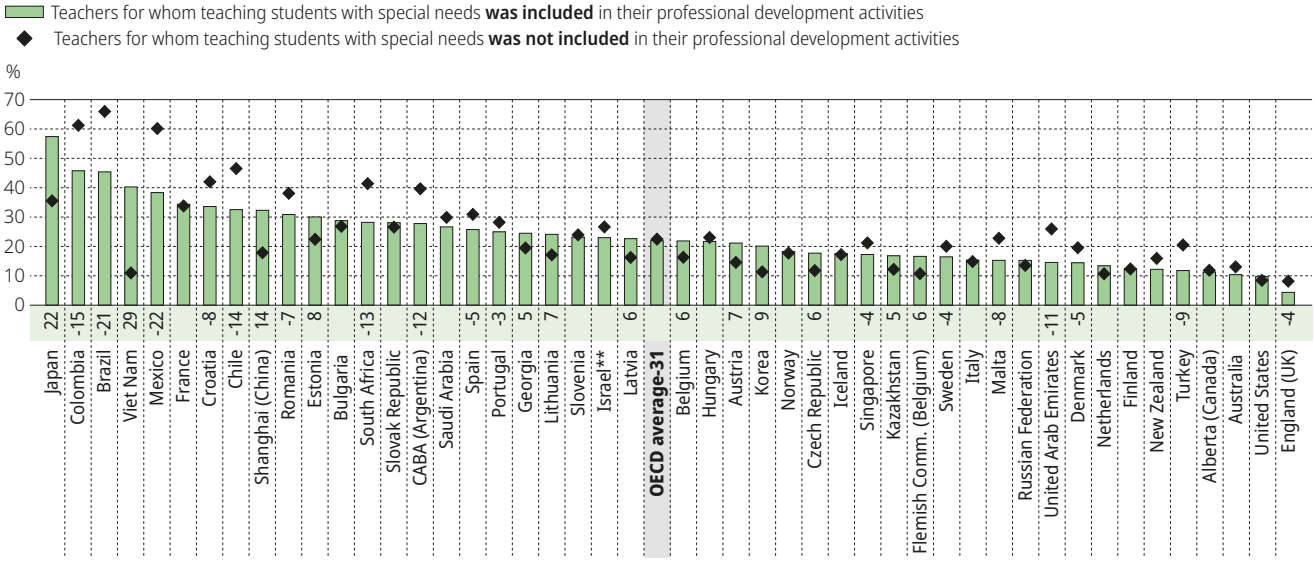
StatLink http://dx.doi.org/10.1787/888933932836

However, one group of topics shows relatively high levels of participation (above 40%) and high levels of need (above 13%): "ICT skills for teaching"; "student behaviour and classroom management"; "teaching cross-curricular skills"; "approaches to individualised learning"; and "teaching students with special needs".[8] High participation and high need for a given topic may be explained by a desire for further development, even if teachers have already participated in training on that topic. So high need for training on a specific topic should not be interpreted solely as a lack of participation in training on that topic (Cooc, 2018[71]). Teachers may want more training on a topic they have already explored because they were dissatisfied with the quality of their original training or they want to invest more time in it. In addition, the knowledge field of areas such as "ICT skills for teaching" or "teaching students with special needs" changes rapidly following the development of new pedagogical frameworks. As such, teachers may present a constant "need" to keep updated with the latest findings in this areas.

In order to further explore the relation between in-service training participation and need, TALIS explored the three areas with the highest need ("teaching students with special needs", "teaching in a multicultural or multilingual setting" and "ICT skills for teaching") to see whether the need for training in these areas is equally prevalent between teachers that have participated in the respective in-service training and in teachers that have not participated in it (Figure I.5.7, Table I.5.24).

Figure I.5.7 **Teachers' need for professional development in teaching students with special needs, by teachers' participation in professional development[1]**

Percentage of lower secondary teachers who report a high level of need for professional development in teaching students with special needs[2]



1. Refers to professional development activities in teaching special needs students in which teachers participated in the 12 months prior to the survey.

2. "Students with special needs" are those for whom a special learning need has been formally identified because they are mentally, physically, or emotionally disadvantaged.

Countries and economies are ranked in descending order of the percentage of lower secondary teachers who participated in a professional development activity in teaching special needs students and report a high level of need for professional development in this topic.

Source: OECD, TALIS 2018 Database, Table I.5.24.

StatLink http://dx.doi.org/10.1787/888933932855

On average across the OECD, it is possible to observe that, regarding professional development in teaching students with special needs, there are no significant differences between the percentages of participating teachers that still report having a high need and the percentage of those that have not participated and have a high need (Figure I.5.7). These results seem to suggest that the needs of teachers are persistent regardless of whether they have previously participated in training in that area or not. The need for training may emerge not only from previous access to training, but also as a response to concrete school and classroom demands and/or policy requirements (more on this issue in the section *Content of continuous professional development and need for it, in trends perspective*).

However, there are important cross-country variations that are relevant to acknowledge. For example, in most of the Asian countries participating in TALIS 2018, the percentage of teachers who participated in "teaching students with special needs" in-service training and still report a high need for it is significantly greater than that of those that have not participated in it and report a high need.

That is the case for Japan (57% of participating teachers report a high need against 36% of non-participating teachers with a high need), Shanghai (China) (32% of participating teachers report a high need against 18% of non-participating teachers with a high need) and Viet Nam (40% of participating teachers report a high need against 11% of non-participating teachers with a high need). Inversely, in most of the Latin American countries and economies, the proportion of teachers that have not participated in "teaching students with special needs" and have a high need is greater than the percentage that have participated and still have a high need. This is the case for Brazil (45% of participating teachers report a high need against 66% of non-participating teaches with a high need), Colombia (46% of participating teachers report a high need against 61% of non-participating teaches with a high need) and Mexico (38% of participating teachers report a high need against 60% of non-participating teachers with high need) (Figure I.5.7). A similar pattern is observed for the other two training areas (Table I.5.24).

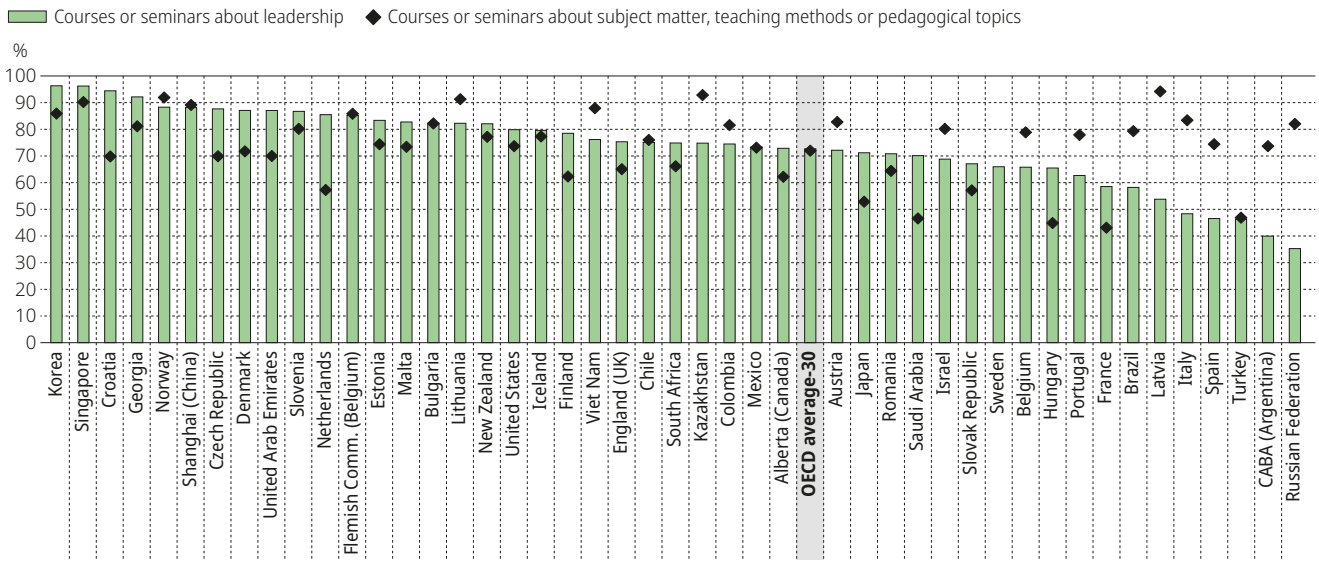
A possible explanation in the case of the Asian countries is that the design and implementation of in-service training actually ingrains in teachers the desire to get further and additional training. In the case of the Latin American countries and economies, it is interesting to observe that, despite the gap, the percentage of teachers reporting a high need is quite elevated, both in participating and non-participating teachers. This suggests that the issues of teaching special needs students, teaching in multicultural or multilingual classrooms and using ICT skills are quite present across these systems. Yet, the fact that the need is so drastically high for Latin American teachers that have not participated indicates that greater effort should be put into providing access to and the promotion of training in these areas.

Regarding principals, on average across the OECD, 73% have participated in "courses/seminars about leadership" (Figure I.5.8). The share of principals who have participated in that type of training is particularly high in Korea (96%), Singapore (96%), Croatia (94%) and Georgia (92%), while CABA (Argentina) (40%) and the Russian Federation (35%) have the lowest percentage of principals participating in this type of training (Table I.5.10). This result could reflect the value that principals allocate to training to help them be better leaders of their schools, as well as the training offered by institutions and educational systems (OECD, 2016[23]).

Similarly, on average across the OECD, 72% of principals participated in "courses/seminars about subject matter, teaching methods or pedagogical topics" (Figure I.5.8). As shown in the TALIS 2013 results (OECD, 2016[23]), the profile of instructional leaders (principals who spend time improving the instructional quality of their teachers) is expanding across education systems. Kazakhstan, Latvia, Lithuania and Norway are the countries with the highest share of principals accessing this type of training (Table I.5.10). TALIS countries and economies showing comparatively low participation rates in this type of training are France, Hungary, Saudi Arabia and Turkey, with a rate of participation between 43 and 47% of principals.

Figure I.5.8 **Principals' participation in professional development courses or seminars**

Percentage of lower secondary principals who participated in the following professional development activities[1]



1. Refers to professional development activities in which principals participated in the 12 months prior to the survey.

Countries and economies are ranked in descending order of the percentage of lower secondary principals who participated in courses/seminars about leadership in the 12 months prior to the survey.

Source: OECD, TALIS 2018 Database, Table I.5.10.

StatLink http://dx.doi.org/10.1787/888933932874

Box I.5.6 Content of and need for continuous professional development from primary to upper secondary education

Content of continuous professional development activities

Across OECD countries and economies, the two most popular types of CPD activities are those consisting of "knowledge and understanding of my subject field(s)" and "pedagogical competencies in teaching my subject field(s)", with participation rates of more than 70% in most countries (Table I.5.18). However, in the 13 countries and economies with available data for ISCED 1 and 2, primary teachers tend to report higher levels of participation in these CPD activities than lower secondary teachers, with a significant decrease in levels of participation in 7 or 8 countries, depending on the programme (Table I.5.19). The largest differences are found in England (United Kingdom), with a decrease of 18 percentage points in the level of participation of lower secondary teachers for training on "knowledge and understanding of my subject field(s)" and France, with a decrease of 12 percentage points for lower secondary teachers for training on "pedagogical competencies in teaching my subject field(s)". Moreover, the general tendency in the decrease of participation in CPD activities between primary and lower secondary education is mirrored in most of the other 13 types of CPD. For instance, in 9 to 11 countries and economies, a significant decrease in participation rates is found for CPD on "student behaviour and classroom management", "approaches to individualised learning", "teaching students with special needs" and "teaching cross-curricular skills". The largest differences are found in Japan (depending on the item, a decrease up to 17 percentage points for lower secondary teachers).

In upper secondary education, the levels of participation tend to decrease further, in the 11 countries and economies with available data for ISCED 2 and 3. The highest decrease is found in training on "teaching students with special needs": in 9 countries, lower secondary teachers participate more often than upper secondary teachers, with a decrease of 15 or more percentage points in Croatia and Turkey (Table I.5.20).

Need for different types of continuous professional development activities

On average across the OECD, among lower secondary teachers, the highest levels of training needs are reported for training on "teaching students with special needs" (22%), "ICT skills for teaching" (18%) and "teaching in a multicultural or multilingual setting" (15%) (Table I.5.21). In the 13 countries and economies with available data for ISCED 1 and 2, primary teachers tend to report a high level of need for these types of training more often than their lower secondary peers. The largest decrease for lower secondary teachers, significant in 7 countries, is found for training on "teaching students with special needs", with a difference exceeding 10 percentage points in the Flemish Community of Belgium, Denmark, France, Japan and Viet Nam (Table I.5.22). Moreover, a similar pattern is found in 7 to 8 countries for high levels of need for activities on "student behaviour and classroom management", "ICT skills for teaching" and "approaches to individualised learning". The decrease in the need for training in classroom management is in line with the reported drop between the primary and lower secondary levels in teachers' use of classroom management teaching practices (see Chapter 2).

A further decrease in the level of need, for at least some of the CPD programmes, is observed at the upper secondary level. In particular, in 7 out of 11 countries and economies with available data for ISCED 2 and 3, a significant decrease is found in the percentage of teachers reporting a high level of need for training activities on "teacher-parent/guardian co-operation", with the largest decrease in Viet Nam (13 percentage points decrease for upper secondary teachers). Also, the expressed level of need for training on "student behaviour and classroom management" and "teaching students with special needs" decreases further in 6 countries (Table I.5.23).

However, in 5 countries, principals seem to participate more in "courses/seminars about leadership" than in "courses/seminars on subject matter, teaching methods or pedagogical topics" (a difference of more than 20 percentage points). That is the case for Croatia, Hungary, the Netherlands and Saudi Arabia. Inversely, higher participation in "courses/seminars on subject matter, teaching methods and pedagogical topics" than in "courses/seminars about leadership" is observed for Brazil, CABA (Argentina), Italy, Latvia, the Russian Federation and Spain (Table I.5.10). The differences in the participation of this training could be a reflection of certain profiles prioritised by school systems or principals themselves. While training in leadership usually seeks to reinforce the skills of principals to lead and provide guidance to their schools, training in "subject matter, teaching methods or pedagogical topics" is particularly focused on providing the necessary skills for being an instructional leader able to support their teachers in their development needs as well as in their work in the classroom (OECD, 2016[23]).

Principals were asked about the level of need ("no need"; "low level of need"; "moderate level of need"; or "high level of need") on 11 CPD topics. The results may reflect the fact that principals are required to be proficient in multiple roles, ranging from keeping their school financially secure to being pedagogical leaders (Zepeda, Parylo and Bengtson, 2013[22]) (Table I.5.32).

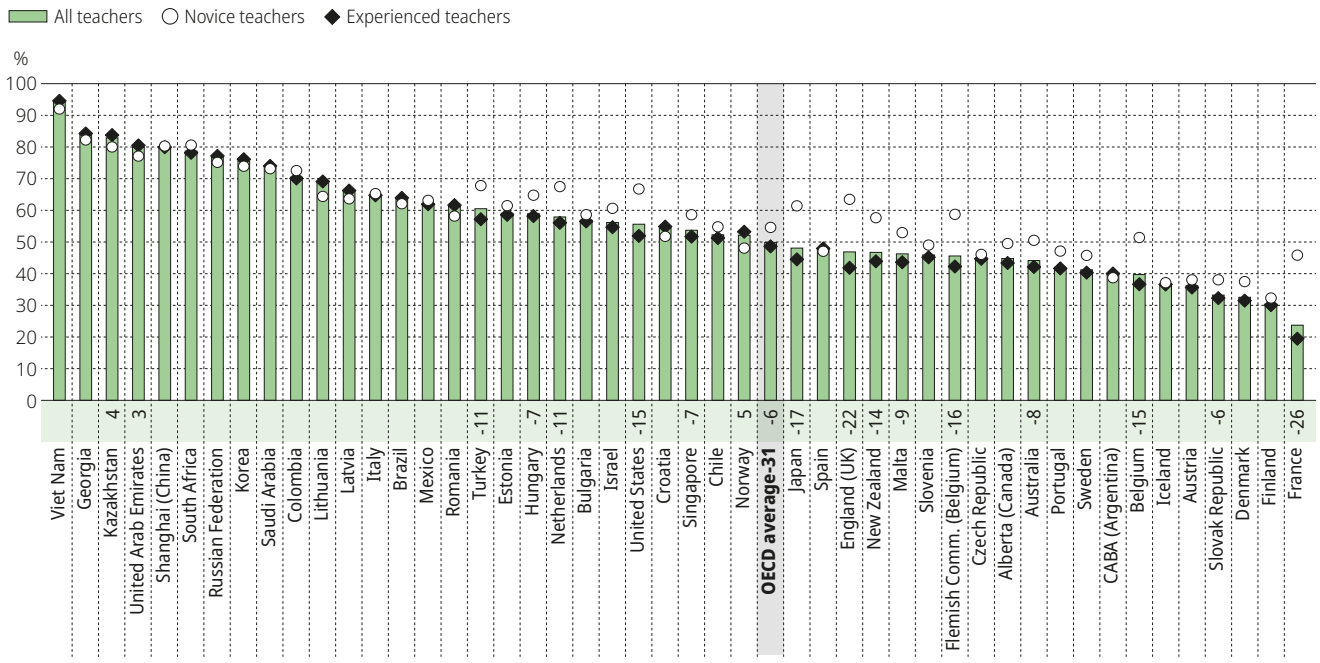
The main area highlighted for development concerns the promotion of collaborative work. Across OECD countries and economies, 26% of principals report a high need for professional development in developing collaboration among teachers. In Japan, Shanghai (China) and Viet Nam, more than 50% of principals report a high level of need for training in developing collaboration among teachers. Training programmes based on collaborative work have been found to be a key component for instructional leadership (OECD, 2016[23]). Indeed, CPD programmes that train school leaders to build trust in their schools and promote teacher learning have been considered crucial steps in creating schools as learning organisations and helping build professional learning communities (Kools and Stoll, 2016[72]; Youngs and Bruce King, 2002[73]). Results also reveal that, across OECD countries and economies, 24% of principals report a high need for training in using data to improve the quality of the school and 23% of principals report a high need for training in financial management.

Content of continuous professional development and need for it, by teacher characteristics

TALIS results show interesting differences in the content of CPD attended by teachers, based on their socio-demographic characteristics, particularly their level of experience. The topic for which the gap in participation rates between teachers with less and more experience is largest is CPD training in "student behaviour and classroom management" (an average gap of 6 percentage points) (Figure I.5.9). Novice teachers participated more often in this training than their more experienced colleagues in 14 countries, with the largest gaps observed in France (26 percentage points), England (United Kingdom) (22 percentage points), and Japan (17 percentage points) (Table I.5.18). In other words, less experienced teachers are getting training in handling their classroom in greater shares than more experienced teachers. As studies have shown, teachers with less experience are usually allocated to more challenging schools in terms of the student socio-demographic composition (OECD, 2014[14]; OECD, 2018[27]), which can translate into higher participation by novice teachers in classroom management training than by their more experienced peers. Given the time that they have spent in classrooms, more experienced teachers may already have developed these classroom management skills.[9]

Figure I.5.9 Participation in professional development in classroom management, by teachers' teaching experience

Percentage of lower secondary teachers for whom student behaviour and classroom management were included in their professional development activities[1]



1. Refers to professional development activities in which teachers participated in the 12 months prior to the survey.

Note: Statistically significant differences between experienced teachers (with more than 5 years of experience) and novice teachers (with less than or equal to 5 years of experience) are shown next to the country/economy name (see Annex B).

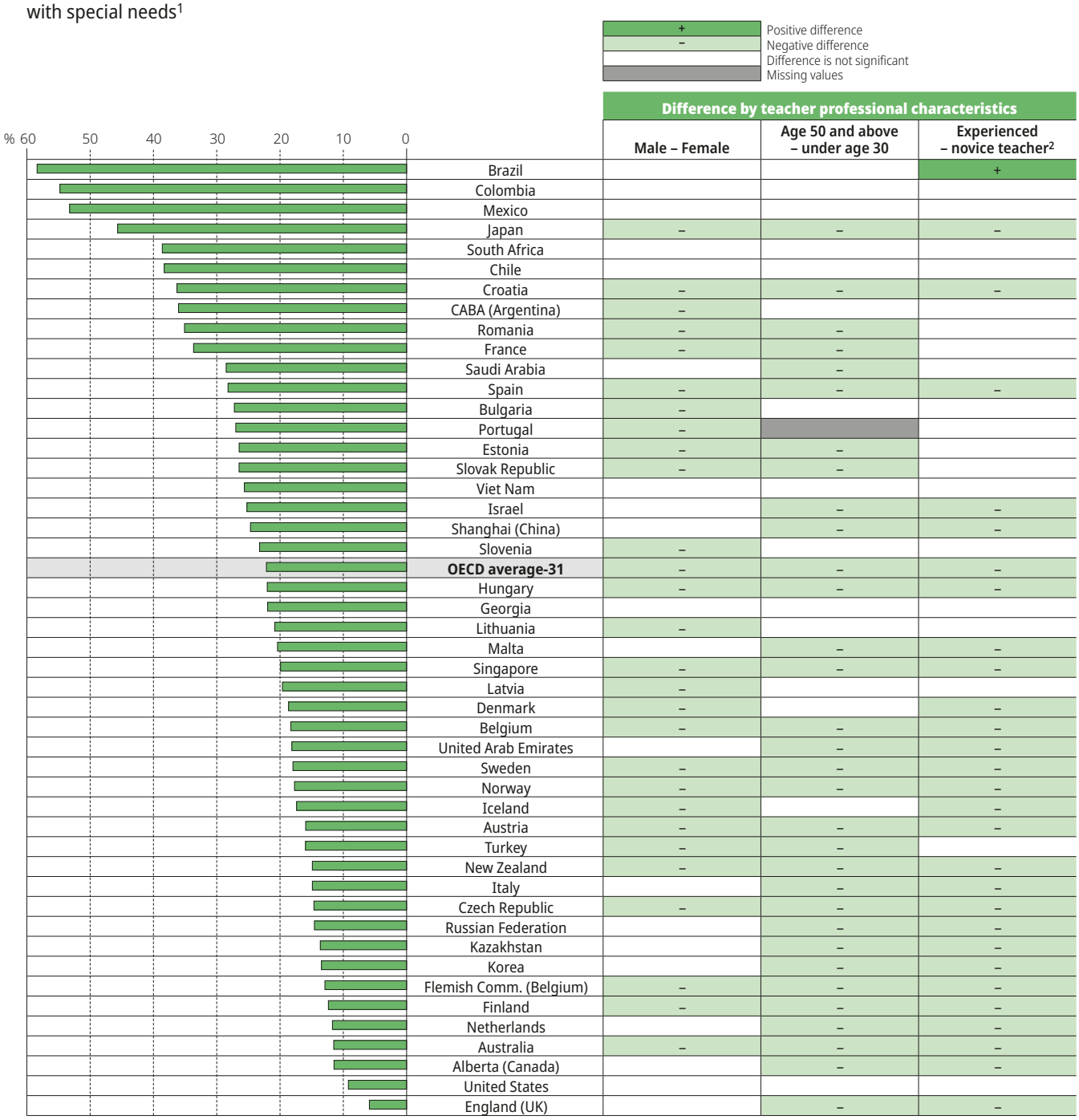
Countries and economies are ranked in descending order of the percentage of lower secondary teachers for whom student behaviour and classroom management were included in their professional development activities.

Source: OECD, TALIS 2018 Database, Table I.5.18.

StatLink http://dx.doi.org/10.1787/888933932893

Figure I.5.10 **Need for professional development in teaching students with special needs, by teacher characteristics**

Percentage of lower secondary teachers who report a high level of need for professional development in teaching students with special needs[1]



	Difference by teacher professional characteristics		
	Male – Female	Age 50 and above – under age 30	Experienced – novice teacher[2]
Brazil			+
Colombia			
Mexico			
Japan	–	–	–
South Africa			
Chile			
Croatia	–	–	–
CABA (Argentina)	–		
Romania	–	–	
France	–	–	
Saudi Arabia		–	
Spain	–	–	–
Bulgaria	–		
Portugal	–		
Estonia	–	–	
Slovak Republic	–	–	
Viet Nam			
Israel		–	–
Shanghai (China)		–	–
Slovenia	–		
OECD average-31	–	–	–
Hungary	–	–	–
Georgia			
Lithuania	–		
Malta		–	–
Singapore	–	–	–
Latvia	–		
Denmark	–		–
Belgium	–	–	–
United Arab Emirates		–	–
Sweden	–	–	–
Norway	–	–	–
Iceland	–		–
Austria	–	–	–
Turkey	–	–	
New Zealand	–	–	–
Italy		–	–
Czech Republic	–	–	–
Russian Federation		–	–
Kazakhstan		–	–
Korea		–	–
Flemish Comm. (Belgium)	–	–	–
Finland	–	–	–
Netherlands		–	–
Australia	–	–	–
Alberta (Canada)		–	–
United States			
England (UK)		–	–
Education systems with a positive difference	**0**	**0**	**1**
Education systems with no difference	**20**	**15**	**19**
Education systems with negative difference	**27**	**31**	**27**

1. "Students with special needs" are those for whom a special learning need has been formally identified because they are mentally, physically, or emotionally disadvantaged.

2. Experienced teachers are teachers with more than 5 years of teaching experience.

Countries and economies are ranked in descending order of the percentage of teachers who report a high level of need for professional development in teaching students with special needs.

Source: OECD, TALIS 2018 Database, Table I.5.25.

StatLink http://dx.doi.org/10.1787/888933932912

In addition, novice teachers are more likely than more experienced teachers to attend the following CPD activities: "communicating with people from different cultures or countries" (gap of 1.5 percentage points on average across the OECD); "teaching students with special needs" (gap of 1.6 percentage points); and "teaching in a multicultural or multilingual setting" (gap of 3.6 percentage points) (Table I.5.18).

Socio-demographic differences in professional development needs are also pronounced for CPD training in "teaching students with special needs". On average across OECD countries and economies, there are higher shares of teachers expressing a high need for training in "teaching students with special needs" among female teachers than among male teachers, among teachers under age 30 than among those age 50 or above, and among novice teachers than among more experienced teachers. There are significant differences in the training needs of female teachers on this topic compared to those of male teachers in 27 countries and economies, with Croatia, France and Japan showing a gap of 14 percentage points. The share of younger teachers reporting a high level of need on this topic is significantly higher than the share of older teachers for 32 countries and economies, with Hungary (22 percentage points), Italy (20 percentage points) and Spain (20 percentage points) showing the largest difference in favour of younger teachers. Finally, 28 countries show a significant difference in need for training in this topic by teacher experience, with the proportion of novice teachers exceeding that of more experienced teachers. The gaps are particularly high in Norway (13 percentage points), Iceland (12 percentage points) and New Zealand (11 percentage points) (Figure I.5.10 and Table I.5.25).

In 8 countries and economies, the share of teachers reporting a need for training on "teaching students with special needs" is significantly higher among teachers in schools with a relatively high concentration (over 10%) of students with special needs than among teachers in schools with a lower concentration of special needs students (Table I.5.26). The differences are particularly high in Austria and Japan, with 9 percentage points. However, in Colombia, the share of teachers reporting a need for this training is higher among those in schools with a low concentration of special needs students than among teachers in schools with higher concentrations (12 percentage points). This result could reflect that Colombian teachers teaching in schools with high concentrations of special needs students are being adequately supported, but not enough support is given to those teachers working in schools with low concentrations of special needs students.

Content of continuous professional development and need for it, in trends perspective

Given the rapid pace of education policy reforms (Akiba, 2013[3]; OECD, 2015[24]), some changes over time can be expected in both the participation in certain topics of CPD and the high need for it. TALIS data makes it possible to compare the changes in participation between 2013 and 2018 for 11 of the 14 topics listed in the 2018 cycle (Table I.5.27). In the case of training needs, comparisons are possible for 2008, 2013 and 2018 for 5 of the 14 topics (Table I.5.28).

Between 2013 and 2018, there has been an overall increase in participation in all topics of CPD with available data. Those CPD topics that exhibit the highest number of countries and economies displaying a significant increase are: 1) "student assessment practices" (participation increased in the 28 countries and economies with available data); 2) "teaching students with special needs" (participation increased in the 27 of the countries and economies with available data); 3) "teaching cross-curricular activities" (participation increased in the 27 of the countries and economies with available data) ; and 4) "student behaviour and classroom management (participation increased in the 27 countries and economies with available data) (Table I.5.27). For none of the 14 topics were there more than five countries and economies showing a significant decrease in participation.

Regarding changes in high need for CPD on specific topics, between 2013 and 2018, the topics showing the highest increase in reported need are: 1) "teaching in a multicultural or multilingual setting" (an increase in the 21 countries and economies with available data); and 2) "teaching students with special needs" (an increase in the 20 countries and economies with available data). Training in "ICT skills for teaching" exhibits a complex pattern: although there is a significant increase in the 10 countries and economies with available data, there is also a significant decrease in 8 countries and economies (Table I.5.28).

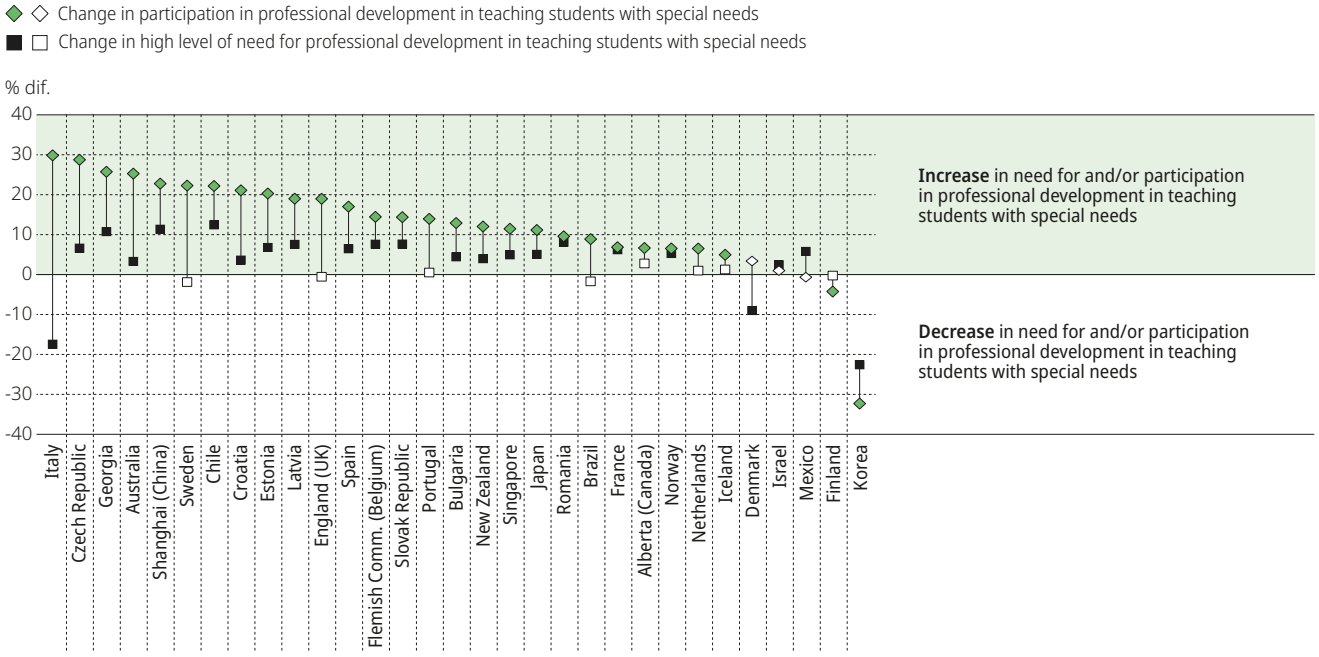
A direct contrast between changes in participation and high need for particular content can shed additional insights on how professional development demands have varied over time. The analysis conducted for the remainder of this section is grounded in the three topics with the highest level of need for both 2013 and 2018: "teaching special needs students"; "teaching in multicultural or multilingual settings"; and "ICT skills for teaching".

Participation in CPD training in "teaching students with special needs" rose between 2013 and 2018 for 27 countries and economies, while high need for CPD in this topic has also increased in 20 of the 32 countries and economies with available data (Figure I.5.11). Italy is one of the countries with the largest increase in participation in CPD in "teaching students with special needs", but the level of high need for it has decreased, possibly suggesting that demand for this type of training has been satisfied. Inversely, there are 18 countries that have also shown a high level of increase in participation in CPD in special needs, but the need for training in this area has actually increased. Finland and Korea are the only countries displaying a significant decrease in participation in training in this topic.

The changes observed between 2013 and 2018 in both participation and high need for professional development in teaching special needs students could be attributed to the implementation of specific national legislation, reforms or initiatives. A reform can be responsible for a rise in teacher participation by providing or expanding access to specific topics of professional development. At the same time, reforms tend to respond to concrete needs of an educational system and, as training is being implemented, the reported needs for access to specialised training can also be high. For example, the Czech Republic, which is among the countries showing the highest increases in both participation and high need for training in this area (Figure I.5.11), introduced legislation in 2016 assuring the legal right of special needs students to access support measures in mainstream schools. Enforcement of this new legislation in the Czech Republic could have translated into an increase in participation due to teachers accessing specialised training in order to provide the support required by the legislation. At the same time, an increase in the enrolment of special needs students in mainstream schools could have boosted the reported needs for training (Shewbridge et al., 2016[74]). Another example is Chile, which, from 2013, has developed and implemented initiatives for the integration of special needs students in schools (*Programas de Integración Escolar*). This could explain the rise in both participation and high need for professional development in teaching special needs students in Chile between 2013 and 2018 (OECD, 2017[75]).

Figure I.5.11 **Change in participation in and need for professional development in teaching students with special needs from 2013 to 2018**

Percentage point differences between 2018 and 2013 in the share of teachers (i) having participated[1] in and (ii) reporting a high level of need for professional development in teaching students with special needs[2]



1. Refers to professional development activities in which teachers participated in the 12 months prior to the survey.
2. "Students with special needs" are those for whom a special learning need has been formally identified because they are mentally, physically, or emotionally disadvantaged.

Notes: Values over zero reflect an increase in participation or need between 2013 and 2018 while values below zero reflect a decrease in participation or need between 2013 and 2018.

Statistically significant values are marked in a darker tone (see Annex B).

Countries and economies are ranked in descending order of the change in the percentage of teachers reporting that teaching students with special needs was included in their professional development activities (TALIS 2018 – TALIS 2013).

Source: OECD, TALIS 2018 Database, Tables I.5.27 and I.5.28.

StatLink http://dx.doi.org/10.1787/888933932931

For some countries and economies, the changes in teachers' participation in and need for training could also be explained by changes in the share of schools with special needs students between 2013 in 2018 (Chapter 3, Table I.3.31). Chile, the Czech Republic, and Italy are among the countries exhibiting the highest increases in teachers teaching in schools with more than 10% of students with special needs, and they are also among the countries displaying the highest increase in participation in training in teaching special needs students (Figure I.5.11). In England (United Kingdom), Iceland and Sweden, the share of teachers in schools with more than 10% of students with special needs has decreased and, although participation in training in this topic has increased, the high

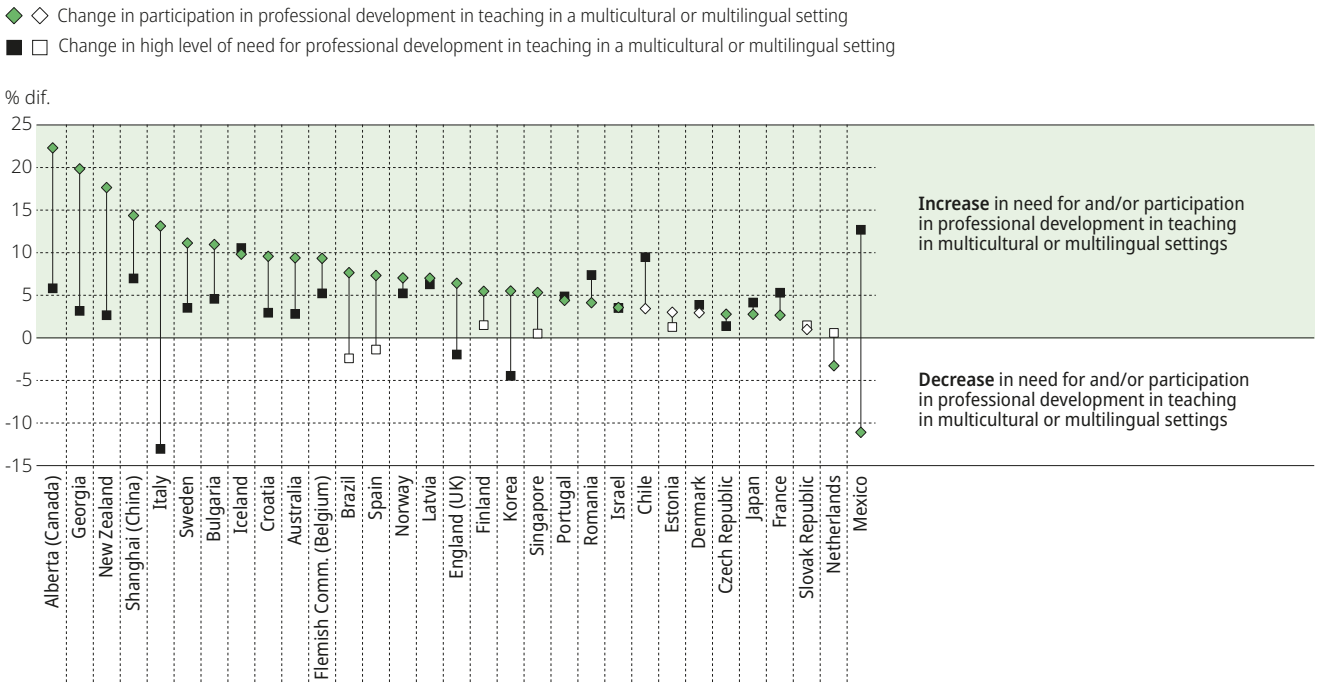
need for it shows no significant changes that may imply that the availability of training has sufficiently satisfied the demand. Korea has also experienced a significant decrease in the share of teachers teaching in schools with more than 10% of students but, unlike the aforementioned countries, it has experienced one of the highest declines in participation (32 percentage points) and, at the same time, exhibits one of the highest declines in high need for this training (23 percentage points) (Table I.5.27 and Table I.5.28).

Regarding participation in CPD in "teaching in a multicultural or multilingual setting", it is also possible to observe an increment in both participation and need (Figure I.5.12) indicating once again that, even though availability has increased, the demand for training is still quite high. Results show that there has been an increase in participation in most countries and economies with available data and an increase in the need for CPD in teaching in multicultural or multilingual settings in 21 of the 32 countries and economies with available data. The countries and economies displaying the highest increase in participation are Alberta (Canada), Georgia, Italy, New Zealand and Shanghai (China) (Table I.5.27). TALIS countries and economies that have experienced a decrease in the need for this type of training are England (United Kingdom), Italy and Korea (Table I.5.28).

For some TALIS countries and economies, the increase in participation and need for training in "teaching in multicultural or multilingual settings" could also be reflecting changes in the proportion of schools enrolling students whose first language is different from the language(s) of instruction (Chapter 3, Table I.3.29). For example, Bulgaria, England (United Kingdom), the Flemish Community (Belgium), Iceland, Portugal and Sweden, which all display an increase in both participation and need (Figure I.5.12), have also, at some point during the last ten years, experienced an increase in the share of teachers teaching in schools with more than 10% of students whose first language is different from the language(s) of instruction. Countries and economies exhibiting an increase in participation in training but not a significant increase in need, such as Brazil, Singapore and Spain, have experienced a significant decrease of teachers teaching in schools with more than 10% of students whose first language is different from the language(s) of instruction.

Figure I.5.12 **Change in participation in and need for professional development in teaching in multicultural or multilingual settings from 2013 to 2018**

Percentage point differences between 2018 and 2013 in the share of teachers (i) having participated[1] in and (ii) reporting a high level of need for professional development in teaching in multicultural or multilingual settings



1. Refers to professional development activities in which teachers participated in the 12 months prior to the survey.

Notes: Values over zero reflect an increase in participation or need between 2013 and 2018 while values below zero reflect a decrease in participation or need between 2013 and 2018.

Statistically significant values are marked in a darker tone (see Annex B).

Countries and economies are ranked in descending order of the change in the percentage of teachers reporting that teaching in multicultural or multilingual settings was included in their professional development activities (TALIS 2018 – TALIS 2013).

Source: OECD, TALIS 2018 Database, Tables I.5.27 and I.5.28.

StatLink http://dx.doi.org/10.1787/888933932950

Mexico presents an interesting situation, since it is the country displaying one of the highest decreases in the share of teachers teaching in schools with more than 10% of students whose first language is different from the language(s) of instruction between 2008 and 2018 (-12 percentage points) (Chapter 3, Table I.3.29). However, Mexico has experienced the highest increase in need (+13 percentage points) and the highest decrease in participation (-11 percentage points) (Table I.5.27 and Table I.5.28). A decrease in the share of teachers working in schools with more than 10% of students whose first language is different from the language(s) of instruction could be signalling a desegregation effect, as students coming from different multicultural or multilingual backgrounds are being more evenly allocated across schools. As of 2014, only 10% of the Indigenous population between 15 and 17 years old were enrolled in a school and, in recent years, Mexico has made a series of efforts to increase the levels of inclusion of these young people (OECD, 2018[76]). As a result, schools that had traditionally not received students from diverse backgrounds could now be confronting a new student population. Therefore, teachers in these schools may be more in need of training in new areas, such as teaching students with a multicultural or multilingual background (see Chapter 3 for further interpretations of the changes in school composition, school segregation and countries' demographic changes). Alberta (Canada) and Sweden exhibit interesting examples of professional development mechanisms to tackle teaching in multicultural and multilingual settings (Box I.5.7).

Box I.5.7 **Building teacher capacity for diverse educational environments in Alberta (Canada) and Sweden**

Alberta (Canada)

For its educators, the government of Alberta prioritises awareness, understanding and the need to support students from diverse ethnic and cultural backgrounds. This issue is highlighted in the preamble to the Ministerial Order on Student Learning and aligned to professional development tools for teachers. Alberta Education offers a series of resources to in-service teachers so they can learn about the Indigenous communities of Canada (First Nation, Métis and Inuit) as well as understand contemporary issues affecting students from these communities. It further supports teachers by providing a curriculum development tool, Guiding Voices, for the inclusion of Indigenous perspectives throughout the school curriculum. Thus, teachers are guided to incorporate the history and contemporary realities of Indigenous peoples in programmes of study, assessments, and teaching and learning resources. For example, the toolkit includes examples of narratives and images of First Nation, Métis, Inuit and other Indigenous groups that could be included while teaching certain subjects in the classroom. It also provides guidelines on how teachers, through their classroom practices, can prevent social exclusion among students. This support mechanism stands out, as it focuses on building a strong foundation of knowledge and awareness among teachers, followed by concrete teaching strategies and resources for reference, to encourage informed implementation of the recommended practices.

Sweden

In Sweden, the capacity of teachers to teach in diverse environments is developed as a continuum from pre-service training to in-service professional development opportunities. Teachers have opportunities to practice and learn about strategies to manage diversity once they start teaching. The National Agency in Sweden offers courses in the area of newly arrived and multilingual children, with the objective of supporting teachers in vocational guidance for newly arrived students, subject-specific instruction and acquisition of Swedish as a second language. These content areas are important features in the professional development of Swedish teachers to teach in multicultural and multilingual environments.

Sources: Alberta Education (2015[77]), *Guiding Voices*, www.learnalberta.ca/content/fnmigv/index.html (accessed 1 March 2019); Cerna, L., et al. (2019[78]), "Strength through diversity's Spotlight Report for Sweden", *OECD Education Working Papers*, No. 194, https://doi.org/10.1787/059ce467-en.

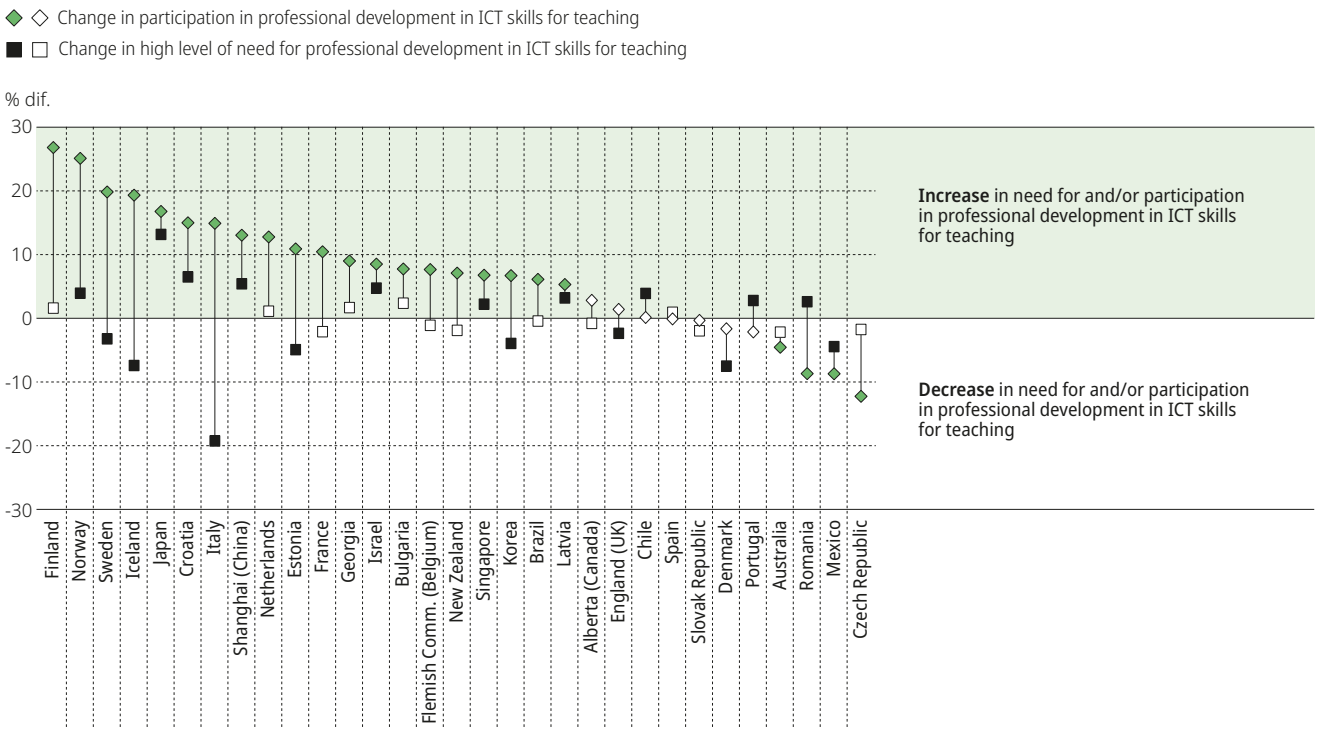
The relation between changes in participation in and need for training in ICT skills presents a less clear pattern (Figure I.5.13). It is possible to observe a significant increase in participation in 20 countries and economies, while 8 out of the 32 countries and economies with available data report a significant decrease in high need for this training, and 10 out of these 32 countries report a significant increase in high need for this training. Finland (+27 percentage points) and Norway (+25 percentage points) display the highest increases in participation (Table I.5.27). Estonia, Iceland, Italy, Korea and Sweden display an increase in participation along with a decrease in high need. Australia, the Czech Republic, Romania and Mexico show a decrease in participation in ICT training, with Mexico also displaying a significant decrease in need.

Nordic countries display an interesting situation when changes in participation in and need for ICT training are compared with changes in the share of teachers frequently or always letting students use ICT for projects or class work (Chapter 2, Table I.2.4).

Between 2013 and 2018, Finland, Iceland and Sweden are among the countries that display the highest increase in the share of teachers using digital technologies to support student learning. At the same time, these three countries also display the highest increase in the share of teachers participating in ICT training (Figure I.5.13). It could be argued that the training in Iceland and Sweden has been effective since, along with a higher increase of teachers using technology in the classroom, there has also been a significant decrease in the need for training in this area.

Figure I.5.13 **Change in participation in and need for professional development in ICT skills for teaching from 2013 to 2018**

Percentage point differences between 2018 and 2013 in the share of teachers (i) having participated[1] in and (ii) reporting a high level of need for professional development in ICT[2] skills for teaching



1. Refers to professional development activities in which teachers participated in the 12 months prior to the survey.
2. ICT: Information and communication technology.

Notes: Values over zero reflect an increase in participation or need between 2013 and 2018 while values below zero reflect a decrease in participation or need between 2013 and 2018.

Statistically significant values are marked in a darker tone (see Annex B).

Countries and economies are ranked in descending order of the change in the percentage of teachers reporting that ICT skills for teaching was included in their professional development activities (TALIS 2018 – TALIS 2013).

Source: OECD, TALIS 2018 Database, Tables I.5.27 and I.5.28.

StatLink http://dx.doi.org/10.1787/888933932969

The introduction of policy reforms promoting the use of ICT in the classroom could explain the increase in both participation in and need for this training in a few countries. For example, Finland's curricular reform of 2016 put emphasis on providing educators with digital resources to support their teaching. For Estonia, the Lifelong Learning Strategy for 2020 has highlighted the need to apply modern digital technologies in the learning process (OECD, 2015[24]). The implementation of these curricular initiatives in ICT could explain the increased participation in this type of training in Finland and Estonia.

Content of continuous professional development, self-efficacy and effective classroom practices

In addition to describing the content of CPD attended by teachers, it is relevant to assess whether the related training is associated with implementation of pedagogical practices. As discussed earlier in this chapter, the goal of CPD activities is to provide training opportunities for teachers with the expectation that the training will have an impact on their teaching practices and influence student achievement. The positive association between CPD training reported as impactful by teachers and their levels of job satisfaction and self-efficacy was discussed earlier in this chapter. This section seeks to further explore these relationships

by examining the association of teachers' participation in specific CPD content areas with teachers' levels of self-efficacy and practices in these areas. In particular, regression models were conducted to examine the relationships between: 1) participation in CPD training on pedagogical practices and the implementation of effective practices in the classroom; 2) participation in CPD training on classroom management and teachers' level of self-efficacy in classroom management; and 3) participation in CPD training in teaching in multicultural/multilingual settings and teachers' levels of self-efficacy to teach in multicultural environments.

The first relationship examined is the association between participation in at least one of the three CPD training activities focusing on pedagogical practices ("pedagogical competencies in teaching my subject", "approaches to individualised learning" and "teaching cross-curricular skills") and the implementation of effective practices in the classroom (based on the teaching practices scale encompassing items of effective practices in clarity of instruction, cognitive activation and classroom management). After controlling for teacher characteristics (such as gender and teaching experience) in almost all TALIS countries and economies, teachers who have participated in at least one of the training activities in pedagogical practices are more likely to have higher levels of implementation of effective practices than teachers who did not participate in this type of training. The relationship is especially strong in Colombia, Kazakhstan, Korea, South Africa and the Russian Federation (Table I.5.29).

The second relationship consists of the association between teachers' participation in CPD training in "student behaviour and classroom management" and the scale of teachers' self-efficacy in classroom management. After controlling by teacher characteristics, on average across the OECD, teachers who have participated in CPD focusing on classroom management are more likely to report higher levels of self-efficacy in classroom management than teachers who have not participated in this type of training. This holds true for teachers in three out of five countries and economies that participate in TALIS. The association between training in classroom management and self-efficacy in this area is especially strong in Georgia, Israel, Kazakhstan, Shanghai (China), South Africa and the United Arab Emirates (Table I.5.30).

The last relationship explored is the association between participation in at least one of the two training activities focusing on multiculturalism ("teaching in a multicultural or multilingual setting" and "communicating with people from different cultures or countries") and the scale of teachers' self-efficacy in multicultural environments. After controlling for teacher characteristics in 41 countries, teachers who have participated in at least one of the training activities on multicultural teaching report higher levels of self-efficacy in this area than teachers who did not participate in either of these two training activities. The relationship is particularly strong in Korea and Shanghai (China), while the only countries/economies where this association is not significant are Alberta (Canada), Chile, Iceland, the Netherlands, Saudi Arabia and the Slovak Republic (Table I.5.31).

These findings suggest that, for teachers in most countries and economies, participation in professional development is associated with implementation of effective practices and building confidence to do their work. Although caution must be exercised in drawing a causal link, these results mirror previous findings on the relation between training, self-efficacy and teaching practices (Barrera-Pedemonte, 2016[36]; Fischer et al., 2018[11]). The relationship between training and self-efficacy should not be neglected, since affecting the beliefs of teachers regarding their practices is a first step towards improving their classroom instruction (Guskey and Yoon, 2009[61]).

SUPPORTING CONTINUOUS PROFESSIONAL DEVELOPMENT FOR TEACHERS AND SCHOOL LEADERS

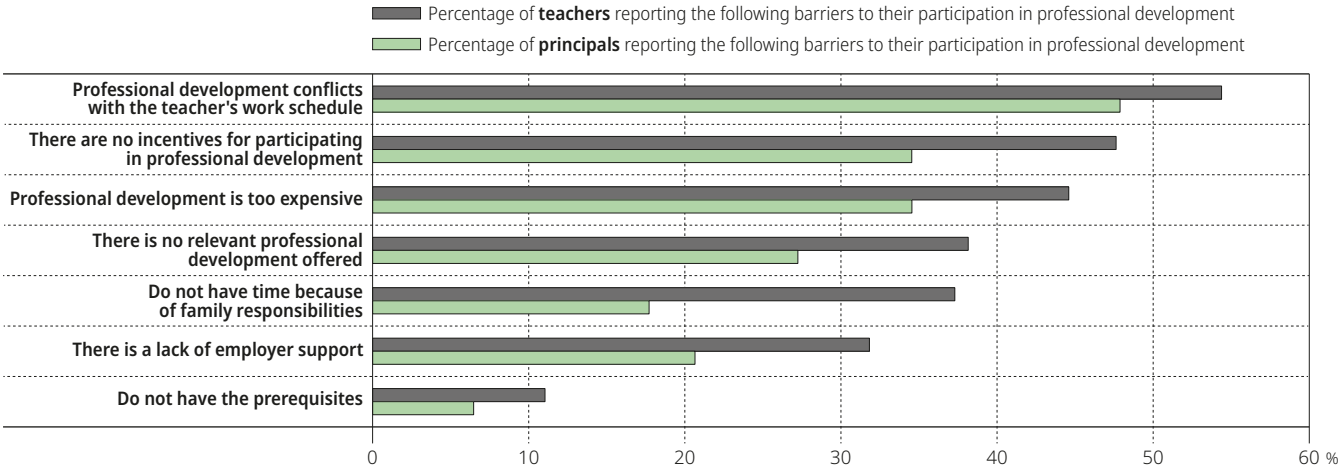
A big part of the success of CPD activities relies on design and implementation (Darling-Hammond, Hyler and Gardner, 2017[15]). Content should be linked with the curriculum, take teachers' experience into account and be aligned with their needs (Opfer and Pedder, 2011[50]). But no professional development programme can be successful if teachers and school leaders do not participate in it. Thus, policy makers must take into consideration the possible barriers to teachers' participation in these training opportunities and identify support mechanisms to facilitate their participation. Indeed, participation in CPD programmes should not be viewed as a responsibility solely borne by teachers and principals. High-achieving education systems provide guidance and support to teachers and principals to help them select and participate in the most pertinent training for them (Darling-Hammond et al., 2017[79]; Jensen et al., 2016[20]). This section describes the main barriers to accessing training, as reported by teachers and principals. It then examines the level of support received by teachers and how that relates to actual participation in training programmes.

Barriers to participation in continuous professional development

TALIS presented teachers and principals with a list of seven possible impediments to participation in CPD training and asked to what extent they agreed that these issues represented a barrier to participation at the time of the survey ("strongly disagree"; "disagree"; "agree"; or "strongly agree"). On average across the OECD, most teachers (54%) and principals (48%) "agree" or "strongly agree" that the issue of "conflicts with the teacher's/principal's work schedule" was a barrier (Figure I.5.14). The percentage of teachers reporting a "conflict with the work schedule" varies considerably across TALIS countries and economies, from particularly high values in Korea (88%) and Japan (87%) to a very low percentage in Georgia (20%) (Table I.5.36). For principals, Japan is again at the top of the scale, with 82% of principals reporting schedule conflicts as a barrier, while in Croatia only 7% of principals report this barrier (Table I.5.40).

Figure I.5.14 **Types of barriers to teachers' and principals' participation in professional development**

Results based on responses of lower secondary teachers and principals (OECD average)[1, 2]



1. OECD average covers 31 countries for teachers and 30 countries for principals (see Annex B).

2. Includes teachers and principals who "agree" or "strongly agree" that the following elements present barriers to their participation in professional development.

Values are ranked in descending order of the percentage of teachers reporting the following barriers to their participation in professional development.

Source: OECD, TALIS 2018 Database, Tables I.5.36 and I.5.40.

StatLink http://dx.doi.org/10.1787/888933932988

These results should not come as a surprise, since time allocated for training has been identified as one of the major challenges for implementation of effective CPD (Scribner, 1999[33]; Sparks, 2002[21]). Systems should strive to allocate some hours for teachers and principals to participate in training within their regular work schedules, whether through formal channels (such as participation in courses or seminars) or informal channels (such as collaborating with colleagues) (Darling-Hammond, Hyler and Gardner, 2017[15]; Jensen et al., 2016[20]).

The second-highest reported barrier for both teachers (48%) and principals (35%) is that "there are no incentives for participating in professional development" (Figure I.5.14). The cross-country variation regarding reporting of "lack of incentives" as a barrier to participation in CPD activities is high, with 85% of teachers in Portugal and Saudi Arabia reporting this issue and only 15% of teachers in Estonia and Kazakhstan doing so (Table I.5.36). In the case of principals, 84% of principals in Saudi Arabia report "lack of incentives" as a barrier, while only 4% of principals do so in Singapore (Table I.5.40).

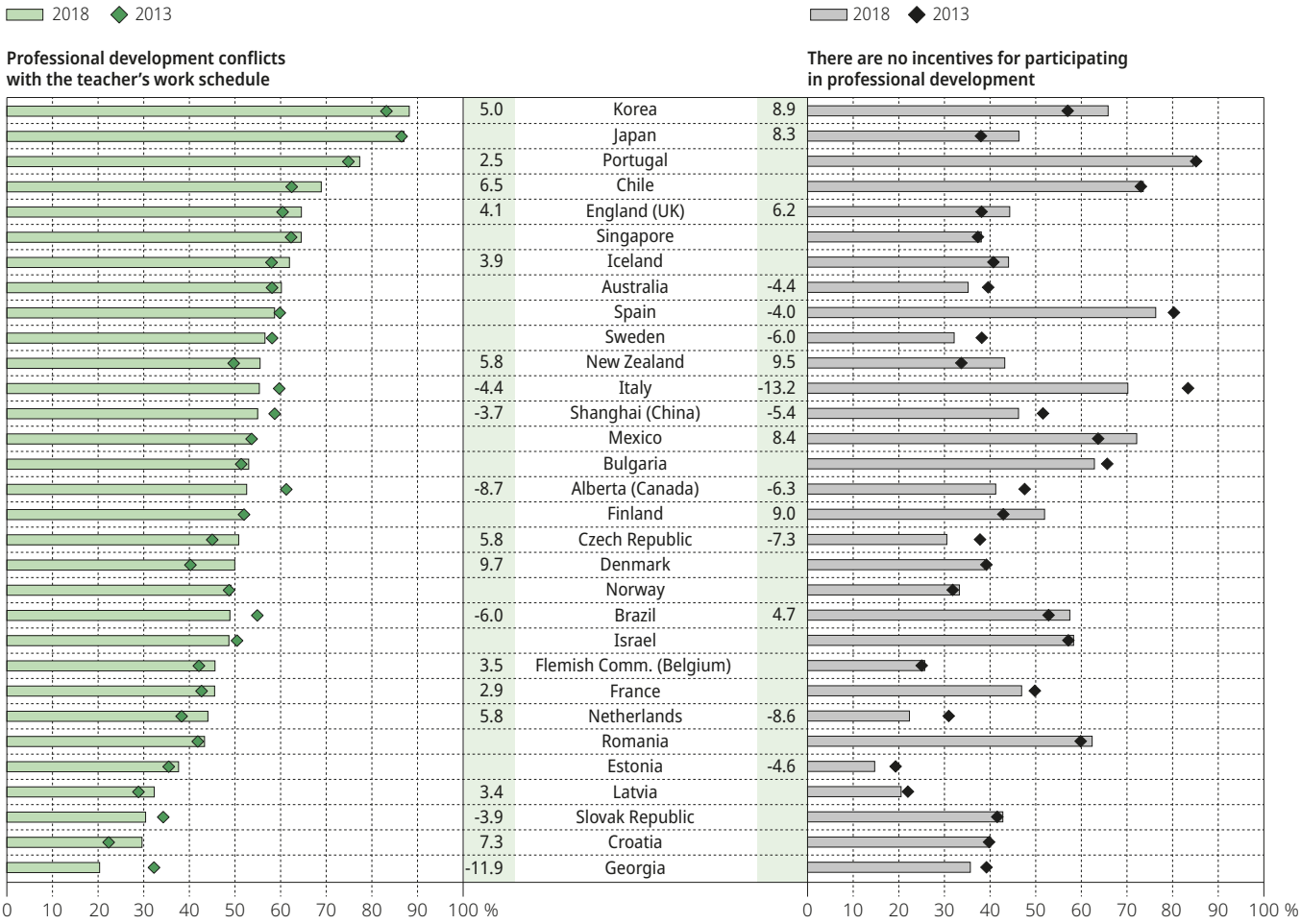
The issue of incentives for participating in CPD is linked to the question of what motivates teachers and principals to engage in further training (Richter et al., 2011[80]). An important aspect of participation in CPD training is career advancement since, more often than not, participation in CPD translates into an accumulation of credits that count for career promotion (OECD, 2013[38]). However, CPD training should not be understood solely as a mechanism for career advancement; it should also be considered a means for learning and improvement. Many teachers and principals are attracted to CPD because it offers the opportunity to tackle situations or issues that they face in their daily lives (Scribner, 1999[33]). One of the great incentives of CPD programmes is developing an offer in which the content is aligned with the needs of teachers and principals (Opfer and Pedder, 2011[50]).

TALIS makes it possible to display changes in the barriers to CPD training for teachers between 2013 and 2018 (Figure I.5.15). For teachers, in 14 countries and economies with available data, there has been a significant increase in reporting of "conflicts with the teacher's work schedule" as a barrier to participation. The largest increases are observed in Denmark (+10 percentage points) and Croatia (+7 percentage points). But 6 of the 32 countries and economies with available data show a significant decrease in this area: Georgia (12 percentage points) and Alberta (Canada) (-9 percentage points) display the largest decreases between 2013 and 2018 (Table I.5.39).

Regarding the changes over time on "lack of incentives" being a barrier to participation in CPD activities, it is possible to see that 9 of the 32 countries with available data show a significant decrease in teachers signalling lack of incentives as a barrier. The decrease is particularly high in Italy (-13 percentage points), the Netherlands (-9 percentage points) and the Czech Republic (-7 percentage points). However, 6 of the 32 countries with available data show a significant increase in the share of teachers reporting "lack of incentives" as a barrier. Countries with the highest increases are: New Zealand (+10 percentage points), Finland (+9 percentage points), Korea (+9 percentage points) and Mexico (+8 percentage points).

Figure I.5.15 **Change in barriers to teachers' participation in professional development from 2013 to 2018**

Percentage of lower secondary teachers reporting the following barriers to their participation in professional development[1]



1. Includes teachers who agree or strongly agree that the following elements present barriers to their participation in professional development.

Notes: Only countries and economies with available data for 2013 and 2018 are shown.

Statistically significant change between 2013 and 2018 (TALIS 2018 – TALIS 2013) are found next to the category and the country/economy name (see Annex B).

Countries and economies are ranked in descending order of the percentage of teachers reporting professional development conflicts with the teacher's work schedule as a barrier to their participation in professional development in 2018.

Source: OECD, TALIS 2018 Database, Table I.5.39.

StatLink http://dx.doi.org/10.1787/888933933007

Efforts to reduce barriers for teachers in accessing professional development in countries like Georgia (-12 percentage points decrease in the share of teachers reporting "conflict of schedules as a barrier) and Italy (-4.4 percentage points decrease in the share of teachers reporting "conflict of schedules as a barrier") (Table I.5.39), could be explained by concrete initiatives that have sought to further support the engagement of teachers with in-service training (Box I.5.8).

For principals, there are only a few significant changes between 2013 and 2018 in the share of those reporting barriers to CPD training (Table I.5.43). In 5 of the 32 countries and economies with available data, there is a significant increase in the share of principals signalling schedule conflicts as a barrier to CPD participation: the Czech Republic (+22 percentage points), Finland (+17 percentage points), Norway (+17 percentage points), the Flemish Community (Belgium) (+15 percentage points) and the Slovak Republic (+15 percentage points). Furthermore, in 5 of the 33 countries and economies with available data, there is a significant increase in the share of principals reporting lack of incentives as an obstacle to participation: Korea (+15 percentage points), Japan (+14 percentage points), Georgia (+9 percentage points), the Flemish Community (Belgium) (+8 percentage points) and Shanghai (China) (+8 percentage points).

Box I.5.8 **Aligning incentives and opportunities with teachers' professional development needs in Georgia and Italy**

Georgia

The Teacher Professional Development Scheme in Georgia is a key component of the overarching Teacher Recruitment, Evaluation, Professional Development, and Career Advancement Scheme (2015). The Scheme offers Georgian teachers career advancement opportunities through differentiation of teacher status: practitioner, senior teacher, leading teacher and mentor. All in-service and new teachers are expected to pass a certifying examination to gain the status of a senior teacher. Teachers are required to participate in a number of mandatory and optional professional development activities to earn credits and, thus, maintain or enhance their status. A main constituent of the scheme, introduced in 2016, is an increased number of optional activities replacing mandatory activities for teachers. This allows more flexibility for teachers to tailor their professional development based on their needs and interests. In addition, teachers have a financial incentive to improve their status through participation in professional development activities, as they receive higher salaries based on their status advancement. The programme also stands out by offering teachers the opportunity for self-reflection through self-evaluation, including design of an individual work plan by the teacher, self-assessment of performance and identification of professional development needs.

Italy

The Italian government is focusing on school-level autonomy as a key lever for educational improvement. Reflecting this orientation, in-service professional development provisions at the school level and chosen by teachers are a key feature of the Good School reform (*La Buona Scuola*), introduced in 2015. The reform has made in-service training mandatory, permanent and structural. These provisions were designed to respond to the low participation of Italian teachers in professional development activities. First, the Italian government made a large financial investment (EUR 1.5 billion) exclusively for training in areas of system skills (school autonomy, evaluation and innovative teaching) and 21st century skills (such as digital skills, schoolwork schemes) and skills for inclusive education. Second, the programme stands out because of its tailored approach and scope of choice for teachers to participate in professional development according to their needs. This is done by providing teachers a sum of EUR 500 per year on their "Teachers Card" to participate in training activities, purchase resources (books, conference tickets, etc.) and offering matching processes to align training offers with training demands using a digital platform.

Sources: Government of Georgia (2015[81]), [Decree of the Government of Georgia no. 68: Initiating teacher activities, approving professional development and career progression scheme, Chapter V], https://matsne.gov.ge/document/view/2739007?publication=0 (accessed 8 April 2019); OECD (2017[82]), *Education Policy Outlook: Italy*, www.oecd.org/education/Education-Policy-Outlook-Country-Profile-Italy.pdf.

The increase in reports signalling "lack of incentives" and "conflicts with work schedule" as barriers across years could be partially explained by the budget cuts incurred by many countries (OECD, 2015[24]). A lack of financial resources could translate into a lack of human resources, augmenting the workload of current staff and presenting a barrier to professional development. Also, the lack of funds limits the possibility of establishing concrete rewards for teachers and principals to engage in professional development activities.

Box I.5.9 **Barriers to teachers' participation in professional development activities from primary to upper secondary education**

Even though participation in CPD activities is generally high, about half of teachers at the lower secondary level (on average in the OECD) agree or strongly agree that the training programme "conflicts with the teacher's work schedule" (54%), "there are no incentives for participating in professional development" (48%) or that training programmes are "too expensive" (45%) (Table I.5.36). By contrast, primary teachers tend to have fewer barriers to participation in CPD activities than their lower secondary peers. In particular, depending on the category, in 7 to 8 out of 13 countries and economies with available data for ISCED 1 and 2, primary teachers are less likely to agree or strongly agree that "there are no incentives for participating in professional development" or that "professional development conflicts with the teacher's work schedule" (Table I.5.37). The largest differences for work schedule conflicts are found in CABA (Argentina) (-11 percentage points lower for primary teachers) and England (-17 percentage points lower for primary teachers). The opposite pattern is observed in France, where the percentage of teachers reporting work schedule conflicts as a barrier to training decreases from 61% at the primary level to 46% at the lower secondary level, a difference of 15 percentage points. In fact, work schedule conflicts,

lack of employers' support and the feeling that there are no incentives for participating in professional development are highly correlated across countries and economies (Table I.5.36). In this sense, it is not surprising that, in France, concurrent to the decrease in the difference between primary and lower secondary teachers in work schedule conflicts as a barrier, there have also been decreases in the difference between the two levels of education on "lack of employers' support" (-19 percentage points) and lack of "incentives for participating in professional development" (-5 percentage points).

At the upper secondary level, depending on the barrier, the changes go in different directions, and no unique tendency arises. However, a remarkable increase in the percentage of teachers reporting "conflicts with the teacher's working schedule" as a barrier to training is found in 5 out of 11 countries and economies with available data for ISCED 2 and 3, with the largest difference in Alberta (Canada) and Denmark (both 9 percentage points higher for upper secondary teachers) (Table I.5.38).

Available support for teachers' participation in continuous professional development

Once the barriers to CPD have been identified, it is crucial to provide support to teachers to overcome them. These support efforts encompass every part of education systems, from central administration to management staff in local schools (Jensen et al., 2016[20]). Results from TALIS 2013 have shown the importance of monetary support for participation in professional development (OECD, 2014[14]), but relevant support can also be provided through allocation of time for training or guidance on further training (Darling-Hammond, Hyler and Gardner, 2017[15]).

TALIS countries and economies had the option of choosing a question on mechanisms to support participation in CPD. Of the participating countries and economies, 43 have available data. Teachers were asked to select the support mechanisms they receive for their CPD training from a list of eight options. On average, among the group of TALIS participants that included this question, the options more frequently highlighted by teachers were: "release from teaching duties for activities during regular working hours" (48% of teachers); "material needed for activities" (38%); and "reimbursement or payment of costs (34%). The least-mentioned option was "increase of salary" (10% of teachers) (Table I.5.44).

A summary indicator was developed to indicate if the teacher listed at least one of the eight possible options for support. Overall, across these 43 TALIS participants, more than 75% of teachers report receiving at least one type of support to participate in professional development activities during the months preceding the survey (Table I.5.45). Nine out of ten teachers report receiving some type of support in the Czech Republic (93%), Estonia (93%), Latvia (93%), Viet Nam (91%) and Australia (91%). Countries with a comparatively lower share of teachers reporting any form of support are Spain (59%), Italy (54%), Mexico (47%) and Portugal (44%).

Furthermore, for 13 countries, teachers from privately managed schools report more frequently receiving some type of support to participate in CPD training than teachers in publically managed schools (Table I.5.45). The gap is particularly pronounced in Mexico (+26 percentage points in privately managed schools), Turkey (+17 percentage points), Spain (+12 percentage points) and Norway (+11 percentage points). For 13 countries and economies, the share of teachers in rural schools receiving at least one type of support is significantly higher than that of teachers in city schools. The gap is particularly pronounced in Brazil (+12 percentage points in favour of rural school teachers), Alberta (Canada) (+11 percentage points), Spain (+11 percentage points), Croatia (+11 percentage points) and New Zealand (+10 percentage points).

This section started with the premise that support is important for teachers' participation in CPD. Figure I.5.16 explores this association by looking at the country-level association between participation in a number of different CPD activities and the support received for this participation. Results show a positive correlation between support received by teachers and overall participation in CPD activities (the linear correlation coefficient r is r=.59 among OECD countries and r=.50 among the 43 TALIS countries). Percentage levels above the OECD average of both participation and support are observed for 12 countries. Inversely, percentage levels significantly below the OECD average for both support and participation are observed for 7 countries.

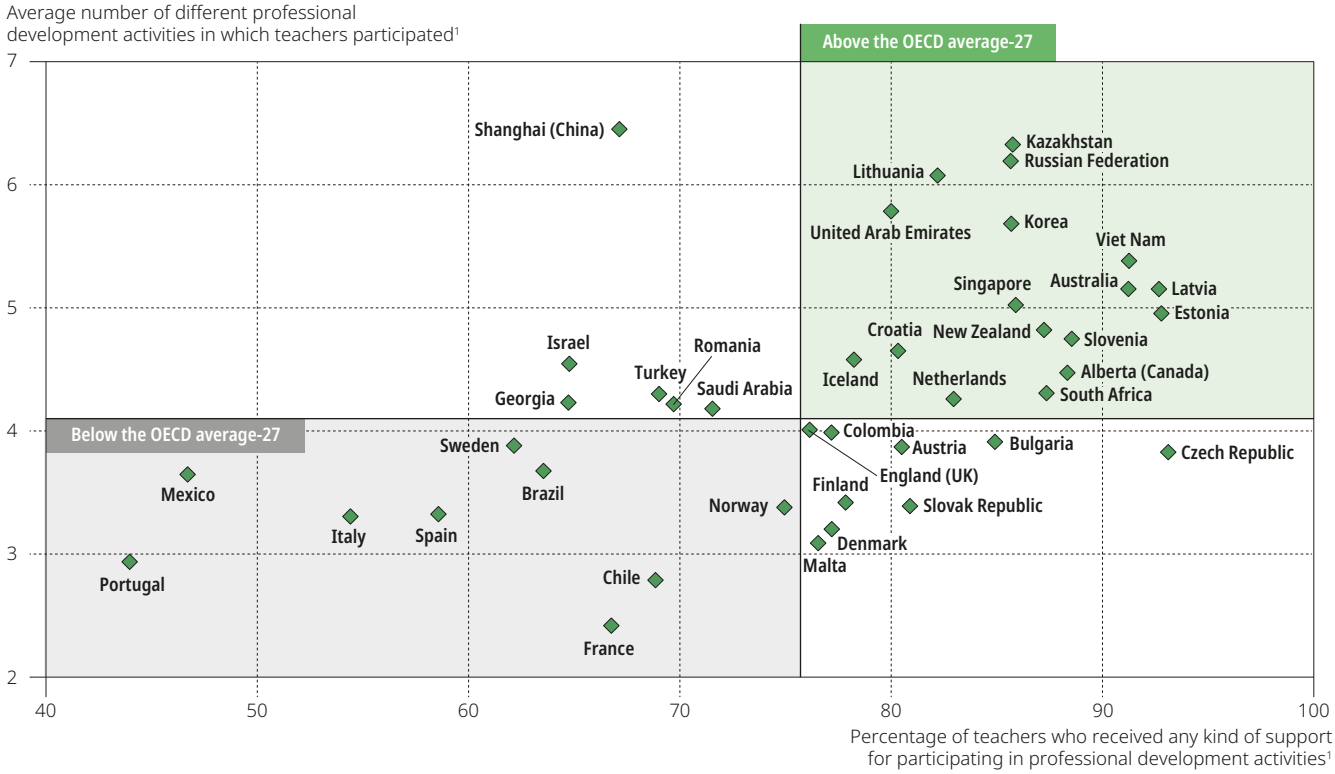
Countries in the upper-left quadrant exhibit high levels of participation despite having comparatively low levels of support, as is the case in Georgia, Israel, Romania, Saudi Arabia, Shanghai (China) and Turkey. Participation in CPD within those systems might be mandatory, or they could have strong incentives motivating teachers to engage in CPD. Given the proportion of teachers stating that they are receiving support for their training, countries and economies in the lower-right quadrant of the figure (such as Colombia, Finland, Denmark) should have higher levels of participation in CPD activities. It is possible that factors other than support, such as motivation for further training or remaining barriers, may be impeding higher levels of participation.

The eight types of support can be grouped into two distinct groups: monetary support and nonmonetary support[10]. Further analyses at the teacher level allow for a more nuanced understanding of how these different types of support relate to participation in different types of professional development. TALIS results showed that, in all 43 countries and economies with available data,

after controlling for teachers' characteristics, teachers who report having received at least one type of non-monetary support tend to participate in more professional development activities (Table I.5.46). Likewise, for 40 countries and economies, teachers who report receiving at least one type of monetary support also tend to participate in more professional development activities (Table I.5.16). The evidence shows the importance of both types of support in promoting the participation of teachers in CPD activities. Indeed, the results suggest that teachers benefit from monetary and non-monetary support. As such, systems should not only be mindful of monetary incentives to increase participation, such as increased salary for participation, but also of non-monetary factors, such as providing flexible schedules for participation or providing the materials necessary for the activities.

Figure I.5.16 **Participation in professional development and level of support received**

Results based on responses of lower secondary teachers



1. Refers to professional development activities in which teachers participated in the 12 months prior to the survey.

Notes: Only countries and economies with available data for the average number of different professional development activities in which teachers participated and for the percentage of teachers who received any kind of support for participating in professional development activities are shown.

The OECD average-27 includes all TALIS 2018 OECD countries, with the exception of Belgium, Hungary, Japan and the United States.

Source: OECD, TALIS 2018 Database, Tables I.5.7 and I.5.45.

StatLink http://dx.doi.org/10.1787/888933933026

Notes

1. Professional development, understood in a broad sense, encompasses all training opportunities, from initial education to in-service training. For analytical purposes, TALIS has divided the analysis of these training opportunities across different chapters. Chapter 4 focuses on pre-service initial training activities and training opportunities (induction and mentoring) for those who are new to the profession or the school. Chapter 5 focuses on recent (defined as having taken place in the 12 months prior to the survey) in-service training activities involving teachers and principals.
2. For a full description of the United Nations Strategic Development Goals and their link with the TALIS study, please see Box A in What is TALIS?.
3. The OECD average corresponds to the arithmetic mean of the estimates of the OECD countries and economies that participate in TALIS, with adjudicated data.
4. Participation in a network of teachers allows not only for dissemination of knowledge and support of concrete areas of teachers' work, but also for expanded possibilities of pedagogical innovation – see, for example, the Mathematics Teachers' Network (https://completemaths.com/events/mtn) and the AMICO Robot Network (OECD, 2018, p. 5[83]).
5. The high participation of principals in professional development could be somewhat explained by the lack of initial training they receive in the specific tasks of their role. Only 53% of school leaders have completed a programme or course in school administration or principal training before taking up their position as principal, with the same share having completed an instructional leadership training programme or course. For more information, see Chapter 4.
6. These results also reflect findings from Chapter 3 that show that the proportion of teachers reporting high levels of self-efficacy drops to 59% when it comes to adapting their teaching to the cultural diversity of students, i.e. much lower than for aspects related to promoting positive relationships and interactions between students from different backgrounds (Figure I.3.11, Table I.3.38).
7. On average across the OECD, 31% of teachers work in schools with at least 10% of students with special needs, 30% in schools with at least 1% of refugee students, 21% in schools with at least 10% of students whose first language is different from the language(s) of instruction, 20% in schools with at least 30% of socio-economically disadvantaged students and 17% in schools with at least 10% of students with a migrant background. For more information, see Chapter 3.
8. It is also interesting to note that more than half of the teachers report that "student behaviour and classroom management", "teaching cross-curricular skills" and "use of ICT for teaching" were included in teacher formal initial education and training. It may signal that there is constant demand to further develop these areas, regardless of the previous training received by teachers. For more information, see Chapter 4.
9. The results mirror the findings of Chapter 2, where it was shown that 78% of novice teachers feel that they can control disruptive behaviour in their classroom, while 87% of experienced teachers report that they can do so. In accordance with previous research, this supports the concept that experience helps teachers to develop skills and routines to manage their classroom better and to try out various strategies of teaching and assessing students.
10. Monetary support refers to teachers who report receiving at least one of the following: "reimbursement or payment of costs", "monetary supplements for activities outside of the working hours", "increased salary". Non-monetary support refers to teachers reporting receiving at least one of the following: "release from teaching duties for activities during regular working hours", "non-monetary support for activities outside working hours", "material needed for the activities", "non-monetary rewards", "non-monetary professional benefits".

References

Akiba, M. (ed.) (2013), *Teacher Reforms around the World: Implementations and Outcomes*, Emerald Publishing Limited, Bingley. [3]

Alberta Education (2015), *Guiding Voices*, www.learnalberta.ca/content/fnmigv/index.html (accessed on 1 March 2019). [77]

Andersen, L., E. Heinesen and **L. Pedersen** (2014), "How does public service motivation among teachers affect student performance in schools?", *Journal of Public Administration Research and Theory*, Vol. 24/3, pp. 651-671, http://dx.doi.org/10.1093/jopart/mut082. [42]

Avalos, B. (2011), "Teacher professional development in Teaching and Teacher Education over ten years", *Teaching and Teacher Education*, Vol. 27/1, pp. 10-20, http://dx.doi.org/10.1016/j.tate.2010.08.007. [44]

Barrera-Pedemonte, F. (2016), "High-Quality Teacher Professional Development and Classroom Teaching Practices: Evidence from Talis 2013", *OECD Education Working Papers*, No. 141, OECD Publishing, Paris, https://dx.doi.org/10.1787/5jlpszw26rvd-en. [36]

Borko, H. (2004), "Professional development and teacher learning: Mapping the terrain", *Educational Researcher*, Vol. 33/8, pp. 3-15, http://dx.doi.org/10.3102/0013189X033008003. [8]

Bruns, B., L. Costa and **N. Cunha** (2018), "Through the looking glass: Can classroom observation and coaching improve teacher performance in Brazil?", *Economics of Education Review*, Vol. 64, pp. 214-250, http://dx.doi.org/10.1016/j.econedurev.2018.03.003. [52]

Cerna, L. et al. (2019), "Strength through diversity's Spotlight Report for Sweden", *OECD Education Working Papers*, No. 194, OECD Publishing, Paris, https://dx.doi.org/10.1787/059ce467-en. [78]

Chen, J. and **J. McCray** (2012), "A conceptual framework for teacher professional development: The whole teacher approach", *NHSA Dialog*, Vol. 15/1, pp. 8-23, http://dx.doi.org/10.1080/15240754.2011.636491. [47]

Choy, S. et al. (2006), *Teacher Professional Development in 1999-2000: What Teachers, Principals, and District Staff Report*, National Center for Education Statistics, Washington, DC, https://nces.ed.gov/pubs2006/2006305.pdf. [37]

Cilliers, J. et al. (2019), "How to improve teaching practice? An experimental comparison of centralized training and in-classroom coaching", *The Journal of Human Resources*, https://doi.org/10.3368/jhr.55.3.0618-9538r1. [53]

Clarke, D. and **H. Hollingsworth** (2002), "Elaborating a model of teacher professional growth", *Teaching and Teacher Education*, Vol. 18/8, pp. 947-967, https://doi.org/10.1016/S0742-051X(02)00053-7. [48]

Cooc, N. (2018), "Who Needs Special Education Professional Development?: International Trends from TALIS 2013", *OECD Education Working Papers*, No. 181, OECD Publishing, Paris, https://dx.doi.org/10.1787/042c26c4-en. [71]

Cordingley, P. et al. (2003), *The Impact of Collaborative CPD on Classroom Teaching and Learning: How Does Collaborative Continuing Professional Development (CPD) for Teachers of the 5-16 Age Range Affect Teaching and Learning?*, EPPI-Centre, Social Science Research Unit, Institute of Education, University of London, London, http://eppi.ioe.ac.uk/cms/Portals/0/PDF%20reviews%20and%20summaries/CPD_rv1.pdf. [62]

Darling-Hammond, L. (2017), "Teacher education around the world: What can we learn from international practice?", *European Journal of Teacher Education*, Vol. 40/3, pp. 291-309, http://dx.doi.org/10.1080/02619768.2017.1315399. [26]

Darling-Hammond, L. et al. (2017), *Empowered Educators: How High-Performing Systems Shape Teaching Quality Around the World*, Jossey-Bass, San Francisco. [79]

Darling-Hammond, L., M. Hyler and **M. Gardner** (2017), *Effective Teacher Professional Development*, Learning Policy Institute, Palo Alto, CA, https://learningpolicyinstitute.org/sites/default/files/product-files/Effective_Teacher_Professional_Development_REPORT.pdf. [15]

Darling-Hammond, L. and **G. Sykes** (2003), "Wanted: A national teacher supply policy for education: The right way to meet the 'highly qualified teacher' challenge", *Education Policy Analysis Archives*, Vol. 11/3, http://dx.doi.org/10.14507/epaa.v11n33.2003. [35]

Desimone, L. (2009), "Improving impact studies of teachers' professional development: Toward better conceptualizations and measures", *Educational Researcher*, Vol. 38/3, pp. 181-199, http://dx.doi.org/10.3102/0013189X08331140. [6]

Fischer, C. et al. (2018), "Investigating relationships between school context, teacher professional development, teaching practices, and student achievement in response to a nationwide science reform", *Teaching and Teacher Education*, Vol. 72, pp. 107-121, http://dx.doi.org/10.1016/j.tate.2018.02.011. [11]

Garet, M. et al. (2016), *Focusing on Mathematical Knowledge: The Impact of Content-Intensive Teacher Professional Development (NCEE 2016-4010)*, National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education, Washington, DC, https://files.eric.ed.gov/fulltext/ED569154.pdf. [9]

Garet, M. et al. (2001), "What makes professional development effective? Results from a national sample of teachers", *American Educational Research Journal*, Vol. 38/4, pp. 915-945, https://doi.org/10.3102/00028312038004915. [60]

Government of Georgia (2015), *[Decree of the Government of Georgia no. 68: Initiating teacher activities, approving professional development and career progression scheme, Chapter V]*, https://matsne.gov.ge/document/view/2739007?publication=0 (accessed on 8 April 2019). [81]

Guerriero, S. (ed.) (2017), *Pedagogical Knowledge and the Changing Nature of the Teaching Profession*, Educational Research and Innovation, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264270695-en. [28]

Guskey, T. (2002), "Professional development and teacher change", *Teachers and Teaching*, Vol. 8/3, pp. 381-391, http://dx.doi.org/10.1080/135406002100000512. [12]

Guskey, T. and **K. Yoon** (2009), "What works in professional development?", *Phi Delta Kappan*, Vol. 90/7, pp. 495-500, https://journals.sagepub.com/doi/pdf/10.1177/003172170909000709. [61]

Hattie, J. (2009), *Visible Learning: A Synthesis of over 800 Meta-Analyses Relating to Achievement*, Routledge, London. [7]

Hoban, G. and **G. Erickson** (2004), "Dimensions of learning for long-term professional development: Comparing approaches from education, business and medical context", *Journal of In-service Education*, Vol. 30/2, pp. 301-324, www.tandfonline.com/doi/pdf/10.1080/13674580400200247. [45]

Ingvarson, L., M. Meiers and **A. Beavis** (2005), "Factors affecting the impact of professional development programs on teachers' knowledge, practice, student outcomes and efficacy", *Education Policy Analysis Archives*, Vol. 13/10, pp. 1-28, http://dx.doi.org/10.14507/epaa.v13n10.2005. [57]

Jacobsen, C., J. Hvitved and **L. Andersen** (2014), "Command and motivation: How the perception of external interventions relates to intrinsic motivation and public service motivation", *Public Administration*, Vol. 92/4, pp. 790-806, http://dx.doi.org/10.1111/padm.12024. [39]

Jensen, B. et al. (2016), *Beyond PD: Teacher Professional Learning in High-Performing Systems*, National Center on Education and the Economy, Washington, DC, http://ncee.org/wp-content/uploads/2015/08/BeyondPDDec2016.pdf. [20]

Kennedy, A. (2005), "Models of continuing professional development: A framework for analysis", *Journal of In-Service Education*, Vol. 31/2, pp. 235-250, www.tandfonline.com/doi/10.1080/13674580500200277. [25]

Kohn, A. (1998), "Challenging behaviorist dogma: Myths about money and motivation", *Compensation & Benefits Review*, Vol. 30/2, pp. 27-37, https://doi.org/10.1177/088636879803000206. [40]

Kools, M. and **L. Stoll** (2016), "What Makes a School a Learning Organisation?", *OECD Education Working Papers*, No. 137, OECD Publishing, Paris, https://dx.doi.org/10.1787/5jlwm62b3bvh-en. [72]

Kraft, M., D. Blazar and **D. Hogan** (2018), "The effect of teacher coaching on instruction and achievement: A meta-analysis of the causal evidence", *Review of Educational Research*, Vol. 88/4, pp. 547-588, https://doi.org/10.3102/0034654318759268. [46]

Kyriacou, C. (2001), "Teacher stress: Directions for future research", *Educational Review*, Vol. 53/1, pp. 27-35, http://dx.doi.org/10.1080/00131910120033628. [17]

Little, J. (1993), "Teachers' professional development in a climate of educational reform", *Educational Evaluation and Policy Analysis*, Vol. 15/2, pp. 129-151, https://doi.org/10.3102/01623737015002129. [63]

Loxley, A. et al. (2007), "The role of whole-school contexts in shaping the experiences and outcomes associated with professional development", *Journal of In-Service Education*, Vol. 33/3, pp. 265-285, http://dx.doi.org/10.1080/13674580701487034. [51]

Meissel, K., J. Parr and **H. Timperley** (2016), "Can professional development of teachers reduce disparity in student achievement?", *Teaching and Teacher Education*, Vol. 58, pp. 163-173, http://dx.doi.org/10.1016/j.tate.2016.05.013. [19]

Nir, A. and **R. Bogler** (2008), "The antecedents of teacher satisfaction with professional development programs", *Teaching and Teacher Education*, Vol. 24/2, pp. 377-386, http://dx.doi.org/10.1016/j.tate.2007.03.002. [13]

OECD (2018), *Education Policy Outlook: Mexico*, OECD, Paris, www.oecd.org/education/Education-Policy-Outlook-Country-Profile-Mexico-2018.pdf. [76]

OECD (2018), *Effective Teacher Policies: Insights from PISA*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264301603-en. [27]

OECD (2018), *Teachers in Ibero-America: Insights from PISA and TALIS*, OECD, Paris, www.oecd.org/pisa/Teachers-in-Ibero-America-Insights-from-PISA-and-TALIS.pdf. [68]

OECD (2018), *The Future of Education and Skills: Education 2030*, OECD, www.oecd.org/education/2030/E2030%20Position%20Paper%20(05.04.2018).pdf. [1]

OECD (2018), *The Resilience of Students with an Immigrant Background: Factors that Shape Well-being*, OECD Reviews of Migrant Education, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264292093-en. [66]

OECD (2018), "What Does Innovation in Pedagogy Look Like?", *Teaching in Focus*, No. 21, OECD Publishing, Paris, https://doi.org/10.1787/cca19081-en. [83]

OECD (2017), "Do New Teachers Feel Prepared for Teaching?", *Teaching in Focus*, No. 17, OECD Publishing, Paris, https://doi.org/10.1787/980bf07d-en. [54]

OECD (2017), *Education in Chile*, Reviews of National Policies for Education, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264284425-en. [75]

OECD (2017), *Education Policy Outlook: Italy*, OECD, Paris, www.oecd.org/education/Education-Policy-Outlook-Country-Profile-Italy.pdf. [82]

OECD (2016), *Education in Colombia*, Reviews of National Policies for Education, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264250604-en. [67]

OECD (2016), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264267510-en. [31]

OECD (2016), *School Leadership for Learning: Insights from TALIS 2013*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264258341-en. [23]

OECD (2016), *Supporting Teacher Professionalism: Insights from TALIS 2013*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264248601-en. [59]

OECD (2015), *Education Policy Outlook 2015: Making Reforms Happen*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264225442-en. [24]

OECD (2015), *Immigrant Students at School: Easing the Journey towards Integration*, OECD Reviews of Migrant Education, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264249509-en. [65]

OECD (2015), *Students, Computers and Learning: Making the Connection*, PISA, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264239555-en. [70]

OECD (2014), *TALIS 2013 Results: An International Perspective on Teaching and Learning*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264196261-en. [14]

OECD (2013), "Fostering Learning Communities Among Teachers", *Teaching in Focus*, No. 4, OECD Publishing, Paris, http://dx.doi.org/10.1787/5k4220vpxbmn-en. [16]

OECD (2013), *Synergies for Better Learning: An International Perspective on Evaluation and Assessment*, OECD Reviews of Evaluation and Assessment in Education, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264190658-en. [38]

OECD (2011), *Lessons from PISA for the United States*, Strong Performers and Successful Reformers in Education, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264096660-en. [34]

OECD (2010), *Educating Teachers for Diversity: Meeting the Challenge*, Educational Research and Innovation, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264079731-en. [64]

OECD (2009), *Creating Effective Teaching and Learning Environments: First Results from TALIS*, TALIS, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264068780-en. [5]

OECD (2005), *Teachers Matter: Attracting, Developing and Retaining Effective Teachers*, Education and Training Policy, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264018044-en. [2]

Opfer, D. (2016), "Conditions and Practices Associated with Teacher Professional Development and Its Impact on Instruction in TALIS 2013", *OECD Education Working Papers*, No. 138, OECD Publishing, Paris, https://dx.doi.org/10.1787/5jlss4r0lrg5-en. [49]

Opfer, V. and **D. Pedder** (2011), "Conceptualizing teacher professional learning", *Review of Educational Research*, Vol. 81/3, pp. 376-407, http://dx.doi.org/10.3102/0034654311413609. [50]

Paniagua, A. and **D. Istance** (2018), *Teachers as Designers of Learning Environments: The Importance of Innovative Pedagogies*, Educational Research and Innovation, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264085374-en. [56]

Perry, J., A. Hondeghem and **L. Wise** (2010), "Revisiting the motivational bases of public service: Twenty years of research and an agenda for the future.", *Public Administration Review*, Vol. 70/5, pp. 681-690, https://doi.org/10.1111/j.1540-6210.2010.02196.x. [41]

Perry, J. and **L. Wise** (1990), "The motivational bases of public service", *Public Administration Review*, Vol. 50/3, pp. 367-373. [43]

Richter, D. et al. (2011), "Professional development across the teaching career: Teachers' uptake of formal and informal learning opportunities", *Teaching and Teacher Education*, Vol. 27/1, pp. 116-126, http://dx.doi.org/10.1016/j.tate.2010.07.008. [80]

Santiago, P. et al. (2017), *OECD Reviews of School Resources: Chile 2017*, OECD Reviews of School Resources, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264285637-en. [69]

Scheerens, J. (ed.) (2010), *Teachers' Professional Development: Europe in International Comparison: An Analysis of Teachers' Professional Development Based on the OECD's Teaching and Learning International Survey (TALIS)*, Office for Official Publications of the European Union, Luxembourg, http://dx.doi.org/10.2766/63494. [32]

Scribner, J. (1999), "Professional development: Untangling the influence of work context on teacher learning", *Educational Administration Quarterly*, Vol. 35/2, pp. 238-266, https://doi.org/10.1177/0013161X99352004. [33]

Shewbridge, C. et al. (2016), *OECD Reviews of School Resources: Czech Republic 2016*, OECD Reviews of School Resources, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264262379-en. [74]

Sparks, D. (2002), *Designing Powerful Professional Development for Teachers and Principals*, National Staff Development Council , Oxford, OH. [21]

Timperley, H. et al. (2007), *Teacher Professional Learning and Development: Best Evidence Synthesis Iteration [BES]*, New Zealand: Ministry of Education, Wellington. [58]

Trust, T., D. Krutka and **J. Carpenter** (2016), "'Together we are better': Professional learning networks for teachers", *Computers & Education*, Vol. 102, pp. 15-34, http://dx.doi.org/10.1016/j.compedu.2016.06.007. [55]

UNESCO (2016), *Education 2030: Incheon Declaration and Framework for Action for the Implementation of Sustainable Development Goal 4*, UNESCO, Paris, http://uis.unesco.org/sites/default/files/documents/education-2030-incheon-framework-for-action-implementation-of-sdg4-2016-en_2.pdf. [30]

United Nations (2015), *Transforming our World: The 2030 Agenda for Sustainable Development*, United Nations, New York, NY, www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E. [29]

Villegas-Reimers, E. (2003), *Teacher Professional Development: An International Review of the Literature*, UNESCO: International Institute for Educational Planning, Paris, https://unesdoc.unesco.org/ark:/48223/pf0000133010. [4]

Yoon, K. et al. (2007), "Reviewing the Evidence on How Teacher Professional Development Affects Student Achievement", *Issues & Answers Report, REL 2007*, No. 033, U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest, https://ies.ed.gov/ncee/edlabs/regions/southwest/pdf/REL_2007033.pdf. [18]

Youngs, P. (2001), "District and state policy influences on professional development and school capacity", *Educational Policy*, Vol. 15/2, pp. 278-301, http://dx.doi.org/10.1177/0895904801015002003. [10]

Youngs, P. and **M. Bruce King** (2002), "Principal leadership for professional development to build school capacity", *Educational Administration Quarterly*, Vol. 38/5, pp. 643-670, http://dx.doi.org/10.1177/0013161X02239642. [73]

Zepeda, S., O. Parylo and **E. Bengtson** (2013), "Analyzing principal professional development practices through the lens of adult learning theory", *Professional Development in Education*, Vol. 40/2, pp. 295-315, http://dx.doi.org/10.1080/19415257.2013.821667. [22]

ANNEX A

Technical notes on sampling procedures, response rates and adjudication for TALIS 2018

A note regarding Israel

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.

ANNEX A
Technical notes on sampling procedures, response rates and adjudication for TALIS 2018

SAMPLING PROCEDURES AND RESPONSE RATES

The objective of the Teaching and Learning International Survey (TALIS) in 2018 was to obtain, in each participating country and economy, a representative sample of teachers for each ISCED level in which the country and economy participated. Moreover, a representative sample of teachers teaching students of the appropriate age in schools selected for the Programme for International Student Assessment (PISA) in 2018 was required for each country and economy that opted to participate in the TALIS-PISA link. TALIS 2018 identified policy issues that encompass the classroom, teachers, schools and school management, so the coverage of TALIS 2018 extends to all teachers of each concerned ISCED level and to the principals of the schools where they teach. The international sampling plan prepared for TALIS 2018 used a stratified two-stage probability sampling design. This means that teachers (second stage units, or secondary sampling units) were to be randomly selected from the list of in-scope teachers in each of the randomly selected schools (first stage units, or primary sampling units). A more detailed description of the survey design and its implementation can be found in the TALIS 2018 Technical Report (OECD, 2019[1]).

A teacher of ISCED level 1, 2 or 3 is one who, as part of his or her regular duties in their school, provides instruction in programmes at that ISCED level. Teachers who teach a mixture of programmes at different ISCED levels in the target school are included in the TALIS universe. There is no minimum cut-off for how much teaching these teachers need to be engaged in at any of the three ISCED levels.

The international target population of TALIS 2018 restricts the survey to those teachers who teach regular classes in ordinary schools and to the principals of those schools. Teachers teaching to adults and teachers working in schools exclusively devoted to children with special needs are not part of the international target population and are deemed out of scope. Unlike in TALIS 2008, however, teachers working with special needs students in a regular school setting were considered in scope in TALIS 2013 and 2018. When a school is made up exclusively of these teachers, the school itself is said to be out of scope. Teacher aides, pedagogical support staff (e.g. guidance counsellors and librarians) and health and social support staff (e.g. doctors, nurses, psychiatrists, psychologists, occupational therapists and social workers) were not considered to be teachers and, thus, not part of the TALIS international target population.

For national reasons, participating countries could choose to restrict the coverage of their national implementation of TALIS 2018 to parts of the country. For example, a province or state experiencing civil unrest or in an area struck by a natural disaster could be removed from the international target population to create a national target population that does not include these provinces or states. Participating countries were invited to keep these exclusions to a minimum by keeping the national survey population to at least 95% of the teachers.

TALIS 2018 recognised that attempting to survey teachers in very small schools can be inefficient and difficult. For each ISCED level, surveying teachers in schools with no more than three teachers at a specific ISCED level and those teaching in schools located in geographically remote areas could be a costly, time-consuming and statistically inefficient exercise. Therefore, participating countries were allowed to exclude those teachers for TALIS 2018 data collection, thus creating a national survey population different from the national target population. The national project manager (NPM) for each country was required to document the reasons for exclusion, the size, the location, the clientele, etc., of each excluded school. This documentation was required for each ISCED level in which a country participated. The school exclusions for the TALIS-PISA link were the same as those used in PISA 2018.

Within a selected in-scope school, the following categories of teachers were excluded from the sample:

- teachers teaching in schools exclusively serving special needs students
- teachers who also act as school principals: no teacher data collected, but school principal data collected
- substitute, emergency or occasional teachers
- teachers on long-term leave
- teachers teaching exclusively to adults
- teachers who had taken part in the TALIS 2018 field trial.

SAMPLE SIZE REQUIREMENTS

For each ISCED level, the same requirements for sample size and precision of estimates were established. To allow for reliable estimation and modelling, while allowing for some amount of non-response, the minimum sample size was set at 20 teachers within each participating school. A minimum sample of 200 schools was to be drawn from the population of in-scope schools. Thus, the nominal international sample size was a minimum of 4 000 teachers for each ISCED level in which a country or economy participated. Participating countries and economies could choose to augment their national sample by selecting more schools, by selecting more teachers within each selected school or by increasing both. Some countries and economies were asked to increase the within-school sample to counterbalance the effect of selecting too many schools with fewer than 20 teachers. The sample size requirement was reduced for some participating countries and economies because of the smaller number of schools available for sampling. In a few cases, because the average number of teachers in the schools was fewer than expected in the international plan, the number of schools sampled was increased to maintain a minimum total number of participating teachers.

In many countries, the separation of grades in ISCED levels does not correspond to a physical separation of school buildings or administrations: schools that offer grades 8 to 12 straddle ISCED levels 2 and 3, but all of ISCED level 2 would not be covered by those schools. In countries and economies that participated in more than one ISCED level, arrangements were made with the NPM and their team to optimise the selection of the school sample by either minimising the overlap of the respective samples (one school is selected for participation in only one ISCED level) or maximising the sample overlap (a selected school contributes to all concerned ISCED levels). However, in the case of maximised overlap, teachers who taught at more than one level would be asked to participate in only one.

DEFINITION OF TEACHERS

As in previous cycles, TALIS 2018 followed the INES (Indicators of Educational Systems) data collection definition of a teacher for sampling and analysis:

> *"A classroom teacher (ISCED 0-4) is defined as a person who plans, organises and conducts a group of activities with the aim of developing students' knowledge, skills and competencies as stipulated by educational programmes." (OECD, 2018, p. 43[2]).*

ADJUDICATION PROCESS

The basic principle that guides the adjudication is to determine, for each participating country/economy and for each of the TALIS options, whether the data released to the countries and economies are fit to provide policy relevant, robust international indicators and analysis on teachers and teaching in a timely and cost effective manner.

To establish fitness for use, a number of quality assurance processes were designed and activated throughout the survey process. Some processes relied on expert advice and opinion; some relied on qualitative information and learned judgement; some relied on quantitative information. For more detailed information, please refer to the *TALIS 2018 Technical Report* (OECD, 2019[1]).

During the adjudication session, each individual dataset – that is, the combination of participating countries/economies, survey options and questionnaire types – was submitted to the same examination. For the first time in a TALIS cycle, principal data were evaluated on their own. In other words, principal and teacher data received separate adjudication evaluation per TALIS option and per country/economy.

The issues evaluated concerned the questionnaire adaptation to national context, translation and verification, quality of the sampling frame, handling of out-of-scope and refusal units (i.e. teachers and/or schools), within-school sampling, data collection, data cleaning, the reports of quality observers, participation rates and overall compliance with the technical standards. Once each survey process had been assessed, a recommended rating was formulated, accounting for the participation rates, and for any unresolved issue.

The adjudication rules, based on participation rates for principals and teachers, are displayed in Table A I.A.1 and Table A I.A.2.

Table A I.A.1 **Adjudication rules for school or principal data in TALIS 2018**

School participation (returned principal questionnaires)		Risk of school non-response bias	Rating
Before replacement	After replacement		
≥75%	≥75%		Good
50% - 75%	≥75%		Fair (A)
	50% - 75%	Low	Fair (C)
		High	Poor (D)
< 50%			Insufficient

Table A I.A.2 **Adjudication rules for teacher data in TALIS 2018**

School participation (minimum teacher participation)		Teacher participation after school replacement	Risk of teacher non-response bias	Rating
Before replacement	After replacement			
≥75%	≥75%	≥75%		Good
		50% - 75%		Fair (A)
50% - 75%	≥75%	≥75%		Fair (B)
		50% - 75%	Low	Fair (C)
			High	Poor (D)
50% - 75%	50% - 75%			Poor (E)
< 50%	≥75%			Poor (F)
< 50%	< 75%			Insufficient

The following bulleted list is a simple guide aimed at helping data users appreciate the limitations on use or quality:

- **Good:** the participating country's/economy's data can be used for all reporting and analytical purposes and can be included in international comparisons
- **Fair (A):** national and sub-national estimates can be produced; some teacher characteristics may suffer from a larger standard error (s.e.), hence the warning "Fair" and no additional warnings to users appear necessary
- **Fair (B, only for teacher data adjudication):** national and sub-national estimates can be produced; some sub-national estimates may be of lower precision (larger s.e.) if sample size is locally low, hence the warning "Fair" and no additional warnings to users appear necessary
- **Fair (C):**
  - national and sub-national estimates can be produced
  - some sub-national estimates may be of lower precision (larger s.e.) if sample size is locally low, hence the warning "Fair", but a note on data quality could appear pointing to the outcome of the non-response bias analysis (NRBA)
  - since school participation is somewhat lower than under (B), comparing sub-national estimates should be done with care, as some of those results are based on few schools
  - comparing small sub-national estimates with similar groups from other countries is likely to uncover any statistically meaningful differences as s.e. are likely too large
- **Poor (D):**
  - in addition to the warnings issued for the previous category, a note should warn users of indications of non-response biases in some estimates
  - comparisons of sub-national estimates should be limited to the groups with the larger sample sizes
  - at this point, the sample represents between 37% and 56% of the teaching workforce, from a rather small sample of schools
  - comparisons with similar groups in foreign countries would not be encouraged
- **Poor (E, only for teacher data adjudication):** sub-national estimates would not be recommended; there should be a note pointing out the difficulty of obtaining a representative sample of schools
- **Poor (F, only for teacher data adjudication):** limitations similar to those of line E, but there should be a note pointing out the difficulty of obtaining at least 50% participation of the selected sample of schools; risks of having a non-representative sample of schools
- **Insufficient:** weights should not be calculated for any official tabulations; hence, data should not be incorporated into international tables, models, averages, etc.

The participation rates and the adjudication rating per participating country/economy and by ISCED level are presented in Table A I.A.3 to Table A I.A.8.[1]

NOTES REGARDING THE USE AND INTERPRETATION OF THE DATA

This section lists issues to be noted regarding the sampling or field operations that should be considered when interpreting the data reported for these countries.

- **Alberta (Canada):**
  - TALIS data collection conducted during a labour dispute.
  - Non-response bias analysis shows no evidence of high risk of school non-response bias on the investigated variables for teachers or principals in ISCED 2 or ISCED 3 and, as such, their rating was upgraded from "poor" to "fair".
- **Australia:**
  - For both ISCED 1 and 2, the data collection window for both teachers and principals was extended from the end of the academic year in 2017 to the beginning of the following academic year in 2018.
  - For ISCED 1 principals and teachers and for ISCED 2 principals, data from Australia are located below the line in selected tables in this report and not included in the calculations for the international average. This is because Australia did not meet the international standards for participation rates, as shown in Table AI.A.3 to Table AI.A.5.
- **Colombia:** Non-response bias analysis shows no evidence of high risk of school non-response bias on the investigated variables for teachers or principals and, as such, their rating was upgraded from "poor" to "fair".
- **Czech Republic:** Trend items should be interpreted carefully due to complications arising from the translation process.
- **Denmark:** Non-response bias analysis shows no evidence of high risk of school non-response bias on the investigated variables for teachers or principals in ISCED1, ISCED 2 or ISCED 3 and, as such, their rating was upgraded from "poor" to "fair".
- **Flemish Community of Belgium:** For both ISCED 1 and 2, entries on the sampling frame are administrative units and not "schools" as they are usually defined; a "school" may be comprised of one or several administrative units and the principal would be reporting for the school and not only the selected administrative unit; therefore, users should exercise care when analysing and comparing school-level statistics.
- **Georgia:**
  - Items repeated from the TALIS 2013 questionnaire (hereafter "trends items") should be interpreted carefully due to complications arising from the translation process.
  - Some translation issues could still exist in the Georgian and Azerbaijani version of the questionnaires.
- **Israel:** Coverage falls below 95%, after *post facto* exclusion of ultraorthodox schools for low response rates, making coverage identical to that of TALIS 2013. Because translation issues could still exist in the trends items, users need to exercise caution when comparing results across TALIS cycles.
- **Italy:** Trends items should be interpreted carefully due to complications arising from the translation process.
- **Latvia:**
  - Trends items should be interpreted carefully due to complications arising from the translation process.
  - Some translation issues could still exist in the national instruments that could affect the data.
- **Korea:** For ISCED 2, in four schools, teacher listings were found to be incorrect; those schools were set to "non-participant".
- **Netherlands:**
  - For ISCED 1 and 2, the Netherlands had a six-week early start and extended collection window.
  - For ISCED 1 and 2, the Netherlands had an unapproved collection protocol that resulted in the inclusion of some 50 "national" schools that were not included in the international dataset but left on the national dataset; participation rates were computed on the international dataset.
  - For ISCED 1 principals and teachers, data from the Netherlands are located below the line in in the result tables of this report. This is because the Netherlands did not meet the international standards for participation rates, as shown in Table AI.A.3 and Table AI.A.4.
- **New Zealand:** Coverage was extended to small schools (four or fewer teachers). While the impact of this action on the target population of teachers was negligible, the impact on the target population of principals is important because, compared to TALIS 2013, the target population for principals nearly doubled in size. The TALIS 2018 results reported in the result tables on changes since 2013 for New Zealand were estimated after excluding from New Zealand's TALIS 2018 sample those schools with four or fewer eligible teachers. This was done in order to ensure comparability with their TALIS 2013 results (as such, small schools were excluded from the TALIS 2013 sampling frame). Therefore, these results can differ from those reported for the full TALIS 2018 sample, especially those derived from the school and/or principal data.
- **Russian Federation:** Coverage falls below 95% after the exclusion of Moscow.

- **Saudi Arabia:** Coverage falls below 95% after the sampling excluded two provinces bordering Yemen.
- **Spain:** Trends items should be interpreted carefully due to complications arising from the translation process.
- **United Arab Emirates:**
  - Comparisons with TALIS 2013 must be limited to Abu Dhabi.
  - Because of the selection of multi-level schools, the principal data were copied from the original ISCED level 2 principal questionnaire to the ISCED level 1 and ISCED level 3 corresponding forms, except for question 17 in the principal questionnaire.

Table A I.A.3 **ISCED 1 principals' participation and recommended ratings**

	Number of participating principals	Principals' participation before replacement (%)	Principals' participation after replacement (%)	Recommended rating
Australia	223	48.8	77.9	Insufficient
Flemish Community (Belgium)	185	70.1	92.0	Fair
CABA (Argentina)*	175	85.0	87.5	Good
Denmark	145	56.6	73.2	Fair
England (UK)	161	76.4	89.5	Good
France	178	89.3	91.5	Good
Japan	197	97.2	99.5	Good
Korea	161	78.0	80.5	Good
Netherlands	135	40.7	69.6	Insufficient
Spain	436	98.2	98.2	Good
Sweden	166	84.7	87.4	Good
Chinese Taipei	200	99.8	100.0	Good
Turkey	171	99.3	99.3	Good
United Arab Emirates	502	90.6	90.6	Good
Viet Nam	194	100.0	100.0	Good

* CABA (Argentina) refers to the Ciudad Autónoma de Buenos Aires, Argentina.

Table A I.A.4 **ISCED 1 teachers' participation and recommended ratings**

	Number of participating schools	Number of participating teachers	Estimated size of teacher population	School participation before replacement (%)	School participation after replacement (%)	Teacher participation in participating schools (%)	Overall teacher participation (%)	Recommended rating
Australia	213	3 030	133 915	48.8	74.0	76.4	56.5	Insufficient
Flemish Community (Belgium)	178	2 672	30 204	67.2	88.6	92.0	81.5	Fair
CABA (Argentina)*	167	2 514	16 236	81.0	83.5	86.9	72.5	Good
Denmark	154	2 592	34 185	58.6	77.8	87.5	68.1	Fair
England (UK)	152	2 009	225 2	66.3	80.0	85.7	68.6	Fair
France	178	1 429	209 981	88.6	91.2	92.1	84.0	Good
Japan	197	3 308	355 655	97.0	99.5	98.8	98.3	Good
Korea	182	3 207	128 94	86.0	91.0	91.9	83.6	Good
Netherlands	130	2 019	68 672	39.3	67.3	87.2	58.7	Insufficient
Spain	442	7 246	210 627	99.3	99.5	95.4	95.0	Good
Sweden	178	2 404	57 237	90.0	93.7	78.8	73.8	Good
Chinese Taipei	200	3 494	89 694	99.5	100.0	97.6	97.6	Good
Turkey	172	3 204	213 362	99.4	99.4	98.5	97.9	Good
United Arab Emirates	552	9 188	16 417	99.6	99.6	96.6	96.2	Good
Viet Nam	194	3 991	386 062	100.0	100.0	98.3	98.3	Good

* CABA (Argentina) refers to the Ciudad Autónoma de Buenos Aires, Argentina.

Table A I.A.5 **ISCED 2 principals' participation and recommended ratings**

	Number of participating principals	Principals' participation before replacement (%)	Principals' participation after replacement (%)	Recommended rating
Alberta (Canada)	129	54.4	66.2	Fair
Australia	230	49.0	75.7	Insufficient
Austria	277	96.0	100.0	Good
Belgium	311	86.5	95.7	Good
Flemish Community (Belgium)	192	82.4	93.7	Good
Brazil	184	88.0	95.4	Good
Bulgaria	200	97.5	100.0	Good
Chile	170	78.9	87.6	Good
CABA (Argentina)*	121	77.5	86.2	Good
Colombia	141	68.8	70.9	Fair
Croatia	188	95.0	95.6	Good
Cyprus[1, 2]	88	88.9	88.9	Good
Czech Republic	216	99.0	99.0	Good
Denmark	140	51.5	71.4	Fair
England (UK)	157	71.9	81.8	Fair
Estonia	201	88.6	100.0	Good
Finland	148	100.0	100.0	Good
France	195	97.6	98.0	Good
Georgia	182	91.7	91.7	Good
Hungary	182	91.2	94.3	Good
Iceland	101	74.3	74.3	Fair
Israel	184	90.9	93.7	Good
Italy	190	92.4	98.6	Good
Japan	195	93.9	99.4	Good
Kazakhstan	331	100.0	100.0	Good
Korea	150	68.1	77.8	Fair
Latvia	136	80.4	91.9	Good
Lithuania	195	100.0	100.0	Good
Malta	54	93.1	93.1	Good
Mexico	193	90.6	97.0	Good
Netherlands	125	58.1	86.3	Fair
New Zealand	189	71.7	92.0	Fair
Norway	162	67.5	81.0	Fair
Portugal	200	97.7	100.0	Good
Romania	199	100.0	100.0	Good
Russian Federation	230	99.1	100.0	Good
Saudi Arabia	192	96.5	96.5	Good
Shanghai (China)	198	100.0	100.0	Good
Singapore	167	97.0	98.8	Good
Slovak Republic	180	84.4	90.5	Good
Slovenia	119	74.8	79.3	Good
South Africa	169	92.3	92.3	Good
Spain	396	98.7	99.2	Good
Sweden	171	85.9	89.1	Good
Chinese Taipei	202	100.0	100.0	Good
Turkey	196	99.0	99.0	Good
United Arab Emirates	476	91.4	91.4	Good
United States	164	63.1	77.6	Fair
Viet Nam	196	100.0	100.0	Good

* CABA (Argentina) refers to the Ciudad Autónoma de Buenos Aires, Argentina.

1. **Note by Turkey:** The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

2. **Note by all the European Union Member States of the OECD and the European Union:** The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Table A I.A.6 **ISCED 2 teachers' participation and recommended ratings**

	Number of participating schools	Number of participating teachers	Estimated size of teacher population	School participation before replacement (%)	School participation after replacement (%)	Teacher participation in participating schools (%)	Overall teacher participation (%)	Recommended rating
Alberta (Canada)	122	1 077	9 991	51.8	62.6	83.0	52.0	Fair
Australia	233	3 573	116 679	50.3	76.6	77.7	59.6	Fair
Austria	246	4 255	45 882	85.9	88.8	84.4	75.0	Good
Belgium	306	5 333	34 494	86.0	95.1	86.8	82.6	Good
Flemish Community (Belgium)	186	3 198	18 746	80.0	90.7	84.3	76.5	Good
Brazil	185	2 447	568 719	89.9	96.6	94.9	91.6	Good
Bulgaria	200	2 862	21 221	97.1	100.0	98.3	98.3	Good
Chile	180	1 971	55 979	82.6	91.5	94.3	86.2	Good
CABA (Argentina)*	130	2 099	10 219	81.3	86.7	88.6	76.8	Good
Colombia	154	2 398	164 143	73.9	77.4	93.4	72.3	Fair
Croatia	188	3 358	15 762	95.4	96.2	87.0	83.7	Good
Cyprus[1]	88	1 611	3 861	89.8	89.8	90.3	81.0	Good
Czech Republic	219	3 447	42 354	100.0	100.0	93.8	93.8	Good
Denmark	141	2 001	22 492	51.1	72.0	86.8	62.5	Fair
England (UK)	149	2 376	193 195	72.7	81.5	83.6	68.1	Fair
Estonia	201	3 083	7 248	88.6	100.0	95.4	95.4	Good
Finland	148	2 851	18 938	100.0	100.0	96.2	96.2	Good
France	176	3 006	197 013	87.3	87.8	88.1	77.3	Good
Georgia	198	3 214	38 150	99.5	99.5	95.9	95.4	Good
Hungary	189	3 245	44 013	94.9	97.7	95.0	92.8	Good
Iceland	122	1 277	1 864	89.7	89.7	75.5	67.8	Good
Israel	172	2 627	32 603	85.3	87.3	84.9	84.9	Good
Italy	190	3 612	190 447	91.7	99.0	93.5	92.5	Good
Japan	196	3 555	231 118	92.4	99.5	99.0	98.5	Good
Kazakhstan	331	6 566	195 659	100.0	100.0	99.8	99.8	Good
Korea	163	2 931	75 848	70.5	81.5	92.2	75.1	Fair
Latvia	135	2 315	12 006	77.1	91.2	87.9	80.2	Good
Lithuania	195	3 759	19 861	100.0	100.0	97.4	97.4	Good
Malta	55	1 656	1 941	94.8	94.8	86.5	82.0	Good
Mexico	193	2 926	255 079	90.4	96.3	94.3	90.8	Good
Netherlands	116	2 584	66 491	58.3	80.2	80.8	64.7	Fair
New Zealand	184	2 255	23 411	62.6	79.3	79.6	63.2	Fair
Norway	185	4 154	21 828	77.4	92.6	83.2	77.0	Good
Portugal	200	3 676	39 703	97.9	100.0	92.7	92.7	Good
Romania	199	3 658	66 078	100.0	100.0	98.3	98.3	Good
Russian Federation	230	4 011	647 381	98.7	100.0	99.9	99.9	Good
Saudi Arabia	179	2 744	99 693	89.7	89.7	86.0	77.1	Good
Shanghai (China)	198	3 976	38 876	100.0	100.0	99.5	99.5	Good
Singapore	169	3 280	11 546	98.2	100.0	99.2	99.2	Good
Slovak Republic	176	3 015	24 756	82.4	88.9	95.4	84.7	Good
Slovenia	132	2 094	7 422	82.2	88.0	91.5	80.5	Good
South Africa	170	2 046	92 127	92.3	92.9	89.1	82.3	Good
Spain	399	7 407	186 187	99.5	100.0	94.6	94.6	Good
Sweden	180	2 782	31 435	89.1	93.9	81.3	76.3	Good
Chinese Taipei	200	3 835	53 243	99.0	99.0	97.2	96.2	Good
Turkey	196	3 952	277 675	99.0	99.0	98.5	97.5	Good
United Arab Emirates	521	8 648	14 510	100.0	100.0	96.0	96.0	Good
United States	165	2 560	1 145 071	60.1	76.8	89.6	68.8	Fair
Viet Nam	196	3 825	295 532	100.0	100.0	96.3	96.3	Good

* CABA (Argentina) refers to the Ciudad Autónoma de Buenos Aires, Argentina.

1. See notes 1 and 2 of Table A A.5.

Table A I.A.7 **ISCED 3 principals' participation and recommended ratings**

	Number of participating principals	Principals' participation before replacement (%)	Principals' participation after replacement (%)	Recommended rating
Alberta (Canada)	115	51.8	59.6	Fair
Brazil	187	91.4	97.5	Good
Croatia	145	96.7	96.7	Good
Denmark	96	58.3	70.8	Fair
Portugal	195	98.0	99.5	Good
Slovenia	103	69.6	69.6	Fair
Sweden	174	91.6	93.8	Good
Chinese Taipei	151	100.0	100.0	Good
Turkey	448	98.0	98.0	Good
United Arab Emirates	366	89.7	89.7	Good
Viet Nam	199	100.0	100.0	Good

Table A I.A.8 **ISCED 3 teachers' participation and recommended ratings**

	Number of participating schools	Number of participating teachers	Estimated size of teacher population	School participation before replacement (%)	School participation after replacement (%)	Teacher participation in participating schools (%)	Overall teacher participation (%)	Recommended rating
Alberta (Canada)	112	1 094	7 819	51.6	56.6	80.2	45.4	Fair
Brazil	186	2 828	421 208	92.2	97.4	94.5	92.0	Good
Croatia	147	2 661	14 818	97.9	97.9	89.7	87.9	Good
Denmark	111	1 670	16 739	65.5	79.9	85.7	68.5	Fair
Portugal	195	3 551	36 194	99.0	99.7	91.3	91.0	Good
Slovenia	119	2 200	5 401	80.4	80.4	87.8	70.6	Good
Sweden	181	2 933	26 916	95.3	97.8	81.7	79.9	Good
Chinese Taipei	148	2 800	41 246	98.1	98.1	95.8	94.1	Good
Turkey	457	8 342	252 770	100.0	100.0	98.0	98.0	Good
United Arab Emirates	405	6 118	10 163	99.3	99.3	95.7	95.0	Good
Viet Nam	199	3 884	175 317	100.0	100.0	97.7	97.7	Good

Note

1. Tables A I.A.3 to A I.A.8 display the participation rate estimates that were the most favourable for the adjudication rating. The most favourable estimates could have been weighted or unweighted depending on the characteristics of the country/economy, the teacher and principals population and the educational level.

References

OECD (2019), *TALIS 2018 Technical Report*, OECD, Paris. [1]

OECD (2018), *OECD Handbook for Internationally Comparative Education Statistics 2018: Concepts, Standards, Definitions and Classifications*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264304444-en. [2]

ANNEX B

Technical notes on analyses in this volume

A note regarding Israel

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.

ANNEX B
Technical notes on analyses in this volume

USE OF TEACHER AND SCHOOL WEIGHTS

The statistics presented in this report were derived from data obtained through samples of schools, school principals and teachers. The sample was collected following a stratified two-stage probability sampling design. This means that teachers (second-stage units or secondary sampling units) were randomly selected from the list of in-scope teachers for each of the randomly selected schools (first-stage or primary sampling units). For these statistics to be meaningful for a country, they needed to reflect the whole population from which they were drawn and not merely the sample used to collect them. Thus, survey weights must be used in order to obtain design-unbiased estimates of population or model parameters.

Final weights allow the production of country-level estimates from the observed sample data. The estimation weight indicates how many population units are represented by a sampled unit. The final weight is the combination of many factors reflecting the probabilities of selection at the various stages of sampling and the response obtained at each stage. Other factors may also come into play as dictated by special conditions to maintain the unbiasedness of the estimates (e.g. adjustment for teachers working in more than one school).

Statistics presented in this report that are based on the responses of school principals and that contribute to estimates related to school principals were estimated using school weights (SCHWGT). Results based only on responses of teachers or on responses of teachers and principals (i.e. responses from school principals were merged with teachers' responses) were weighted by teacher weights (TCHWGT).

USE OF COMPLEX VARIABLES AND SCALES

Scales

In this report, several scale indices are used in regression analyses. Descriptions of the construction and validation of these scales can be found in Chapter 11 of the *TALIS 2018 Technical Report* (OECD, 2019 [1]).

Ratios and other variables derived from TALIS data

Student-teacher ratio – The student-teacher ratio was derived from school principals' responses to a question about the number of staff (head counts) currently working in the school and the total number of students (head counts) of all grades in the school. Therefore, measure is not restricted to those teaching or supporting ISCED level 2 education in the school but covers education at all levels provided in the school. The ratio is derived by dividing the number of students by the number of teachers (those whose main activity is the provision of instruction to students). The analyses reporting this ratio in Chapter 3 were done at the school level and, therefore, used the final school estimation weight (SCHWGT).

Ratio of teachers to number of personnel for pedagogical support – This ratio was derived from school principals' responses to a question about the number of staff (head counts) currently working in the whole school and is, therefore, not restricted only to those teaching or supporting ISCED level 2 education in the school. The ratio is derived by dividing the number of teachers (those whose main activity is the provision of instruction to students) by the number of personnel for pedagogical support (including all teacher aides or other non-teaching professionals who provide instruction or support teachers). The analyses reporting this ratio in Chapter 3 were done at the school level and, therefore, used the final school estimation weight (SCHWGT). In line with the approach taken in TALIS 2013, for those few observations where the number of personnel for pedagogical support is zero, the ratio of teachers to number of personnel for pedagogical support is set to equal the number of teachers.

Ratio of teachers to number of school administrative or management personnel – This ratio was derived from school principals' responses to a question about the number of staff (head counts) currently working in the school. Therefore, the measure is not restricted to those teaching or supporting ISCED level 2 education in the school but covers education at all levels provided in the school. The ratio is derived by dividing the number of teachers (those whose main activity is the provision of instruction to students) by the sum of school administrative personnel and management personnel. School administrative personnel include receptionists, secretaries and administration assistants, while management personnel include principals, assistant principals, and other management staff whose main activity is management. The analyses reporting this ratio were done at the school level and, therefore, used the final school estimation weight (SCHWGT).

Practices pertaining to clarity of instruction – This variable was derived from teachers' responses to a question about the frequency of use of certain teaching practices in the target class. The variable is constructed as a binary variable based on the arithmetic mean of three teaching practices: "I present a summary of recently learned content", "I refer to a problem from everyday life or work to demonstrate why new knowledge is useful" and "I let students practise similar tasks until I know that every student has understood the subject matter". The variable takes the value of 0 if the arithmetic mean of the aforementioned three teaching practices is lower than 0.5, while it is equal to 1 if the arithmetic mean is greater than 0.5. In those few cases where the arithmetic mean is equal to 0.5, the variable is set to missing.

INTERNATIONAL AVERAGES

The OECD and TALIS averages, which were calculated for most indicators presented in this report, correspond to the arithmetic mean of the respective country estimates. When the statistics are based on responses of teachers, the OECD and TALIS averages cover, respectively, 31 and 48 countries and economies (see Table A I.B.1). In those cases where the analysis is based on principals' responses, the OECD and TALIS averages cover, respectively, 30 and 47 countries and economies.

The EU total represents the 23 European Union member states that also participated in TALIS 2018 as a single entity and to which each of the 23 EU member states contribute in proportion to the number of teachers or principals, depending on the basis of the analysis. Therefore, the EU total is calculated as a weighted arithmetic mean based on the sum of final teacher (TCHWGT) or principal (SCHWGT) weights by country, depending on the target population.

In this publication, the OECD average is generally used when the focus is on providing a global tendency for an indicator and comparing its values across education systems. In the case of some countries and economies, data may not be available for specific indicators, or specific categories may not apply. Therefore, readers should keep in mind that the term "OECD average" refers to the OECD countries and economies included in the respective comparisons. In cases where data are not available or do not apply to all sub-categories of a given population or indicator, the "OECD average" may be consistent within each column of a table but not necessarily across all columns of a table.

STANDARD ERRORS AND SIGNIFICANCE TESTS

The statistics in this report represent estimates based on samples of teachers and principals, rather than values that could be calculated if every teacher and principal in every country had answered every question. Consequently, it is important to measure the degree of uncertainty of the estimates. In TALIS, each estimate has an associated degree of uncertainty that is expressed through a standard error. The use of confidence intervals provides a way to make inferences about the population means and proportions in a manner that reflects the uncertainty associated with the sample estimates. From an observed sample statistic and assuming a normal distribution, it can be inferred that the corresponding population result would lie within the confidence interval in 95 out of 100 replications of the measurement on different samples drawn from the same population. The reported standard errors were computed with a balanced repeated replication (BRR) methodology.

Differences between sub-groups

Differences between sub-groups along teacher (e.g. female teachers and male teachers) and school characteristics (e.g. schools with a high concentration of students from socio-economically disadvantaged homes and schools with a low concentration of students from socio-economically disadvantaged homes) were tested for statistical significance. All differences marked in bold in the data tables of this report are statistically significantly different from 0 at the 95% level.

In the case of differences between sub-groups, the standard error is calculated by taking into account that the two sub-samples are not independent. As a result, the expected value of the covariance might differ from 0, leading to smaller estimates of standard error as compared to estimates of standard error calculated for the difference between independent sub-samples.

Differences between cycles

Differences between TALIS cycles (e.g. change between 2013 and 2018) were tested for statistical significance. All differences marked in bold in the data tables of this report are statistically significant at the 95% level. As samples from different TALIS cycles are considered independent, the standard error for any comparison between cycles is calculated with the expected value of the covariance being equal to 0.

STATISTICS BASED ON REGRESSIONS

Regression analysis was conducted to explore the relationships between different variables. Multiple linear regression was used in those cases where the dependent (or outcome) variable was considered continuous. Binary logistic regression was employed when the dependent (or outcome) variable was a binary categorical variable. Regression analyses were carried out for each country separately. Similarly to other statistics presented in this report, the OECD and TALIS averages refer to the arithmetic mean of country level estimates, while the EU total is calculated as a weighted arithmetic mean based on the sum of final teacher (TCHWGT) or principal (SCHWGT) weights by country, depending on the target population.

Table A I. B.1 **Country coverage of international averages in TALIS 2018**

	TALIS average-48 (teachers)	TALIS average-47 (principals)	OECD average-31 (teachers)	OECD average-30 (principals)	EU total-23
Alberta (Canada)	x	x	x	x	–
Australia	x	–	x	–	–
Austria	x	x	x	x	x
Belgium	x	x	x	x	x
Flemish Comm. (Belgium)	–	–	–	–	–
Brazil	x	x	–	–	–
Bulgaria	x	x	–	–	x
CABA (Argentina)*	x	x	–	–	–
Chile	x	x	x	x	–
Colombia[1]	x	x	x	x	–
Croatia	x	x	–	–	x
Cyprus[2, 3]	x	x	–	–	x
Czech Republic	x	x	x	x	x
Denmark	x	x	x	x	x
England (UK)	x	x	x	x	x
Estonia	x	x	x	x	x
Finland	x	x	x	x	x
France	x	x	x	x	x
Georgia	x	x	–	–	–
Hungary	x	x	x	x	x
Iceland	x	x	x	x	–
Israel	x	x	x	x	–
Italy	x	x	x	x	x
Japan	x	x	x	x	–
Kazakhstan	x	x	–	–	–
Korea	x	x	x	x	–
Latvia	x	x	x	x	x
Lithuania	x	x	x	x	x
Malta	x	x	–	–	x
Mexico	x	x	x	x	–
Netherlands	x	x	x	x	x
New Zealand	x	x	x	x	–
Norway	x	x	x	x	–
Portugal	x	x	x	x	x
Romania	x	x	–	–	x
Russian Federation	x	x	–	–	–
Saudi Arabia	x	x	–	–	–
Shanghai (China)	x	x	–	–	–
Singapore	x	x	–	–	–
Slovak Republic	x	x	x	x	x
Slovenia	x	x	x	x	x
South Africa	x	x	–	–	–
Spain	x	x	x	x	x
Sweden	x	x	x	x	x
Chinese Taipei	x	x	–	–	–
Turkey	x	x	x	x	–
United Arab Emirates	x	x	–	–	–
United States	x	x	x	x	–
Viet Nam	x	x	–	–	–

* CABA (Argentina) refers to the Ciudad Autónoma de Buenos Aires, Argentina.

1. On 25 May 2018, the OECD Council invited Colombia to become a Member. While Colombia is included in the OECD averages reported in this publication, at the time of its preparation, Colombia was in the process of completing its domestic procedures for ratification and the deposit of Colombia's instrument of accession to the OECD Convention was pending.

2**. Note by Turkey:** The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

3. **Note by all the European Union Member States of the OECD and the European Union:** The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Control variables included in a regression model are selected based on theoretical reasoning and, preferably, limited to the most objective measures or those that do not change over time. Controls for teacher characteristics include: teacher's gender, age, employment status (i.e. full-time/part-time) and years of teaching experience. Controls for class characteristics include: variables of classroom composition (i.e. share of students whose first language is different from the language of instruction, low academic achievers, students with special needs, students with behavioural problems, students from socio-economically disadvantaged homes, academically gifted students, immigrant students or students with an immigrant background, refugee students) and class size.

In the case of regression models based on multiple linear regression, the explanatory power of the regression models are also highlighted by reporting the R-squared (R^2), which represents the proportion of the observed variation in the dependent (or outcome) variable that can be explained by the independent (or explanatory) variables.

In order to ensure the robustness of the regression models, independent variables were introduced into the models in steps. This approach also required that the models at each step be based on the same sample. The restricted sample used for the different versions of the same model corresponded to the sample of the most extended (i.e. with the maximum number of independent variables) version of the model. Thus, the restricted sample of each regression model excluded those observations where all independent variables had missing values.

Multiple linear regression analysis

Multiple linear regression analysis provides insights into how the value of the continuous dependent (or outcome) variable changes when any one of the independent (or explanatory) variable varies while all other independent variables are held constant. In general, and with everything else held constant, a one-unit increase in the independent variable (X_i) increases, on average, the dependent variable (Y) by the units represented by the regression coefficient (β_i):

$$Y = \beta_0 + \beta_1 X_1 + \ldots + \beta_j X_j + \varepsilon$$

When interpreting multiple regression coefficients, it is important to keep in mind that each coefficient is influenced by the other independent variables in a regression model. The influence depends on the extent to which independent variables are correlated. Therefore, each regression coefficient does not capture the total effect of independent variables on dependent variables. Rather, each coefficient represents the additional effect of adding that variable to the model, if the effects of all other variables in the model are already accounted for. It is also important to note that, because cross-sectional survey data were used in these analyses, no causal conclusions can be drawn.

Regression coefficients in bold in the data tables presenting the results of regression analysis are statistically significantly different from 0 at the 95% confidence level.

Binary logistic regression analysis

Binary logistic regression analysis enables the estimation of the relationship between one or more independent (or explanatory) variables and the dependent (or outcome) variable with two categories. The regression coefficient (ß) of a logistic regression is the estimated increase in the log odds of the outcome per unit increase in the value of the predictor variable.

More formally, let Y be the binary outcome variable indicating no/yes with 0/1, and p be the probability of Y to be 1, so that p = prob(Y=1). Let $X_1,\ldots X_k$ be a set of explanatory variables. Then, the logistic regression of Y on $X_1,\ldots X_k$ estimates parameter values for $\beta_0, \beta_1, \ldots, \beta_k$ via the maximum likelihood method of the following equation:

$$Logit(p) = log(p/(1-p)) = \beta_0 + \beta_1 X_1 + \ldots + \beta_k X_k$$

Additionally, the exponential function of the regression coefficient ($exp(\beta)$) is obtained, which is the odds ratio (OR) associated with a one-unit increase in the explanatory variable. Then, in terms of probabilities, the equation above is translated into the following:

$$p = exp(\beta_0 + \beta_1 X_1 + \ldots + \beta_k X_k)/(1+exp(\beta_0 + \beta_1 X_1 + \ldots + \beta_k X_k))$$

The transformation of log odds (ß) into odds ratios ($exp(\beta)$; OR) makes the data more interpretable in terms of probability. The odds ratio (OR) is a measure of the relative likelihood of a particular outcome across two groups. The odds ratio for observing the outcome when an antecedent is present is:

$$OR = (p_{11}/p_{12})/(p_{21}/p_{22})$$

where p_{11}/p_{12} represents the "odds" of observing the outcome when the antecedent is present, and p_{21}/p_{22} represents the "odds" of observing the outcome when the antecedent is not present. Thus, an odds ratio indicates the degree to which an explanatory variable is associated with a categorical outcome variable with two categories (e.g. yes/no) or more than two categories. An odds ratio below one denotes a negative association; an odds ratio above one indicates a positive association; and an odds ratio of one means that there is no association. For instance, if the association between being a female teacher and having chosen teaching as first choice as a career is being analysed, the following odds ratios would be interpreted as:

- **0.2:** Female teachers are five times less likely to have chosen teaching as a first choice as a career than male teachers.
- **0.5:** Female teachers are half as likely to have chosen teaching as a first choice as a career than male teachers.
- **0.9:** Female teachers are 10% less likely to have chosen teaching as a first choice as a career than male teachers.
- **1:** Female and male teachers are equally likely to have chosen teaching as a first choice as a career.
- **1.1:** Female teachers are 10% more likely to have chosen teaching as a first choice as a career than male teachers.
- **2:** Female teachers are twice more likely to have chosen teaching as a first choice as a career than male teachers.
- **5:** Female teachers are five times more likely to have chosen teaching as a first choice as a career than male teachers.

The odds ratios in bold indicate that the relative risk/odds ratio is statistically significantly different from 1 at the 95% confidence level. To compute statistical significance around the value of 1 (the null hypothesis), the relative-risk/odds-ratio statistic is assumed to follow a log-normal distribution, rather than a normal distribution, under the null hypothesis.

PEARSON CORRELATION COEFFICIENT

Correlation coefficient measures the strength and direction of the statistical association between two variables. Correlation coefficients vary between -1 and 1; values around 0 indicate a weak association, while the extreme values indicate the strongest possible negative or positive association. The Pearson correlation coefficient (indicated by the letter r) measures the strength and direction of the linear relationship between two variables.

In this report, Pearson correlation coefficients are used to quantify relationships between country-level statistics.

CHANGES BETWEEN TALIS CYCLES AND IMPLICATIONS FOR ANALYSES

Change in the definition of the target population between TALIS cycles

The third TALIS cycle (i.e. TALIS 2018) allows analysis of changes over a 10-year period. Nevertheless, such analysis poses particular challenges and, therefore, requires caution. The various challenges include: country coverage and the target population within a given country may differ across cycles; the variables of interest could change, in addition, through changes in the questionnaires; moreover, the context of teaching and learning might also change. Therefore, comparisons across cycles need to be interpreted with care.

In TALIS 2008, teachers whose teaching is directed entirely or mainly to students with special needs were not part of the target population. However, this changed for TALIS 2013 and 2018, as teachers of special needs students got included in the target population. Hence, estimates representing the change from 2008 to 2013 and from 2008 to 2018 need to interpreted with caution. Nevertheless, it is important to note that teachers who work in schools that teach only special needs students were excluded from all TALIS cycles.

In the case of New Zealand, the definition of the target population has changed between TALIS 2013 and TALIS 2018. While, in 2013, schools with four or fewer eligible teachers were excluded, it was no longer the case in 2018. As a result, a filter variable (TALIS13POP), which excludes schools with four or fewer teachers for New Zealand, was used to estimate 2018 statistics for New Zealand in order to ensure comparability in data tables representing changes over time. Therefore, these results can differ from those reported for the full TALIS 2018 sample of New Zealand, especially for those based on principals' reports.

Change in the ISCED classification

The classification of levels of education is based on the International Standard Classification of Education (ISCED). ISCED is an instrument for compiling statistics on education internationally. In TALIS 2008 and 2013, ISCED-97 was used to report on teachers' and principals' educational attainment. The first classification, ISCED-97, was revised and the new one, ISCED-2011, was formally adopted in November 2011. ISCED-2011 is the basis of the education levels presented in the TALIS 2018 questionnaires for teachers and for school principals. The data tables reporting teachers' and principals' educational attainment in this report are based on ISCED-2011. A correspondence table (Table AI.B.2) was used to translate ISCED-97 education categories used in TALIS 2008 and 2013 into the categories of the new ISCED-2011, in order to produce tables reporting changes in teachers' and principals' educational attainment from 2008 to 2018. This correspondence table was used to compile Tables I.4.11 and I.4.27 in Chapter 4 of Volume I. However, changes over time in teachers' and principals' educational attainment will need to be interpreted with caution because of the change in the classification.

For certain countries, the correspondence between ISCED-97 and ISCED-2011 was revised to reflect country specificities, compared to the general approach presented in Table AI.B.2. As a result, for Tables I.4.11 and I.4.27, ISCED-97 level 5B was reclassified as ISCED-2011 level 6 in the cases of Italy and the Flemish Community of Belgium.

In Austria, the former "Pädagogische Akadmie" (pedagogical academy, ISCED-97 level 5B) was transformed into "Pädagogische Hochschule" (university college of teacher education, ISCED-2011 level 6) in 2007. Thus, in the case of Austria, the large change from 2008 to 2018 in ISCED levels 5 and 6 in Tables I.4.11 and I.4.27 is not only caused by the change in ISCED classification, but it is also a result of the change in the system of teacher education.

In Portugal, the teachers with a "pre-Bologna master's degree" are categorised as ISCED level 6. The question is presented in a way that prevents the disaggregation between "pre-Bologna master's degree" and "doctorate degree".

In Slovenia, teachers with a "pre-Bologna bachelor's degree" are categorised as ISCED level 5 (which typically corresponds to short-term tertiary education). The question is presented in a way that prevents the disaggregation between "pre-Bologna bachelor's degree" and "bachelor's degree".

Table A I.B.2 **Correspondence between ISCED-2011 and ISCED-97 levels used in TALIS 2018 publications**

TALIS 2008	TALIS 2013		TALIS 2018	
ISCED-97	ISCED-97	ISCED-97 categories	ISCED-2011	ISCED-2011 categories
–	–	–	Level 0	**Early childhood education** Refers to early childhood programmes that have an intentional education component and aim to develop cognitive, physical and socio-emotional skills necessary for participation in school and society. Programmes at this level are often differentiated by age.
–	–	–	Level 01	*Early childhood educational development*
Level 0	Level 0	**Pre-primary education** Initial stage of organised instruction, designed primarily to introduce very young children to a school-type environment.	Level 02	*Pre-primary education*
Level 1	Level 1	**Primary education or first stage of basic education** Normally designed to give students a sound basic education in reading, writing and mathematics.	Level 1	**Primary education** Designed to provide a sound basic education in reading, writing and mathematics and a basic understanding of some other subjects. Entry age: between 5 and 7. Typical duration: 6 years.
Level 2	Level 2	**Lower secondary education or second stage of basic education** The lower secondary level of education generally continues the basic programmes of the primary level, although teaching is typically more subject-focused, often employing more specialised teachers who conduct classes in their field of specialisation.	Level 2	**Lower secondary education** Completes provision of basic education, usually in a more subject-oriented way with more specialist teachers. Programmes may differ by orientation, general or vocational, though this is less common than at upper secondary level. Entry follows completion of primary education and typical duration is 3 years. In some countries, the end of this level marks the end of compulsory education.
Level 3	Level 3	**Upper secondary education** The final stage of secondary education in most OECD countries. Instruction is often more organised along subject- matter lines than at ISCED Level 2 and teachers typically need to have a higher level, or more subject-specific, qualification than at ISCED 2.[1]	Level 3	**Upper secondary education** Stronger specialisation than at lower secondary level. Programmes offered are differentiated by orientation: general or vocational. Typical duration is 3 years.
Level 4	Level 4	**Post-secondary non-tertiary education** These programmes straddle the boundary between upper secondary and post-secondary education from an international point of view, even though they might clearly be considered as upper secondary or postsecondary programmes in a national context.[2]	Level 4	**Post-secondary non-tertiary education** Serves to broaden rather than deepen the knowledge, skills and competencies gained in the upper secondary level. Programmes may be designed to increase options for participants in the labour market, for further studies at tertiary level, or both. Usually, programmes at this level are vocationally oriented.
Level 5	Level 5	**First stage of tertiary education** ISCED 5 programmes have an educational content more advanced than those offered at Levels 3 and 4.	–	–
Level 5B	*Level 5B*	*ISCED 5B programmes that are generally more practical/technical/occupationally specific than ISCED 5A programmes.*	Level 5	**Short-cycle tertiary education** Serves to deepen the knowledge developed at previous levels by imparting new techniques, concepts and ideas not generally covered in upper secondary education.
Level 5A Bachelor's degree	*Level 5A*	*ISCED 5A programmes that are largely theoretically based and are intended to provide sufficient qualifications for gaining entry into advanced research programmes and professions with high skills requirements.*	Level 6	**Bachelor's or equivalent level** Designed to provide participants with intermediate academic and/or professional knowledge, skills and competencies, leading to a first degree or equivalent qualification. Typical duration: 3-4 years full-time study.
Level 5A Master's degree			Level 7	**Master's or equivalent level** Stronger specialisation and more complex content than bachelor's level. Designed to provide participants with advanced academic and/or professional knowledge. May have a substantial research component.
Level 6	Level 6	**Second stage of tertiary education** This level is reserved for tertiary programmes that lead to the award of an advanced research qualification. The programmes are devoted to advanced study and original research.	Level 8	**Doctoral or equivalent level** Designed to lead to an advanced research qualification. Programmes at this level are devoted to advanced study and original research, and exist in both academic and professional fields.

1. There are substantial differences in the typical duration of ISCED 3 programmes, both across and between countries, typically ranging from two to five years of schooling.

2. They are often not significantly more advanced than programmes at ISCED 3, but they serve to broaden the knowledge of participants who have already completed a programme at Level 3. The students are typically older than those in ISCED 3 programmes.

Source: UNESCO-UIS (2012[2]), International Standard Classification of Education: ISCED 2011, UNESCO Institute for Statistics, Montreal, http://uis.unesco.org/sites/default/files/documents/international-standard-classification-of-education-isced-2011-en.pdf.

References

OECD (2019), *TALIS 2018 Technical Report*, OECD, Paris. [1]

UNESCO-UIS (2012), *International Standard Classification of Education: ISCED 2011*, UNESCO Institute for Statistics, Montreal, http://uis.unesco.org/sites/default/files/documents/international-standard-classification-of-education-isced-2011-en.pdf. [2]

ANNEX C

List of tables available on line

The following tables are available in electronic form only.

Chapter 2 Teaching and Learning for the Future

https://doi.org/10.1787/888933933045

WEB	**Table I.2.1**	Teaching practices
WEB	**Table I.2.2**	Teaching practices in primary education
WEB	**Table I.2.3**	Teaching practices in upper secondary education
WEB	**Table I.2.4**	Change in teaching practices from 2013 to 2018
WEB	**Table I.2.5**	Change in teaching practices pertaining to the clarity of instruction between 2013 and 2018
WEB	**Table I.2.6**	Teachers' assessment practices
WEB	**Table I.2.7**	Teachers' assessment practices in primary education
WEB	**Table I.2.8**	Teachers' assessment practices in upper secondary education
WEB	**Table I.2.9**	Change in teachers' assessment practices from 2013 to 2018
WEB	**Table I.2.10**	Use of class time during a typical lesson
WEB	**Table I.2.11**	Use of class time during a typical lesson in primary education
WEB	**Table I.2.12**	Use of class time during a typical lesson in upper secondary education
WEB	**Table I.2.13**	Time spent on actual teaching and learning, by teacher characteristics
WEB	**Table I.2.14**	Time spent on actual teaching and learning, by school characteristics
WEB	**Table I.2.15**	Relationship between class time spent on actual teaching and learning and teacher characteristics
WEB	**Table I.2.16**	Relationship between class time spent on actual teaching and teacher and class characteristics
WEB	**Table I.2.17**	Change in time spent on actual teaching and learning from 2008 to 2018
WEB	**Table I.2.18**	Change in time spent on classroom management from 2008 to 2018
WEB	**Table I.2.19**	Change in time spent on administrative tasks from 2008 to 2018
WEB	**Table I.2.20**	Teachers' self-efficacy, by teachers' teaching experience
WEB	**Table I.2.21**	Primary teachers' self-efficacy
WEB	**Table I.2.22**	Upper secondary teachers' self-efficacy
WEB	**Table I.2.23**	Change in teachers' self-efficacy from 2013 to 2018
WEB	**Table I.2.24**	Relationship between the use of cognitive activation practices and class and teacher characteristics
WEB	**Table I.2.25**	Relationship between self-efficacy and class and teacher characteristics
WEB	**Table I.2.26**	Relationship between class time spent on classroom management and self-efficacy in classroom management
WEB	**Table I.2.27**	Teachers' working hours
WEB	**Table I.2.28**	Primary teachers' working hours
WEB	**Table I.2.29**	Upper secondary teachers' working hours
WEB	**Table I.2.30**	Change in teachers' working hours from 2013 to 2018
WEB	**Table I.2.31**	Principals' working time
WEB	**Table I.2.32**	Principals' working time in primary education
WEB	**Table I.2.33**	Principals' working time in upper secondary education
WEB	**Table I.2.34**	Change in principals' working time from 2013 to 2018
WEB	**Table I.2.35**	Teachers' views on their colleagues' attitudes towards innovation
WEB	**Table I.2.36**	Primary teachers' views on their colleagues' attitudes towards innovation
WEB	**Table I.2.37**	Upper secondary teachers' views on their colleagues' attitudes towards innovation
WEB	**Table I.2.38**	Teachers' openness to change, by teacher characteristics
WEB	**Table I.2.39**	Innovation in school practices
WEB	**Table I.2.40**	Innovation in school practices in primary education
WEB	**Table I.2.41**	Innovation in school practices in upper secondary education
WEB	**Table I.2.42**	School's openness to new ideas, by school characteristics

Chapter 3 The Changing Landscape of Teaching

https://doi.org/10.1787/888933933064

WEB	**Table I.3.1**	Teachers' age
WEB	**Table I.3.2**	Primary teachers' age
WEB	**Table I.3.3**	Upper secondary teachers' age
WEB	**Table I.3.4**	Change in age of teachers from 2008 to 2018
WEB	**Table I.3.5**	Principals' age
WEB	**Table I.3.6**	Primary principals' age
WEB	**Table I.3.7**	Upper secondary principals' age
WEB	**Table I.3.8**	Change in age of principals from 2008 to 2018
WEB	**Table I.3.9**	Teachers' work experience
WEB	**Table I.3.10**	Primary teachers' work experience
WEB	**Table I.3.11**	Upper secondary teachers' work experience
WEB	**Table I.3.12**	Change in teachers' teaching experience from 2008 to 2018
WEB	**Table I.3.13**	Principals' work experience
WEB	**Table I.3.14**	Primary principals' work experience
WEB	**Table I.3.15**	Upper secondary principals' work experience
WEB	**Table I.3.16**	Change in principals' work experience as a principal from 2008 to 2018
WEB	**Table I.3.17**	Teachers' gender, by school characteristics
WEB	**Table I.3.18**	Primary teachers' gender
WEB	**Table I.3.19**	Upper secondary teachers' gender
WEB	**Table I.3.20**	Change in the proportion of female teachers from 2008 to 2018
WEB	**Table I.3.21**	Principals' gender, by school characteristics
WEB	**Table I.3.22**	Primary principals' gender
WEB	**Table I.3.23**	Upper secondary principals' gender
WEB	**Table I.3.24**	Change in the proportion of female principals from 2008 to 2018
WEB	**Table I.3.25**	School composition
WEB	**Table I.3.26**	Primary school composition
WEB	**Table I.3.27**	Upper secondary school composition
WEB	**Table I.3.28**	Classroom composition
WEB	**Table I.3.29**	Change in the concentration of students who are non-native speakers in school from 2008 to 2018
WEB	**Table I.3.30**	Change in the concentration of students who are from socio-economically disadvantaged homes in school from 2013 to 2018
WEB	**Table I.3.31**	Change in the concentration of students with special needs in school from 2013 to 2018
WEB	**Table I.3.32**	Principals' point of view regarding equity beliefs of teachers
WEB	**Table I.3.33**	Principals' point of view regarding diversity beliefs of teachers
WEB	**Table I.3.34**	School practices related to equity
WEB	**Table I.3.35**	School practices related to diversity
WEB	**Table I.3.36**	Primary schools' practices related to diversity
WEB	**Table I.3.37**	Upper secondary schools' practices related to diversity
WEB	**Table I.3.38**	Self-efficacy in multicultural environments
WEB	**Table I.3.39**	Primary teachers' self-efficacy in multicultural environments
WEB	**Table I.3.40**	Upper secondary teachers' self-efficacy in multicultural environments
WEB	**Table I.3.41**	Relationship between self-efficacy in multicultural environments and class and teacher characteristics
WEB	**Table I.3.42**	School safety
WEB	**Table I.3.43**	Primary schools' safety
WEB	**Table I.3.44**	Upper secondary schools' safety
WEB	**Table I.3.45**	Change in school safety from 2013 to 2018
WEB	**Table I.3.46**	Teacher-student relations
WEB	**Table I.3.47**	Teacher-student relations in primary schools
WEB	**Table I.3.48**	Teacher-student relations in upper secondary schools
WEB	**Table I.3.49**	Change in teacher-student relations from 2008 to 2018
WEB	**Table I.3.50**	Classroom discipline
WEB	**Table I.3.51**	Classroom discipline in primary schools
WEB	**Table I.3.52**	Classroom discipline in upper secondary schools
WEB	**Table I.3.53**	Relationship between classroom disciplinary climate and class characteristics
WEB	**Table I.3.54**	Relationship between classroom disciplinary climate and class and teacher characteristics
WEB	**Table I.3.55**	Change in classroom discipline from 2008 to 2018
WEB	**Table I.3.56**	Relationship between self-efficacy and class characteristics
WEB	**Table I.3.57**	Relationship between self-efficacy and class and teacher characteristics

WEB **Table I.3.58** Relationship between class time spent on actual teaching and learning and class characteristics
WEB **Table I.3.59** Relationship between class time spent on actual teaching and learning and class and teacher characteristics
WEB **Table I.3.60** Relationship between the use of cognitive activation practices and classroom disciplinary climate
WEB **Table I.3.61** Relationship between the use of cognitive activation practices and classroom disciplinary climate and class characteristics
WEB **Table I.3.62** Relationship between the use of cognitive activation practices and classroom disciplinary climate and class and teacher characteristics
WEB **Table I.3.63** Impact of shortages of school resources
WEB **Table I.3.64** Impact of shortages of resources in primary schools
WEB **Table I.3.65** Impact of shortages of resources in upper secondary schools
WEB **Table I.3.66** Spending priorities in education, according to teachers
WEB **Table I.3.67** Spending priorities in education, according to primary teachers
WEB **Table I.3.68** Spending priorities in education, according to upper secondary teachers
WEB **Table I.3.69** Improving teacher salaries as a priority, by school characteristics
WEB **Table I.3.70** Teachers' actual salaries relative to earnings of tertiary-educated workers between age 26 and age 64 (2016)
WEB **Table I.3.71** Teachers' statutory salaries, based on the most prevalent qualifications at different points in teachers' careers (2017)
WEB **Table I.3.72** Relationship between improving teacher salaries as a spending priority and motivation to become a teacher
WEB **Table I.3.73** Relationship between reducing class sizes as a spending priority and class characteristics
WEB **Table I.3.74** School staff resources
WEB **Table I.3.75** Staff resources in primary schools
WEB **Table I.3.76** Staff resources in upper secondary schools
WEB **Table I.3.77** Change in student-teacher ratio from 2008 to 2018
WEB **Table I.3.78** Class size
WEB **Table I.3.79** Change in class size from 2008 to 2018

Chapter 4 Attracting and Effectively Preparing Candidates

https://doi.org/10.1787/888933933083

WEB **Table I.4.1** Motivation to join the profession, by teachers' teaching experience
WEB **Table I.4.2** Primary teachers' motivation to join the profession
WEB **Table I.4.3** Upper secondary teachers' motivation to join the profession
WEB **Table I.4.4** Teaching as a first career choice, by teacher characteristics
WEB **Table I.4.5** Relationship between teaching as a career choice and motivation to become a teacher
WEB **Table I.4.6** Relationship between teaching as a first career choice and job satisfaction
WEB **Table I.4.7** Relationship between teaching as a first career choice and self-efficacy
WEB **Table I.4.8** Teachers' highest educational attainment
WEB **Table I.4.9** Primary teachers' highest educational attainment
WEB **Table I.4.10** Upper secondary teachers' highest educational attainment
WEB **Table I.4.11** Change in teachers' educational attainment from 2008 to 2018
WEB **Table I.4.12** Type of teacher education or training programme, by year of completion
WEB **Table I.4.13** Content of teacher education or training programme, by year of completion
WEB **Table I.4.14** Comprehensiveness of teacher education or training programme, by year of completion
WEB **Table I.4.15** Content of teacher education or training programme for primary teachers
WEB **Table I.4.16** Content of teacher education or training programme for upper secondary teachers
WEB **Table I.4.17** Relationship between self-efficacy in classroom management and being trained in classroom management
WEB **Table I.4.18** Relationship between the use of ICT for teaching and being trained in the use of ICT for teaching
WEB **Table I.4.19** Relationship between self-efficacy in multicultural environments and being trained in a multicultural or multilingual setting
WEB **Table I.4.20** Sense of preparedness for teaching
WEB **Table I.4.21** Primary teachers' sense of preparedness for teaching
WEB **Table I.4.22** Upper secondary teachers' sense of preparedness for teaching
WEB **Table I.4.23** Stay abroad during teacher education
WEB **Table I.4.24** Principals' highest educational attainment
WEB **Table I.4.25** Primary principals' highest educational attainment
WEB **Table I.4.26** Upper secondary principals' highest educational attainment
WEB **Table I.4.27** Change in principals' highest educational attainment from 2008 to 2018
WEB **Table I.4.28** Principals' formal training
WEB **Table I.4.29** Primary principals' formal training
WEB **Table I.4.30** Upper secondary principals' formal training
WEB **Table I.4.31** Change in principals' formal training from 2013 to 2018
WEB **Table I.4.32** Novice teachers, by school characteristics
WEB **Table I.4.33** Teachers' job satisfaction with their work environment, by teachers' teaching experience

WEB	**Table I.4.34**	Teachers' job satisfaction with their profession, by teachers' teaching experience
WEB	**Table I.4.35**	Access to induction activities
WEB	**Table I.4.36**	Access to induction activities in primary schools
WEB	**Table I.4.37**	Access to induction activities in upper secondary schools
WEB	**Table I.4.38**	Participation in induction activities during first employment, by teachers' teaching experience
WEB	**Table I.4.39**	Participation in induction activities at the current school, by teachers' teaching experience
WEB	**Table I.4.40**	Participation in induction activities in primary schools
WEB	**Table I.4.41**	Participation in induction activities in upper secondary schools
WEB	**Table I.4.42**	Types of induction activities
WEB	**Table I.4.43**	Types of induction activities in primary schools
WEB	**Table I.4.44**	Types of induction activities in upper secondary schools
WEB	**Table I.4.45**	Relationship between self-efficacy and participation in induction activities during first employment
WEB	**Table I.4.46**	Relationship between self-efficacy and participation in induction activities during first employment and content of teacher education
WEB	**Table I.4.47**	Relationship between self-efficacy and participation in induction activities at the current school
WEB	**Table I.4.48**	Relationship between self-efficacy and participation in induction activities at the current school and content of teacher education
WEB	**Table I.4.49**	Relationship between job satisfaction and participation in induction activities during first employment
WEB	**Table I.4.50**	Relationship between job satisfaction and participation in induction activities during first employment and content of teacher education
WEB	**Table I.4.51**	Relationship between job satisfaction and participation in induction activities at the current school
WEB	**Table I.4.52**	Relationship between job satisfaction and participation in induction activities at the current school and content of teacher education
WEB	**Table I.4.53**	Relationship between self-efficacy and team teaching with experienced teachers being part of induction
WEB	**Table I.4.54**	Relationship between job satisfaction and team teaching with experienced teachers being part of induction
WEB	**Table I.4.55**	Relationship between self-efficacy and reduced teaching load being part of induction
WEB	**Table I.4.56**	Relationship between job satisfaction and reduced teaching load being part of induction
WEB	**Table I.4.57**	Teachers' workload, by teachers' teaching experience
WEB	**Table I.4.58**	Relationship between the number of working hours and teacher experience
WEB	**Table I.4.59**	Relationship between the number of working hours and teacher experience and employment status
WEB	**Table I.4.60**	Access to mentoring programmes
WEB	**Table I.4.61**	Access to mentoring programmes in primary schools
WEB	**Table I.4.62**	Access to mentoring programmes in upper secondary schools
WEB	**Table I.4.63**	Importance of mentoring
WEB	**Table I.4.64**	Peer mentoring, by teachers' teaching experience
WEB	**Table I.4.65**	Peer mentoring in primary schools
WEB	**Table I.4.66**	Peer mentoring in upper secondary schools
WEB	**Table I.4.67**	Change in participation in mentoring programmes from 2013 to 2018

Chapter 5 Providing Opportunities for Continuous Development

https://doi.org/10.1787/888933933102

WEB	**Table I.5.1**	Teachers' recent participation in professional development, by teacher characteristics
WEB	**Table I.5.2**	Teachers' recent participation in professional development, by school characteristics
WEB	**Table I.5.3**	Primary teachers' recent participation in professional development, by school characteristics
WEB	**Table I.5.4**	Upper secondary teachers' recent participation in professional development, by school characteristics
WEB	**Table I.5.5**	Relationship between participation in professional development and the social-utility values teachers indicate as reasons for entering the profession
WEB	**Table I.5.6**	Relationship between participation in professional development and the personal-utility values teachers indicate as reasons for entering the profession
WEB	**Table I.5.7**	Types of professional development undertaken by teachers, by teachers' teaching experience
WEB	**Table I.5.8**	Types of professional development undertaken by primary teachers
WEB	**Table I.5.9**	Types of professional development undertaken by upper secondary teachers
WEB	**Table I.5.10**	Types of professional development undertaken by principals
WEB	**Table I.5.11**	Types of professional development undertaken by primary principals
WEB	**Table I.5.12**	Types of professional development undertaken by upper secondary principals
WEB	**Table I.5.13**	Relationship between teachers' job satisfaction and participation in impactful professional development
WEB	**Table I.5.14**	Relationship between teachers' self-efficacy and participation in impactful professional development
WEB	**Table I.5.15**	Characteristics of effective professional development, by teachers' teaching experience
WEB	**Table I.5.16**	Characteristics of effective professional development in primary education
WEB	**Table I.5.17**	Characteristics of effective professional development in upper secondary education
WEB	**Table I.5.18**	Content of professional development, by teachers' teaching experience
WEB	**Table I.5.19**	Content of professional development in primary education

ANNEX D

List of TALIS 2018 contributors

TALIS is a collaborative effort, bringing together expertise from participating countries that share an interest in developing a survey programme to inform their policies about teachers, teaching and learning. This report is the product of collaboration and co-operation among the member countries of the OECD and the partner countries participating in the third round of TALIS. Engagement with bodies representing teachers (Education International) and regular briefings and exchanges with the Trade Union Advisory Council (TUAC) at the OECD have been very important in the development and implementation of TALIS. In particular, the co-operation of the teachers and principals in the participating schools has been crucial in ensuring the success of TALIS.

The TALIS Governing Board has, in the context of OECD objectives, driven the development of TALIS and has determined its policy objectives. This includes the objectives of the analysis and reports produced, the conceptual framework and the development of the TALIS questionnaires. The governing board has also overseen the implementation of the survey and the preparation of this report.

Participating countries implemented TALIS at the national level at national project centres through, among others, national project managers (NPMs), national data managers (NDMs) and national sampling managers (NSMs), who were subject to rigorous technical and operational procedures. The NPMs played a crucial role in helping to secure the co-operation of schools, to oversee the national adaptation, translation and validation of the questionnaires, to manage the national data collection and processing and to verify the results from TALIS. The NDMs co-ordinated data processing at the national level and liaised in the cleaning of the data. The NSMs were responsible for implementing TALIS, respecting sampling procedures and other rigorous technical and operational procedures.

A Questionnaire Expert Group (QEG) was established to translate the policy priorities into questionnaires to address the policy and analytical questions that had been agreed by the participating countries. A Technical Advisory Group (TAG) was assembled to advise during the decision-making process for technical or analytical issues. A group of subject-matter experts and analysts were also critical in the analytical phase and drafting of the initial reports.

The co-ordination and management of implementation at the international level was the responsibility of the appointed contractor, the International Association for the Evaluation of Educational Achievement (IEA) and its consortium members, Statistics Canada (Ottawa, Canada) and the Australian Council for Educational Research (ACER, Melbourne, Australia). The TALIS Consortium included staff from the IEA offices in Amsterdam and Hamburg, Statistics Canada and ACER. The IEA Hamburg was responsible for the overall survey planning, survey administration and the international data management. The IEA Amsterdam Secretariat was responsible for overseeing the verification of the translation and for quality control in general. Statistics Canada, as a sub-contractor of the IEA Data Processing Center, Hamburg (DPC), developed the sampling plan, advised countries on its application, calculated the sampling weights and advised on the calculation of sampling errors. Furthermore, ACER was responsible for the quality control of the final report tables and select analytical advice.

The OECD Secretariat had overall responsibility for managing the programme, monitoring its implementation on a day-to-day basis and serving as the secretariat of the TALIS Governing Board.

A note regarding Israel

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.

ANNEX D
List of TALIS 2018 contributors[1]

Members of the TALIS Governing Board

Chair: João Costa; Shinichi Yamanaka (former)

Alberta (Canada): Leslie Twilley; Karen Andrews (former)

Australia: Oon Ying Chin

Austria: Andreas Grimm

Belgium: Isabelle Erauw; Michèle Mombeek (substitute)

Brazil: Marcus Vinícius Carvalho Rodrigues (former); Maria Inês Fini (former)

Bulgaria: Neda Kristanova

Chile: Juan Luis Cordero; Eliana Chamizo Álvarez (substitute); Hugo Nervi (former)

Ciudad Autónoma de Buenos Aires (Argentina): Tamara Vinacur

Colombia: María Figueroa Cahnspeyer; Ximena Dueñas (former)

Croatia: Ana Markočić Dekanić; Maja Jukić (former); Michelle Braš Roth (former)

Czech Republic: Tomáš Zatloukal; Josef Basl (substitute)

Denmark: Charlotte Rotbøll Sjøgreen; Mette Hansen (former)

England (UK): Michele Weatherburn; Libby Wright (substitute); Ian Taylor (former)

European Commission: Francesca Crippa

Estonia: Eneken Juurmann

Finland: Kristiina Volmari

France: Axelle Charpentier; Olivier Cosnefroy (former)

Georgia: Giorgi Ratiani; Natia Andguladze (former)

Hungary: Ildikó Balázsi; Laszló Ostorics (substitute); Csilla Stéger (former)

Iceland: Sonja Dögg Pálsdóttir; Sigurjón Mýrdal (former)

Israel: Hagit Glickman

Italy: Antonietta D'Amato; Roberto Ricci (substitute); Antonio Panaggio (substitute); Francesca Brotto (former)

Japan: Koji Yanagisawa; Kojiro Sato (former); Shinichi Yamanaka (former)

Kazakhstan: Yerlikzhan Sabyruly; Dilyara Tashibaeva (former); Serik Irsaliyev (former)

Korea: Dongyup Lee; Hyunjung Kim (former); Heesuk An (former)

Latvia: Gunta Arāja

Lithuania: Audronė Albina Razmantienė

Malta: Louis Scerri

Mexico: Roberto Peña Resendiz; Otto Granados Roldán (former); Ana Maria Aceves Estrada (former substitute)

Netherlands: Hans Ruesink; Loes Leget (substitute)

New Zealand: Barclay Anstiss; Charlotte Harris-Miller (former)

Norway: Anne Magdalena Solbu Kleiven; Siv Hilde Lindstrøm (former)

Portugal: João Costa; Luísa Canto e Castro Loura (substitute and former TGB representative)

Romania: Roxana Mihail (acting); Silviu Cristian Mirescu (former)

Russian Federation: Sergey Kravtsov

Saudi Arabia: Faisal Almishari Al Saud; Al Baraa Taiba (former)

Shanghai (China): Minxuan Zhang

Singapore: Siew Hoong Wong

Slovak Republic: Romana Kanovská

Slovenia: Andreja Schmuck

South Africa: Shunmugam Govindasam Padayachee

Spain: Carmen Tovar Sánchez

Sweden: Tomas Matti; Katalin Bellaagh (former)

Turkey: Adnan Boyacı; Semih Aktekin (former)

United Arab Emirates: Masood Badri

United States: Mary Coleman

Viet Nam: My Ha Le

TALIS national project managers

Alberta (Canada): Janusz Zieminski

Australia: Sue Thomson; Petra Lietz (former); Katherine Dix (former)

Austria: Juliane Schmich; Simone Breit (former)

Belgium: Valérie Quittre; Filip Van Droogenbroeck; Isabelle Erauw (former)

Brazil: Juliana Marques da Silva; Rachel Pereira Rabelo (Deputy); Daniel Capistrano de Oliveira (former)

Bulgaria: Marina Mavrodieva

Chile: Paula Andrea Guardia Gutiérrez; Carla Guazzini Galdames (former)

Ciudad Autónoma de Buenos Aires (Argentina): Lorena Landeo; Carolina Meschengieser (substitute); Pía Otero (former)

Colombia: Natalia González Gómez; Ximena Dueñas (former); Andres Gutierrez (former)

Croatia: Ana Markočić Dekanić; Michelle Braš Roth (former)

Cyprus:[2, 3] Yiasemina Karagiorgi

Czech Republic: Josef Basl

Denmark: Mikkel Bergqvist; Søren Trolborg (former)

England (UK): Laura James

Estonia: Anne-Mai Meesak; Ülle Übius (former)

Finland: Matti Taajamo

France: Rizlaine Embarek; Olivier Cosnefroy (former)

Georgia: Zakaria Giunashvili; Giorgi Ratiani (former); Natia Andguladze (former)

Hungary: Csaba Vadász; László Ostorics (former)

Iceland: Ragnar F. Ólafsson

Israel: Hadas Gelbart; Inbal Ron-Kaplan (former)

Italy: Laura Palmerio

Japan: Kentaro Sugiura; Akiko Yamada (former)

Kazakhstan: Rizagul Syzdykbayeva; Dilyara Nurlanovna Tashibayeva (former)

Korea: Ju Hur

Latvia: Andrejs Geske

Lithuania: Egle Melnike

Malta: Louis Scerri

Mexico: Roberto Peña Resendiz; Marina Santos Insúa; Ana María Aceves-Estrada (former)

Netherlands: Eva Van der Boom; Nadine Zeeman (assistant); Linda Dominguez (former assistant)

New Zealand: Nicola Marshall; Debra Taylor (former)

Norway: Inger Throndsen

Portugal: Nuno Miguel Rodrigues

Romania: Roxana Mihail; Silviu Cristian Mirescu (former)

Russian Federation: Ilya Denisenko; Elena Chernobaj (former)

Saudi Arabia: Fahad Ibrahim Almoqhim; Ali Altamimi (former)

Shanghai (China): Minxuan Zhang

Singapore: Han Pin Goh; Sean Tan (former)

Slovak Republic: Kristina Čevorová; Júlia Miklovičová (former)

Slovenia: Barbara Japelj Pavešić

South Africa: Mark Chetty

Spain: Verónica Díez Girado; Carmen Tovar Sánchez (former)

Sweden: Tomas Matti

Chinese Taipei: Hwawei Ko

Turkey: İlkay Aydın

United Arab Emirates: Mariam Al Ali

United States: Mary Coleman

Viet Nam: My Ha Le

TALIS national data managers

Alberta (Canada): David Kerner

Australia: Elizabeth O'Grady

Austria: Juliane Schmich

Belgium: Filip Van Droogenbroeck; Valérie Quittre

Brazil: Camila Neves Souto; Rachel Pereira Rabelo

Bulgaria: Marina Mavrodieva

Chile: Mario Rivera Cayupi; Paula Andrea Guardia Gutiérrez (former); María Victoria Martínez Muñoz (former)

Ciudad Autónoma de Buenos Aires (Argentina): Sebastián Schurmann; Adrián Sepliarsky

Colombia: Cristian Fabian Montaño Rincón

Croatia: Marina Markuš Sandrić

Cyprus:[4] Andreas Polydorou

Czech Republic: Simona Boudová

Denmark: Justyna Wijas-Jensen; Monika Klingsbjerg-Besrechel; Alberta Hansen

England (UK): Dave Thomson

Estonia: Lauri Veski

Finland: Eija Puhakka

France: Anaëlle Solnon; Toki Ranarivony (former)

Georgia: Giorgi Ratiani; Natia Andguladze (former)

Hungary: Csaba Rózsa

Iceland: Ragnar F. Ólafsson

Israel: Hadas Gelbart

Italy: Paola Giangiacomo

Japan: Kenji Matsubara

Kazakhstan: Rizagul Syzdykbayeva; Kuanysh Sailau (former)

Korea: Won seok Choi

Latvia: Antra Ozola

Lithuania: Egle Melnike; Benediktas Bilinskas

Malta: Karen Grixti

Mexico: Proceso Silva

Netherlands: Eva Van der Boom

New Zealand: Nicola Marshall; Rachel Borthwick

Norway: Ann-Britt Haavik

Portugal: Joaquim Santos

Romania: Liviu Blanariu

Russian Federation: Alina Kuleshova; Alex Baryshkov (former)

Saudi Arabia: Abdulaziz Al-Ajaji; Abdualmohsen Almshari; Naif Alotaibi

Shanghai (China): Xiaohu Zhu

Singapore: Chin Min Lim; Huiyuan Lin; Shu Hui Chai; Zi Xian Chan

Slovak Republic: Kristína Čevorová

Slovenia: Barbara Japelj Pavešić

South Africa: Jerry Tshikororo

Spain: Francisco Javier García Crespo

Sweden: Jannike Nilbrink; Marija Toplak

Chinese Taipei: Kuan-Ming Chen

Turkey: İlker Damlar; İrem Özbay

United Arab Emirates: Mohammed Mazheruddin

United States: Nita Lemanski

Viet Nam: Nguyen Ngoc Tu

TALIS national sampling managers

Alberta (Canada): Janusz Zieminski

Australia: Martin Murphy

Austria: Juliane Schmich

Belgium: Valérie Quittre; Isabelle Erauw

Brazil: Camila Neves Souto

Bulgaria: Marina Mavrodieva

Chile: María José Sepúlveda

Ciudad Autónoma de Buenos Aires (Argentina): Adrián Sepliarsky

Colombia: Cristian Fabian Montaño Rincón

Croatia: Marina Markuš Sandrić.

Cyprus:[5] Thekla Afantiti-Lamprianou

Czech Republic: Simona Boudová

Denmark: Justyna Wijas-Jensen; Monika Klingsbjerg-Besrechel

England (UK): Dave Thomson; Sam Sims

Estonia: Lauri Veski

Finland: Eija Puhakka

France: Anaëlle Solnon; Toki Ranarivony (former)

Georgia: Zakaria Giunashvili

Hungary: Csaba Rózsa

Iceland: Ragnar F. Ólafsson

Israel: Hadas Gelbart; Inbal Ron-Kaplan

Italy: Carlo Di Chiacchio

Japan: Kenji Matsubara

Kazakhstan: Dilyara Tashibayeva; Kuanysh Sailau

Korea: Won seok Choi

Latvia: Andrejs Geske

Lithuania: Egle Melnike; Greta Baliutaviciute

Malta: Karen Grixti

Mexico: Noe Moacyr

Netherlands: Eva Van der Boom

New Zealand: Debra Taylor

Norway: Ann-Britt Haavik

Portugal: Joaquim Santos

Romania: Liviu Blanariu

Russian Federation: Alina Kuleshova; Daria Tuchkova (former)

Saudi Arabia: Abdulsalam A. AL-Shogeir; Abdullah M. Al-Jouiee

Shanghai (China): Xiaohu Zhu

Singapore: Lee Shan Chan

Slovak Republic: Júlia Miklovičová

Slovenia: Barbara Japelj Pavešić

South Africa: Lebogang Phasha

Spain: Francisco Javier García Crespo

Sweden: Christian Tallberg

Chinese Taipei: Minglei Chen; Jun Ren Lee

Turkey: İlker Damlar; İrem Özbay

United Arab Emirates: Mohammed Mazheruddin

United States: Keith Rust

OECD Secretariat

Core team

Project leader

Karine Tremblay (strategic development and project management, TGB management)

Analysis team

Pablo Fraser (NPM management and analysis)

Noémie Le Donné (report production co-ordinator, TAG management and analysis)

Julie Bélanger (former)

Katarzyna Kubacka (former)

Statistical analysis and consultant team

Maxence Castiello

Gabor Fülöp

Aakriti Kalra

Markus Schwabe

Valentin Burban (former)

Hélène Guillou (former)

Judit Pál (former)

Administrative support team

Florence Bernard (Assistant, French version)

Emily Groves (Project Assistant)

Thibaut Gigou (former)

Delphine Versini (former)

Communications support team

Henri Pearson

Other secretariat support

Strategic development

Yuri Belfali (head of Early Childhood and Schools division)

Andreas Schleicher (OECD director for Education and Skills)

Editorial and communications support

Marilyn Achiron (editor)

Cassandra Davis (communications manager)

Sophie Limoges

Rose Bolognini

Analytic services

Francesco Avvisati

Clara Barata

Arno Engel

Miyako Ikeda

Alejandro Paniagua

Nora Revai

Carine Viac

Statistical analysis

Giannina Rech

TALIS expert groups

Questionnaire Expert Group (QEG)

Chair: Ralph Carstens (IEA Hamburg)

John Ainley (Australian Council for Educational Research, *ex officio*)

Julie Bélanger (RAND Europe, United Kingdom, *ex officio*)

Sigrid Blömeke (Centre for Educational Measurement, CEMO, Norway)

Jean Dumais (Statistics Canada, *ex officio*)

Hillary Hollingsworth (Australian Council for Educational Research)

David Kaplan (University of Wisconsin-Madison, United States of America)

Daniel Mujis (Ofsted; formerly University of Southampton, United Kingdom)

Trude Nilsen (University of Oslo, Norway)

Heather Price (Marian University, United States of America)

Ronny Scherer (CEMO and University of Oslo, Norway)

Fons van der Vijver (University of Tilburg, the Netherlands, *ex officio*)

Extended Questionnaire Expert Group

Elsebeth Aller (Ministry of Education; formerly Metropolitan University College, Denmark)

Sarah Howie (University of Stellenbosch, South Africa)

Magdalena Mok (The Education University of Hong Kong, Hong Kong, China)

Susan Seeber (Georg-August-Universität Göttingen, Germany)

Sandy Taut (Educational Quality Agency, State of Bavaria, Germany; formerly Pontificia Universidad Católica de Chile, Chile)

Technical Advisory Group (TAG)

Chair: Fons van de Vijver (University of Tilburg, the Netherlands)

Pascal Bressoux (Université Grenoble Alpes, France)

Timothy Kennel (US Census Bureau, United States)

Paul Leseman (Utrecht University, the Netherlands)

Bart Meuleman (University of Leuven, Belgium)

Christian Monseur (University of Liège, Belgium)

TALIS Consortium

IEA Hamburg (Hamburg, Germany)

Core management team

Steffen Knoll (International Study Co-Director – Operations)

Ralph Carstens (International Study Co-Director – Content, Co-Head – International Studies)

Viktoria Böhm (International Study Coordinator)

Friederike Westphal (International Study Coordinator, until early 2016)

Alena Becker (International Data Manager)

Christine Busch (Deputy International Data Manager)

Data management team

Olesya Drozd (Research Analyst)

Svenja Kalmbach (Student Assistant)

Hannah Köhler (Research Analyst)

Oriana Mora (Research Analyst)

Xiao Sui (Research Analyst)

Scaling, analysis and table production team

Agnes Stancel-Piatak (Senior Research Analyst, Deputy Head of Research and Analysis Unit, RandA)

Umut Atasever (Research Analyst)

Falk Briese (Senior Research Analyst)

Minge Chen (Research Analyst)

Deana Desa (Research Analyst)

Ann-Kristin Koop (Research Analyst)

Nadine Twele (Research Analyst)

Justin Wild (Research Analyst)

Meeting organisation

Bettina Wietzorek (Meeting Coordinator and SharePoint Administrator)

Catherine Pfeifer (Meeting Coordinator)

ICT services

Malte Bahrenfuß (ICT Service Manager)

Jan Pohland (ICT Service Provider)

Software development and testing

Meng Xue (Head of Software Development Unit)

Limiao Duan (Programmer)

Christian Harries (Programmer)

Maike Junod (Programmer)

Deepti Kalamadi (Programmer)

Devi Potham Rajendra Prasath (Programmer)

Ievgen Kosievtsov (Programmer)

Kevin Kalitzki (Programmer)

Juan Vilas (Programmer)

Svetoslav Velkov (Software Tester)

Michael Jung (Requirements Engineer and Software Tester)

Ekaterina Mikheeva (Requirements Engineer and Software Tester)

Samih Al-areqi (Requirements Engineer and Software Tester)

Elma Cela (Requirements Engineer and Software Tester)

IEA Amsterdam (Amsterdam, the Netherlands)

Andrea Netten (Director, IEA Amsterdam)

David Ebbs (Senior Research Officer)

Michelle Djekić (Research and Liaison Officer)

Sandra Dohr (Junior Research Officer)

Roel Burgers (Financial Director)

Isabelle Gémin (Senior Financial Officer)

Translation verification was performed in co-operation with cApStAn Linguistic Quality Control, an independent linguistic quality control agency located in Brussels, Belgium. IEA Amsterdam appointed, contracted and trained independent quality observers to monitor survey implementation in each participating country.

Statistics Canada (Ottawa, Canada)

Jean Dumais (Sampling Referee)

Yves Morin (Senior Survey Statistician)

Ahalya Sivathayalan (Survey Statistician)

Naïma Gouzi (Survey Statistician)

Australian Council for Educational Research (ACER, Melbourne, Australia)

John Ainley (Principal Research Fellow)

Hilary Hollingsworth (Principal Research Fellow)

Eveline Gebhardt (Principal Research Fellow)

Tim Friedman (Research Fellow)

Consultants

Hynek Cigler (Masaryk University, Czech Republic)

Eugenio J. Gonzalez (Educational Testing Service, United States)

Plamen Mirazchiyski (International Educational Research and Evaluation Institute)

Leslie A. Rutkowski (Indiana University Bloomington, United States)

Notes

1. This information was correct as at 21 May 2019.
2. **Note by Turkey**: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".
3. **Note by all the European Union Member States of the OECD and the European Union**: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.
4. See endnotes 2 and 3.
5. See endnotes 2 and 3.

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

The OECD is a unique forum where governments work together to address the economic, social and environmental challenges of globalisation. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy and the challenges of an ageing population. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and work to co-ordinate domestic and international policies.

The OECD member countries are: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The European Union takes part in the work of the OECD.

OECD Publishing disseminates widely the results of the Organisation's statistics gathering and research on economic, social and environmental issues, as well as the conventions, guidelines and standards agreed by its members.

OECD PUBLISHING, 2, rue André-Pascal, 75775 PARIS CEDEX 16
ISBN 978-92-64-75256-6 – 2019

TALIS 2018 Results:

TEACHERS AND SCHOOL LEADERS AS LIFELONG LEARNERS

VOLUME I

Do teachers spend more time on actual teaching and learning in a typical lesson compared to previous years? Do they feel prepared to teach when they start teaching? What sort of continuous professional development programmes do they participate in and how does it impact their practice? This report looks first at how teachers apply their knowledge and skills in the classroom in the form of teaching practices, with an accompanying assessment of the demographic makeup of those classrooms and the school climate to provide context on learning environments. The volume then assesses the ways in which teachers acquired their knowledge and skills during their early education and training, as well as the steps they take to develop them through continuous professional development over the course of their career. Based on the voice of teachers and school leaders, the report offers a series of policy orientations to help strengthen the knowledge and skills of the teaching workforce to support its professionalism.

The OECD Teaching and Learning International Survey (TALIS) is the largest international survey asking teachers and school leaders about their working conditions and learning environments, and provides a barometer of the profession every five years. Results from the 2018 cycle explore and examine the various dimensions of teacher and school leader professionalism across education systems.

Consult this publication on line at: ***https://doi.org/10.1787/1d0bc92a-en***

This work is published on the *OECD iLibrary,* which gathers all OECD books, periodicals and statistical databases. Visit ***www.oecd-ilibrary.org*** for more information.

OECD*publishing*
www.oecd.org/publishing

ISBN 978-92-64-75256-6