



### 3

# How Schooling is Organised

This chapter provides detailed descriptions and in-depth analyses of selected organisational features of schools and systems that affect student performance. These include how students are sorted into grades, schools and programmes, school autonomy, school competition, how schools and school systems use student assessments, and resources devoted to education.

Digging deeper into the findings of Chapters 1 and 2, this chapter describes how PISA defines various aspects of school organisation that are related to student performance and shows where countries stand on these policies and practices.

## SELECTING AND GROUPING STUDENTS

As explained in Chapter 2, school systems use vertical and horizontal differentiation to cater to students with different abilities, needs and interests.

Chapter 2 finds that school systems that track students at an early age tend to show a stronger impact of socio-economic background on learning outcomes, signalling larger socio-economic inequalities. School systems with higher grade-repetition and student-transfer rates tend to show lower student performance and a stronger impact of socio-economic background on learning outcomes. Ability grouping within schools tends to be related to lower performance levels at the system level. Selective schools perform at higher levels than non-selective schools, but a system as a whole does not benefit from having more selective schools.

### Vertical differentiation

One-room schools, where all students, regardless of age, shared the same classroom and were taught by the same teacher, were commonplace in many countries in the early 19<sup>th</sup> century. As student populations grew in size and diversity, schooling was increasingly differentiated vertically: younger students would concentrate on basic studies, and as they progressed, they would enter more complex and differentiated study programmes. This vertical differentiation resulted in the creation of different grades and education levels (Sorensen, 1970; Tyack, 1974). This section describes two major aspects of variability in the grades that 15-year-olds students attend: their age of entry into the school system and grade repetition. It then examines how school systems differ in the way 15-year-old students are distributed across grades and education levels (Figure IV.3.1).

#### *Age of entry into the school system*

Many school systems establish a statutory age of entry into school, typically age five or six. Nevertheless, children of the same age often follow different developmental trajectories. Some parents believe that their children could benefit from waiting another year before they start school, and education systems may allow them to postpone enrolment for a year (Graue and DiPerna, 2000). Vertical differentiation in such school systems is thus less age-based than in other school systems.

As a result of different age-of-entry policies and practices as well as differences in grade-retention rates, the 15-year-olds assessed by PISA may be in different grades. In PISA 2009, students were asked at what age they entered primary school. Most students are at most one year younger or older than the statutory age of entry; but in countries where parents have more freedom to choose when their children enter school, students are often two or more years above or below the usual age of entry. In Ireland and the United Kingdom, the average age of entry into primary schools is at or below five years, while in eight countries the age of entry is higher than six-and-a-half years (Figure IV.3.1). The age of entry does not vary greatly in Japan, Poland, Korea, the Slovak Republic and Finland, with more than 98% of students entering primary schools within a two-year window.<sup>1</sup> In Canada, the United States, the United Kingdom and Australia, the proportion of PISA students who first attended school outside the usual two years of school entry exceeds 15%. Among the partner countries and economies, no education system has an average starting age for primary schools below five years. In 16 of the 31 partner countries and economies, the average starting age for PISA students exceeds six-and-a-half years. Only in Montenegro do almost all students (more than 98%) enter primary school within the two-year window. In 13 partner countries and economies, the rate at which PISA students entered primary schools outside the two years exceeds 15%; and in Brazil, Qatar, Trinidad and Tobago, Colombia, Macao-China and Dubai (UAE), at least one in five 15-year-old students entered primary school outside the usual two years of entry.

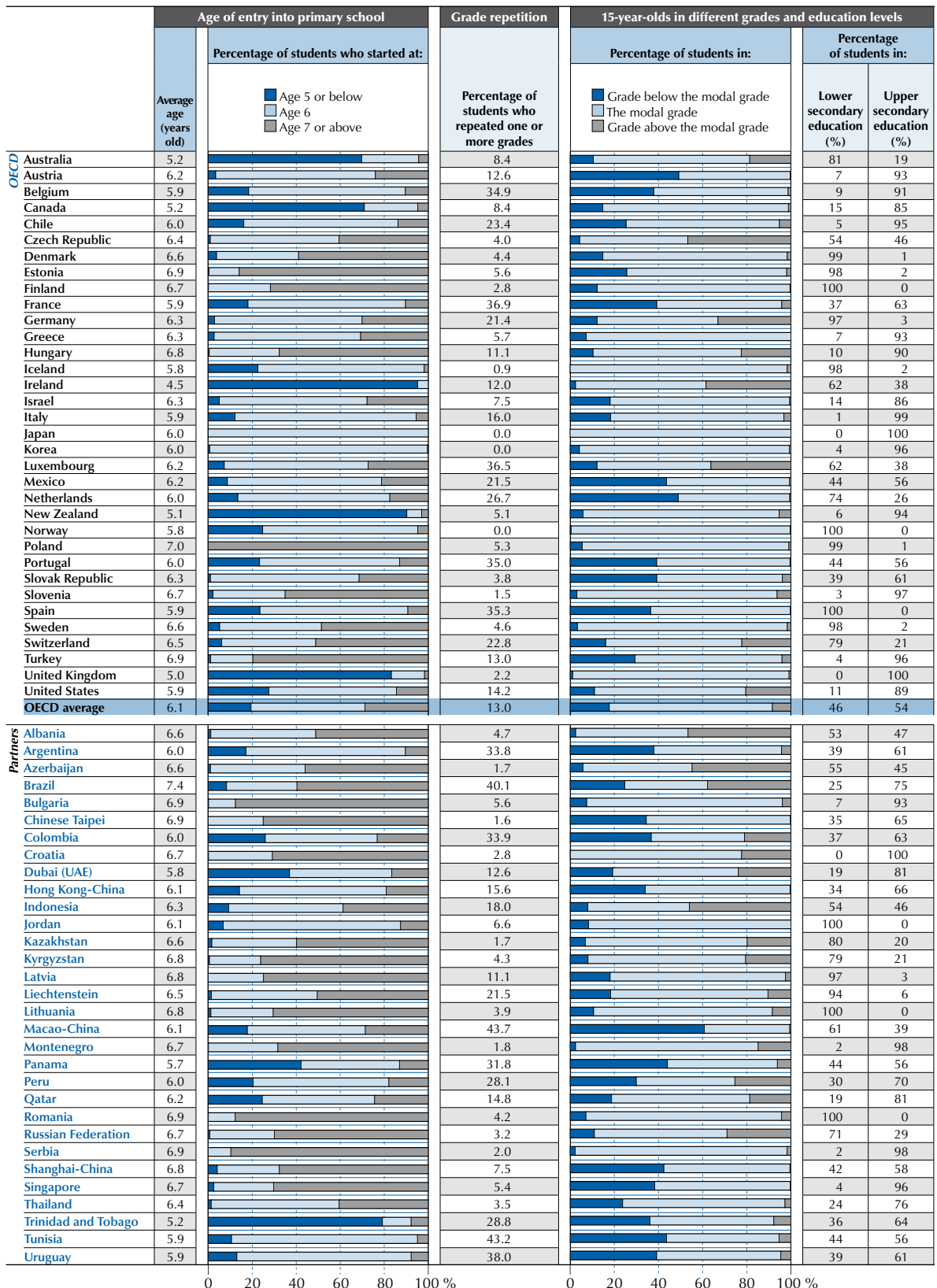
#### *Grade repetition*

Grade repetition is also a form of vertical differentiation as it seeks to adapt the curriculum to student performance and create homogeneous learning environments by distributing students across grades. Although some research suggests that repeating a grade generally does not yield improvements in learning outcomes and is associated with high economic and social costs (Alexander, Entwisle and Dauber, 2003; Hauser, 2004), grade repetition is still commonly used in many countries to create more homogeneous learning environments. In most countries, the requirement to repeat a year typically follows a formal or informal assessment of the student by the teacher or school towards the end of the school year.




■ Figure IV.3.1 ■

## Age at which students enter school and how they progress



Source: OECD, PISA 2009 Database, Table IV.3.1.

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In PISA, 15-year-old students were asked whether they had repeated a grade in primary, lower secondary or upper secondary school. Across OECD countries, on average, 13% of students reported that they had repeated a grade at least once: 7% of students had repeated a grade in primary school, 6% of students had repeated a lower secondary grade and 2% of students had repeated an upper secondary grade (Figure IV.3.1 and Table IV.3.1). Grade repetition is non-existent in Korea, Japan and Norway. Over 95% of students in 8 other OECD countries and 12 partner countries and economies reported they had never repeated a grade. In contrast, over 25% of students in France, Luxembourg, Spain, Portugal, Belgium and the Netherlands, as well as in the partner countries and economies Macao-China, Tunisia, Brazil, Uruguay, Colombia, Argentina, Panama, Trinidad and Tobago and Peru reported they had repeated a grade.

### **Differentiation in grade and education levels**

The modal grade level and the proportion of students in lower and upper secondary schools differ across the countries participating in PISA, depending on the different age-of-entry policies, policies on cut-off dates for enrolment<sup>2</sup> and grade-retention policies.

In OECD countries, the majority of 15-year-old students attend the modal grade level. On average across OECD countries, 26% of 15-year-olds attend grade levels that are above or below the modal grade level in their country, but this varies across OECD countries (Table IV.3.1). While in some school systems almost all 15-year-olds share the same grade (*i.e.* Japan, Norway, Iceland and the United Kingdom), in other countries, 15-year-olds are spread out across different grades. In the Czech Republic, the Netherlands, Austria, Luxembourg and Germany and the partner countries and economies Brazil, Macao-China, Colombia, Peru, Indonesia, Azerbaijan, Panama, Albania and Tunisia, almost half of all students attend a different grade than the modal grade.

On average across OECD countries, 54% of 15-year-old students attend upper secondary programmes, and in 19 of the 34 OECD countries, the majority of students do so. In 15 of these countries, over 80% of 15-year-olds attend upper secondary programmes and practically all students in Japan and the United Kingdom attend these programmes. In contrast, in 10 OECD countries, less than 20% of 15-year-olds attend upper secondary programmes. Practically no 15-year-olds in Spain, Norway, Finland, Poland and Denmark are enrolled at the upper secondary level of education. In the Czech Republic, Portugal and Mexico, almost half of all students are enrolled in lower secondary programmes while the other half attend upper secondary programmes. In 6 partner countries and economies, less than 20% of 15-year-olds attend upper secondary programmes, while in 7 other partner countries and economies, over 80% of 15-year-olds attend upper secondary programmes (Figure IV.3.1).

## **Horizontal differentiation at the system level**

### **Programmes of study and age of selection**

School systems often tailor their curricula to better meet their students' needs. In comprehensive school systems, all 15-year-old students follow the same programme, while in stratified school systems, students are streamed into different programmes. Some of these programmes may be strictly academic, others contain strong vocational components, and yet others may offer combinations of academic and vocational programmes (Kerckhoff, 2000; LeTendre, Hofer and Shimizu, 2003).

Among the 34 OECD countries, 14 countries' school systems are comprehensive in that they offer a single programme of study to all 15-year-olds. Yet, even within comprehensive programmes, students are often able to enrol in different programmes and courses that reflect their various interests and academic goals (see the section on horizontal differentiation at the school level below). In the remaining 19 OECD countries with stratified school systems, 15-year-olds are streamed into at least two different study programmes. Such streaming takes place at an average age of 14 but occurs as early as at the age of 10 in Germany and Austria and at age 11 in the Czech Republic, Hungary, the Slovak Republic and Turkey (Table IV.3.2a).

Among the partner countries and economies, seven offer a single programme of study to 15-year-olds, while in 19 countries and economies, students are streamed into different study programmes. Liechtenstein and Trinidad and Tobago select students for streaming before the age of 12, but most other partner countries and economies with stratified systems delay selection until students are 15 years old (Table IV.3.2a).

These organisational policies must also be taken into account when comparing other characteristics of school systems, such as performance, equity and school climate, as they signal different educational experiences and trajectories for students. As shown in Chapter 2, the degree of streaming and the age at which such streaming takes place are closely related to the impact of socio-economic background on learning outcomes.



### **School admission policies**

Admission and placement policies establish frameworks for selecting students for academic programmes and streaming. In countries with large performance differences between programmes and schools, or where socio-economic segregation is firmly entrenched in residential segregation, admission and grouping policies can have a major impact on parents and students. Some schools may be better able to attract motivated students and retain good teachers, while in other schools, a “brain drain” of students and staff risks reinforcing low school performance. As shown in Volume II, *Overcoming Social Background*, the socio-economic context of the school in which students are enrolled tends to be much more strongly related to student learning outcomes than students’ individual socio-economic background.

To assess the selectivity of education systems, school principals were asked how frequently they considered the following factors when admitting students to their schools: students’ residences students’ academic records (including placement tests); recommendations from feeder schools; parents’ endorsements of the instructional or religious philosophy of the school; students’ needs or desires for a specific programme; and the past or present attendance of other family members at the school. School systems that are composed of highly selective schools are more likely to have homogeneous student populations within the schools since students with similar academic aptitudes and/or backgrounds are selected into the same schools. While schools may perform at a higher level when their student populations are homogeneous, low-performing students will be less likely to benefit from their high-achieving peers.

On average across OECD countries, 36% of students are enrolled in schools whose principals reported that their schools are highly selective (Table IV.3.2b).<sup>3</sup> In 10 of the 34 OECD countries, more than half of all students attend schools that always consider recommendations from feeder schools or academic transcripts when making admission decisions. Of these countries, in the Netherlands, Japan and Hungary, more than 85% of students are selected for schools on the basis of academic records or recommendations. In contrast, more students attend non-selective schools – that is, schools that select on the basis of residence or agreement with the schools’ educational philosophy, or have an open-door policy – in Portugal, Spain, Iceland, Sweden, Finland, Denmark, Norway and Greece, where less than 10% of all students attend schools that are academically selective.

In no partner country or economy do less than 10% of all students attend selective schools and, with the exception of Uruguay, Brazil and Lithuania, in no partner country or economy do less than 20% of all students attend such schools. In contrast, more than 80% of the students in Croatia, Serbia, Singapore, Hong Kong-China and Liechtenstein attend schools whose principals reported that they always consider academic records or recommendations from feeder schools when making admissions decisions.

### **Horizontal differentiation at the school level**

In some education systems, individual schools can choose to differentiate students horizontally within the school or choose to transfer students out of the school because of low achievement, special learning needs or behavioural problems. These school-level policies are less relevant in systems with high levels of vertical and/or horizontal differentiation at the level of the school system, as these systems have already differentiated students to a large degree.

### **Student transferring policies**

Transferring students to other schools because of low academic achievement, behavioural problems or special learning needs is a way for schools to reduce the heterogeneity of the learning environment and to facilitate instruction. Students may move to other schools for several reasons but, whatever the reason, transfers generally pose difficulties for students. Transferring schools can imply a loss of social capital since students transfer out of social networks. When school transfers are motivated by behavioural problems, low academic achievement and special learning needs, students who are transferred out are also more likely to be received by schools with a higher prevalence of these types of students. Students who are transferred for these reasons not only pay the price in terms of social capital, but are also less likely to benefit from higher-achieving peers and orderly environments. In addition, transferred students might be perceived negatively in new schools, and that could affect students’ motivation and attitudes towards learning.

PISA 2009 asked school principals about policies governing student transfers, namely about the likelihood of transferring a student to another school because of low academic achievement, high academic achievement, behavioural problems, special learning needs, parents’ or guardians’ request, or other reasons (Table IV.3.3a).

On average across OECD countries, 18% of students attend a school in which school principals reported that the school would likely transfer students with low achievement, behavioural problems or special learning needs. Yet transfer policies vary across countries: in Iceland, Ireland, Portugal, Norway, Finland, the United Kingdom, New Zealand, Australia and Sweden less than 5% of students attend schools whose school principals reported that the school would likely transfer students for these reasons. In contrast, in Luxembourg, Austria, Belgium, Greece and Turkey, around one-third or more of students attend a school whose principal reported that students with low achievement, behavioural problems or special learning needs will “very likely” be transferred out of the school.

Among the partner countries and economies, it is rare for students in Liechtenstein and Singapore to attend schools in which school principals reported that students will be transferred out of the school for low achievement, behavioural problems or special learning needs. In contrast, the practice is common in schools in Macao-China, Jordan, Qatar, Colombia, Indonesia, Romania, Kyrgyzstan, Chinese Taipei and Bulgaria, where around one-third or more of students attend schools that will very likely transfer a student with low achievement, behavioural problems or special learning needs to another school.

### **Ability grouping within schools**

In some school systems, students are also grouped within the schools they attend based on their abilities. The intent behind this practice is much the same as for other types of differentiation, namely to better meet students’ needs by creating a more homogeneous learning environment and making it easier for teachers to teach. Because individual schools are nested in a broader organisation, the practice of grouping students according to their ability within schools is partly determined by whether or not there are other forms of differentiation between and within schools, including the number of programmes available to students, grade repetition or transfer policies.

PISA asked school principals to report whether students were grouped by ability into different classes or within a class, and whether these groupings were made in all or only selected subjects. If ability grouping extends to all subjects, it creates a very different learning environment than if it is done for just a few subjects since there is little interaction between students in different groups, and lower-achieving students are unlikely to benefit the way they might if they share a class with their higher-achieving peers (Table IV.3.4).

On average across OECD countries, 13% of students are in schools whose principals reported that students are grouped by ability in all subjects. In Luxembourg, the Netherlands and Switzerland, over one-third of students attend schools that stream students in all subjects by ability, while in 19 other OECD countries, less than 10% of students attend such schools.

Among the partner countries and economies, ability grouping is more common than across OECD countries. In only four partner countries and economies do less than 10% of students attend schools that group students in all subjects. Ability grouping in all subjects is particularly common in Jordan, the Russian Federation, Qatar, Dubai (UAE) and Kazakhstan, where around one-third or more of students attend such schools.

### **Country profiles in selecting and grouping students**

The organisational arrangements that govern selecting and assigning students to classes and schools are often closely interrelated. Some school systems are highly differentiated, combining various possibilities of selection, including vertical differentiation and horizontal differentiation, at both system and school levels. Other school systems are characterised by low levels of differentiation and seek to address heterogeneity within the classroom through instructional practices, such as individualised attention from teachers during class or remedial instruction, either during the school day or after school, in an attempt to keep all students at a similar academic level. Using the information on the kinds of differentiation adopted by each school system, a latent profile analysis identifies categories of school systems according to the types of vertical and horizontal differentiation they adopt (see Annex A5 for technical details). The analysis is based on three dimensions of selecting students into schools, and identifies several categories: two categories (*i.e.* low or high level of differentiation) on vertical differentiation, three categories (*i.e.* low, medium or high level of differentiation) on horizontal differentiation at the level of the education system, and two categories (*i.e.* low or high level of differentiation) on horizontal differentiation at the school level. Countries and economies are grouped such that all school systems in each category share similar differentiation policies and practices (Figure IV.3.2).



Among all OECD countries, Australia, Canada, Denmark, Estonia, Finland, Greece, Iceland, New Zealand, Norway, Poland, Sweden, the United Kingdom and the United States are characterised by low levels of differentiation in selecting and grouping students. In these school systems, students are not systematically streamed, schools are not selective in their admissions processes, and students usually do not repeat grades and are not transferred to other schools. As a result, classrooms tend to be heterogeneous. Four partner countries, Kazakhstan, Latvia, Lithuania and the Russian Federation, also fit into this category.

School systems in six OECD countries, Ireland, Israel, Italy, Japan, Korea and Slovenia, stratify students into different programmes based on the students' academic performance, usually before they are 15 years old (*i.e.* horizontal differentiation at the level of the school system). Grade repetition is not common in these school systems, nor is horizontal differentiation at the school level. Seven partner countries and economies, Albania, Azerbaijan, Dubai (UAE), Hong Kong-China, Montenegro, Shanghai-China and Thailand, also belong to this category.

In four OECD countries, Austria, the Czech Republic, Hungary and the Slovak Republic, school systems also apply horizontal differentiation at the level of the school system. These school systems are characterised by their use of streaming and early selection into these programmes based on students' academic performance, but generally, they do not use grade repetition or school-level differentiation. Three partner countries, Croatia, Liechtenstein and Singapore, also belong to this category.

Turkey and the partner countries Bulgaria and Serbia are characterised by high levels of horizontal differentiation at the school and system levels. These systems do not use vertical differentiation, but often create homogeneous classrooms by grouping students according to ability, transferring students or streaming students, through early tracking or selective admission.

■ Figure IV.3.2 ■

### How school systems select and group students for schools, grades and programmes


		Low vertical differentiation		High vertical differentiation	
		Students who repeated one or more grades: 7% Students out of modal starting ages: 7%		Students who repeated one or more grades: 29% Students out of modal starting ages: 11%	
		Low horizontal differentiation at the school level	High horizontal differentiation at the school level	Low horizontal differentiation at the school level	High horizontal differentiation at the school level
		Schools that transfer students to other schools due to low achievement, behavioural problems or special learning needs: 15%	Schools that transfer students to other schools due to low achievement, behavioural problems or special learning needs: 33%	Schools that transfer students to other schools due to low achievement, behavioural problems or special learning needs: 15%	Schools that transfer students to other schools due to low achievement, behavioural problems or special learning needs: 33%
		Schools that group students by ability in all subjects: 8%	Schools that group students by ability in all subjects: 38%	Schools that group students by ability in all subjects: 8%	Schools that group students by ability in all subjects: 38%
<b>Low horizontal differentiation at the system level</b>	Number of school types or distinct educational programmes: 1.1 First age of selection: 15.8 Selective schools: 17%	Australia, <sup>1</sup> Canada, <sup>2</sup> Denmark, Estonia, <sup>2</sup> Finland, <sup>2</sup> Greece, Iceland, <sup>2</sup> New Zealand, <sup>1</sup> Norway, <sup>2</sup> Poland, <sup>1</sup> Sweden, United States, United Kingdom, Kazakhstan, Latvia, Lithuania, Russian Federation	Jordan	Spain, Argentina, Brazil, Tunisia, Uruguay	Chile, Colombia, Peru
<b>Medium horizontal differentiation at the system level</b>	Number of school types or distinct educational programmes: 3.0 First age of selection: 14.5 Selective schools: 42%	Ireland, Israel, Italy, Japan, <sup>2</sup> Korea, <sup>2</sup> Slovenia, Albania, Azerbaijan, Dubai (UAE), Hong Kong-China, <sup>2</sup> Montenegro, Shanghai-China, <sup>1</sup> Thailand	Indonesia, Kyrgyzstan, Qatar, Romania, Chinese Taipei	Mexico, Portugal	Luxembourg, Macao-China, Panama
<b>High horizontal differentiation at the system level</b>	Number of school types or distinct educational programmes: 4.3 First age of selection: 11.2 Selective schools: 61%	Austria, Czech Republic, Hungary, Slovak Republic, Croatia, Liechtenstein, Singapore <sup>1</sup>	Turkey, Bulgaria, Serbia	Belgium, <sup>1</sup> Germany, Trinidad and Tobago	Netherlands, <sup>1</sup> Switzerland <sup>1</sup>

Note: The estimates in the grey cells indicate the average values of the variables used in latent profile analysis in each group. See Annex A5 for technical details.

1. Perform higher than the OECD average in reading.

2. Perform higher than the OECD average in reading and where the relationship between students' socio-economic background and reading performance is weaker than the OECD average.

Source: OECD, PISA 2009 Database.

StatLink  <http://dx.doi.org/10.1787/888932343399>

Among the countries whose school systems use vertical differentiation to create homogeneous learning environments, the Netherlands and Switzerland also apply high levels of horizontal differentiation at the school level and at the level of the school system. In contrast, Spain and four partner countries, Argentina, Brazil, Tunisia and Uruguay, use vertical differentiation as the primary and almost only form of selecting and distributing students. The OECD countries Belgium, Chile, Mexico, Portugal, Luxembourg, Germany and the partner countries and economies Peru, Colombia, Macao-China, Panama and Trinidad and Tobago, use vertical differentiation and either horizontal differentiation at the school level or at the level of the school system.

To examine how these policies and practices are reflected in students' academic performance, the between-school variation in students' performance can be compared among the OECD countries in the different categories with high, medium and low levels of differentiation. For example, the Netherlands and Switzerland have high levels of vertical and horizontal differentiation at the level of the school system and high levels of horizontal differentiation at the school level. Chile, Turkey and Luxembourg have high levels of differentiation in two of three dimensions. Not surprisingly, therefore, on average across these 5 OECD countries, 53% of the variation in student performance is attributable to the differences among schools.<sup>4</sup> In contrast, on average in the 13 OECD countries that have been categorised as having school systems with low levels of differentiation in all three dimensions, only 23% of the variation in student performance is attributable to the differences among schools.

As discussed in Chapters 1 and 2, these organisational features are also related to the average performance of school systems and to the impact of socio-economic background on learning outcomes. School systems with above-average student performance and a below-average impact of socio-economic background on learning outcomes are more likely to be those with low levels of all three types of differentiation. The 13 OECD countries that have low levels of vertical differentiation, horizontal differentiation at the level of the school system and horizontal differentiation at the school level have an average student performance of 505 score points with 12% of the variation in achievement explained by students' socio-economic background; across OECD countries, the average student performance is at 403 score points, with 14% of variation explained by students' socio-economic background. School systems that differentiate either vertically or horizontally have either lower levels of equity or lower levels of performance (Tables IV.1.1a, IV.1.1b and IV.1.1c).

## GOVERNANCE OF SCHOOL SYSTEMS

Another important organisational feature of school systems is how they are governed. This idea of governance includes two elements: the degree to which schools are considered autonomous entities that make decisions independently of district, regional or national entities; and whether schools are allowed to compete for enrolment and the degree to which students and parents can choose schools. Chapter 2 shows that the relationship between school governance and performance and equity is complex. Autonomy in designing curricula and assessments seems to benefit the entire school system. It mainly relates to performance through its interaction with the school's socio-economic profile.

### School autonomy

Since the early 1980s, school reforms have focused on giving schools greater autonomy over a wide range of institutional operations in an effort to raise performance levels (Whitty, 1997; Carnoy, 2000). More decision-making responsibility and accountability has devolved to school principals and, in some cases, management responsibilities have devolved to teachers or department heads. In order to gauge the extent to which school staff have a say in decisions relating to school policy and management, PISA 2009 asked school principals to report whether the teachers, the principal, the school's governing board, the regional or local education authorities or the national education authority had considerable responsibility for allocating resources to schools (appointing and dismissing teachers, establishing teachers' starting salaries and salary raises, formulating school budgets and allocating them within the school) and responsibility for the curriculum and instructional assessment within the school (establishing student-assessment policies, choosing textbooks, determining which courses are offered and the content of those courses). This information was combined to create two composite indices: an *index of school responsibility for resource allocation*, and an *index of school responsibility for curriculum and assessment*, such that both indices have an average of zero and a standard deviation of one for OECD countries. Higher values indicate more autonomy for school principals and teachers.

In most countries, few schools have a major influence on teachers' salaries. Across OECD countries, around three-quarters of students are in schools whose principals reported that only national and/or regional education authorities have considerable responsibility for establishing teachers' starting salaries and determining teachers' salary increases (Figure IV.3.3a). Some 95% or more of students in Austria, Belgium, Greece, Italy, Ireland, Spain,





Turkey and the partner countries Albania, Argentina, Croatia, Jordan, Romania, Tunisia and Uruguay are in schools whose principals reported that only regional and/or national education authorities have considerable responsibility for these two tasks. In contrast, school principals and/or teachers have more responsibility for tasks related to resources, such as selecting and hiring teachers, dismissing teachers, formulating the school budget and deciding on budget allocations within the school. Around 80% or more of students in Denmark, Estonia, Hungary, the Netherlands, New Zealand and the partner countries and economies Bulgaria, Hong Kong-China, Latvia, Macao-China and Shanghai-China are in schools whose principals reported that principals and/or schools have considerable responsibility for at least three of these four tasks.

School autonomy, as measured by the *index of school responsibility for resource allocation*, is greatest in the Netherlands, the Czech Republic and the partner countries and economies Macao-China and Bulgaria, as reported by school principals in these countries. In all of these countries, most schools are responsible for hiring and dismissing teachers and formulating and allocating budgets. In contrast, responsibility for resource allocation is lowest among schools in Greece, Turkey, Italy and the partner countries Romania and Tunisia.

Schools within a country show varying degrees of autonomy in allocating resources. School principals in Greece, Turkey, Ireland and the partner country Romania reported similar levels of autonomy in allocating resources, while in Chile, Hungary, the Czech Republic and the partner countries and economies Peru, Dubai (UAE) and Qatar, some schools are entitled to allocate resources while in other schools these decisions are made by national or regional educational authorities (Table IV.3.5). In some countries, upper secondary schools tend to have more autonomy in allocating resources than lower secondary schools, while in a few countries the reverse is true. Private schools tend to have higher degrees of autonomy in almost all countries.

In general, schools that are given responsibility for resource allocation are not necessarily entitled to make curricular decisions. Greece, Turkey and the partner countries Tunisia, Jordan and Serbia are among those countries that grant the least responsibility to schools in making decisions about curricula and assessments, as measured by the *index of responsibility for curriculum and assessment* (Figure IV.3.3b). Relatively higher levels of school autonomy in setting curricula and assessment practices are observed in Japan, the Netherlands, the Czech Republic, the United Kingdom, New Zealand and the partner economies Hong Kong-China and Macao-China, where the index scores are at least four-fifths of a standard deviation higher than the OECD average.

Examining in detail school principals' responses to individual questionnaire items composing the index, around 80% or more of students are in schools whose principals reported that only school principals and/or teachers have a considerable responsibility for establishing student assessment policies, choosing which textbooks are used, determining course content, and deciding which courses are offered in the Czech Republic, Japan, Korea, the Netherlands, New Zealand, the United Kingdom and the partner countries and economies Hong Kong-China, Macao-China and Thailand. Meanwhile, these are mainly only under the responsibility of regional and/or national education authority in Greece and the partner countries Jordan and Tunisia.

Not all schools within the same system have the same level of discretion over their curricula and assessments. For example, in the Slovak Republic, Chile, Israel, Sweden and the partner countries/economies Dubai (UAE), Lichtenstein, Shanghai-China, Peru, Kyrgyzstan and Indonesia, some schools can formulate their own curricula and assessments while other schools must abide by decisions taken by the school governing board or national/regional authorities (Table IV.3.6). The opposite is true in Greece, Portugal, Turkey and the partner countries Tunisia, Serbia, Croatia and Bulgaria, where all schools have somewhat similar levels of autonomy in designing their curricula. In some countries, there is a difference in the degree of schools' autonomy in deciding curricula and assessments between upper- and lower secondary schools, but the pattern is not consistent: upper secondary schools tend to have more autonomy in this area than lower secondary schools in some countries, while the reverse is observed in other countries. In most countries, private schools tend to have higher degrees of autonomy in making decisions about curricula and assessments.

Some caution is warranted when interpreting the degree of responsibility schools have in allocating resources, formulating curricula and using student assessments. Decision-making arrangements vary widely across countries, so the questions posed to school principals were general; thus, responses may depend on how school principals interpreted the questions. For example, when school principals were asked who has considerable responsibility for formulating the school budget, some school principals might have related this question to the regular budget of the school, while others may not have had any involvement in the regular budget and may therefore have related the question to supplementary budgets, *i.e.* contributions from parents or the community.





Since the degree of autonomy of each stakeholder was not identified, the responses were given equal weight, regardless of the actual influence stakeholders had on different aspects of decision making. However, a comparison of the responses from school principals with data provided by national authorities indicates a fairly close correspondence,<sup>5</sup> suggesting that the responses from school principals are not distorted by cultural and contextual bias (OECD, 2010b). It is worth noting that variation within countries can be explained, in part, by regional differences, particularly in federal education systems (see Table S.IV.d).

### School choice

Students in some school systems are encouraged or even obliged to attend their neighbourhood school. However, reforms over the past decades have tended to give more authority to parents and students to choose schools that meet their educational needs or preferences best (Heyneman, 2009). Across OECD countries, more than half of the countries reported a reduction in restrictions on school choice among schools that are publicly managed and publicly funded. Twelve OECD countries reported the creation of new autonomous public schools and ten reported that new funding mechanisms had been put in place to promote school choice (OECD, 2010a).

When students and parents can choose schools based on academic criteria, schools then compete for students, which, in turn, may prompt schools to organise programmes and teaching to better respond to diverse student requirements and interests, and so reduce the costs of failure and mismatches (Berends, 2009). In some school systems, schools not only compete for student enrolment, but also for funding. Direct public funding of independently managed institutions, based on student enrolments or student credit-hours, is one model. Another method is giving money to students and their families through scholarships or vouchers for them to spend in public or private educational institutions of their choice.

According to responses from school principals, across OECD countries, an average of 76% of the students assessed by PISA attend schools that compete with at least one other school for enrolment. Only in Switzerland, Norway and Slovenia do less than 50% of the students attend schools that compete with other schools in this way. In contrast, in the Netherlands, Australia, Belgium, the Slovak Republic and Japan, over 90% of students attend schools that compete with other schools for enrolment (Table IV.3.8a). In some countries, school competition is more common at the upper secondary level than at the lower secondary level, while in other countries the reverse is true (Table IV.3.8b).

Some 13 OECD countries and 5 partner countries and economies allow parents and students to choose public schools and also incorporate vouchers or tax credits in their school-choice arrangements.<sup>6</sup> Eleven OECD countries and seven partner countries and economies offer a choice of public schools, but do not offer vouchers or tax credits; two OECD countries and four partner countries and economies restrict parents and students in the choice of public schools, but offer tax or voucher credits to attend other schools; and in four OECD countries and one partner country, parents and students must attend the public school nearest to where they live and they are not offered any kind of subsidy to attend other schools (Figure IV.3.4).

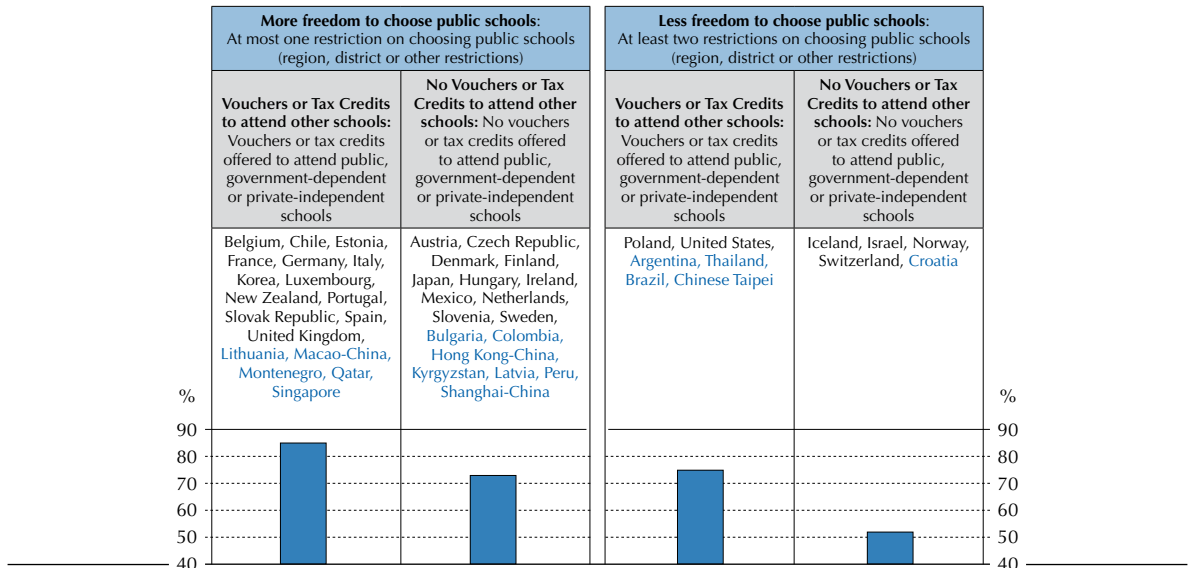
Judging by the reports of school principals, competition among schools is consistent with these school-choice arrangements at the level of the school system, and is greatest in school systems that grant parents and students the freedom to choose public schools and offer subsidies in the form of vouchers or tax credits to attend other schools. In countries with these characteristics, 85% of students attend schools whose principals reported that they compete with at least one other school for enrolment. The lowest levels of school competition are found in countries that restrict attendance to public schools and do not offer subsidies to attend other schools. In the average country in this category, 52% of students attend schools whose principals reported that they compete for student enrolment with at least one other school (Figure IV.3.4). Levels of school competition are similar in countries that restrict attendance to public schools and offer subsidies, and in countries that do not restrict attendance to public schools but offer no subsidies. In these countries, around 75% of students attend schools whose principals reported that they compete with other schools for enrolment. However, competition among schools is less frequent in remote and rural areas, where public schools are usually located at greater distances from each other, making it more difficult for parents and students to choose a school other than the one that is closest to their home (Table IV.2.6).

The partner countries and economies show similar levels of school competition as among OECD countries. School competition is greatest in Macao-China, Hong Kong-China, Indonesia, Singapore and Chinese Taipei, where over 95% of students are in schools whose principals reported that they compete with at least one other school for student enrolment. In contrast, in Montenegro, only 37% of students are enrolled in such schools and in Liechtenstein and Uruguay less than 60% of students are enrolled in such schools (Table IV.3.8a).



■ Figure IV.3.4 ■  
**Countries in which parents can choose schools for their children**

*Prevalence of school competition by school choice arrangements*



Note: Bars represent the average percentages of school competition in OECD countries, by four categories of school choice arrangements.

Source: OECD, *PISA 2009 Database*, Tables IV.3.7 and IV.3.8a.

StatLink <http://dx.doi.org/10.1787/888932343399>

## Public and private stakeholders

School education takes place mainly in public schools, defined by PISA as schools managed directly or indirectly by a public education authority, government agency, or governing board appointed by government or elected by public franchise. Nevertheless, with an increasing variety of educational opportunities, programmes and providers, governments are forging new partnerships to mobilise resources for education and to design new policies that allow all stakeholders to participate more fully and share the costs and benefits more equitably. Private education is not only a way of mobilising resources from a wider range of funding sources, but it is sometimes also considered a way of making education more cost-effective. Publicly financed schools are not necessarily also managed publicly. Governments can transfer funds to public and private educational institutions according to various allocation mechanisms (see section on school choice) (OECD, 2007).

Across OECD countries, 15% of students are enrolled in schools that are privately managed, that is, managed directly or indirectly by a non-governmental organisation, e.g. a church, trade union, business or other private institution (Table IV.3.9). More than 50% of students in the Netherlands, Ireland and Chile are enrolled in privately managed schools. In contrast, in Turkey, Iceland and Norway, more than 98% of students attend schools that are managed publicly.

Schools that are managed publicly are most common among the partner countries and economies. In particular, in the Russian Federation, Azerbaijan, Lithuania, Romania, Montenegro, Latvia, Serbia, Singapore, Tunisia, Croatia and Bulgaria, less than 2% of students attend schools that are managed privately. In contrast, in Macao-China and Hong Kong-China, more than 90% of students attend privately managed schools, and in Dubai (UAE), Indonesia, Argentina and Chinese Taipei, over one-third of students attend privately managed schools.

## Country profiles in the governance of school systems

The preceding comparisons can be summarised in a latent profile analysis. This analysis categorises school systems into groups that share similar profiles in the way they allow schools and parents to make decisions that affect their children's education. The groupings are based on school autonomy and school competition. Two categories

are identified for each feature and the interplay between these features results in four groups: school systems that offer high levels of autonomy to schools in designing and using curricula and assessments<sup>7</sup> and encourage more competition between schools; school systems that offer low levels of autonomy to schools and limit competition between schools; school systems that offer high levels of autonomy to schools, but limit competition between schools; and school systems that offer low levels of autonomy to schools, yet encourage more competition between schools (Figure IV.3.5).

Across OECD countries, the most common configuration is the one that gives schools discretion over curricular and assessment decisions, and restricts competition for enrolment among schools. These school systems have relatively little competition for enrolment among schools, and private schools are not widely available in these countries. Twenty-three OECD countries and fifteen partner countries and economies share this configuration.

The configuration that offers relatively low levels of autonomy to schools and low levels of school competition is found in 4 OECD countries and 11 partner countries.

Six OECD countries and five partner countries and economies reported configurations that offer high levels of autonomy and competition, either in the form of a high prevalence of private schools or greater competition among schools for enrolment. In these school systems, schools have the authority to design curricula, and parents and students can choose from a variety of schools for their children.

When examining these results, it is important to keep in mind that 15-year-olds may be at different education levels in different countries. However, the results from PISA show that the policies and practices concerning school autonomy and school competition tend to be closely related between these levels.<sup>8</sup>

Chapter 1 shows that the school systems with above-average performance and a below-average impact of socio-economic background on student performance tend to grant higher levels of autonomy to schools in formulating and using curricula and assessments and lower levels of school competition. However, not all OECD countries that share this configuration show above-average performance (Table IV.1.1). This suggests that although high levels of school autonomy in decisions affecting curricula and assessments and low levels of school competition could be pathways to successful school systems, other conditions must be in place for this configuration to be effective in improving performance and equity.

■ Figure IV.3.5 ■

### How school systems are governed


		Less school competition	More school competition
		Schools that compete with other schools for students in the same area: 73%	Schools that compete with other schools for students in the same area: 89%
		Private schools: 8%	Private schools: 52%
<b>Less school autonomy for curriculum and assessment</b>	Establish student assessment policies: 61% Choose which textbooks are used: 55% Determine course content: 14% Decide which courses are offered: 18%	Greece, Mexico, Portugal, Turkey, Albania, Azerbaijan, Bulgaria, Croatia, Kazakhstan, Jordan, Montenegro, Qatar, Serbia, Tunisia, Uruguay,	–
<b>More school autonomy for curriculum and assessment</b>	Establish student assessment policies: 92% Choose which textbooks are used: 97% Determine course content: 85% Decide which courses are offered: 87%	Austria, Canada, <sup>2</sup> Czech Republic, Denmark, Estonia, <sup>2</sup> Finland, <sup>2</sup> Germany, Hungary, Iceland, <sup>2</sup> Israel, Italy, Japan, <sup>2</sup> Luxembourg, New Zealand, <sup>1</sup> Norway, <sup>2</sup> Poland, <sup>1</sup> Slovak Republic, Slovenia, Spain, Sweden, Switzerland, <sup>1</sup> United Kingdom, United States, Panama, Argentina, Brazil, Colombia, Kyrgyzstan, Latvia, Liechtenstein, Lithuania, Peru, Romania, Russian Federation, Shanghai-China, <sup>1</sup> Singapore, <sup>1</sup> Thailand, Trinidad and Tobago	Australia, <sup>1</sup> Belgium, <sup>1</sup> Chile, Ireland, Korea, <sup>2</sup> Netherlands, <sup>1</sup> Dubai (UAE), Hong Kong-China, <sup>2</sup> Indonesia, Macao-China, Chinese Taipei

Note: The estimates in the grey cells indicate the average values of the variables used in latent profile analysis in each group. See Annex A5 for technical details.

1. Perform higher than the OECD average in reading.

2. Perform higher than the OECD average in reading and where the relationship between students' socio-economic background and reading performance is weaker than the OECD average.

Source: OECD, *PISA 2009 Database*.

StatLink  <http://dx.doi.org/10.1787/888932343399>



## ASSESSMENT AND ACCOUNTABILITY POLICIES

To ensure that instruction is effective, most schools evaluate student learning, usually through teachers' assessments, required assignments or tests. Standardised tests are often used to compare students and schools at the national or regional level. Evaluation of student learning outcomes can also be used to hold schools and other actors in education accountable for what is one of the principal functions of schooling.

The cross-country analysis in Chapter 2 shows that the use of standards-based external examinations tends to be positively related to a system's overall performance, while the use of standardised tests or assessment data for benchmarking or decision making is not consistently related to learning outcomes. However, in some countries, schools that post achievement data publicly tend to perform better; and the use of standardised tests tends to be associated with a lower impact of socio-economic background on student performance.

### Assessment practices and purposes

Among OECD countries, the Czech Republic, Denmark, Estonia, Finland, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, the Netherlands, New Zealand, Norway, Poland, the Slovak Republic, Slovenia, Turkey and the United Kingdom all use standards-based external examinations throughout the system for students at the secondary education level. While in some countries the standards-based external examinations during or at the end of secondary education are the same for all students, in other countries, e.g. the United Kingdom, students have a choice between different examination levels for a given subject. Among the partner countries and economies, Azerbaijan, Bulgaria, Colombia, Croatia, Dubai (UAE), Hong Kong-China, Indonesia, Jordan, Kyrgyzstan, Latvia, Liechtenstein, Lithuania, Montenegro, the Russian Federation, Shanghai-China, Singapore, Chinese Taipei and Trinidad and Tobago all have system-wide examinations as well (Table IV.3.11).

Beyond national examinations, schools can independently choose to use standardised tests in order to assess their students in a metric that allows for comparisons with national or regional norms. In PISA 2009, school principals were asked to report the types and frequency of assessments used: standardised tests, teacher-developed tests, teachers' judgmental ratings, student portfolios, or student assignments. They were also asked to report on the purposes of the assessments. These include informing parents about their children's progress, making decisions about grade promotion or retention, grouping students for instructional purposes, monitoring and comparing school performance, judging teachers' effectiveness, and/or identifying areas for improvement in the curriculum or teaching methods.

An average of 76% of students in OECD countries are enrolled in schools whose principals reported that they use standardised tests for 15-year-old students. However, standardised tests are relatively uncommon in Slovenia, Belgium, Spain, Austria and Germany, where less than half of students attend schools that assess students through standardised tests. In contrast, the use of standardised tests is practically universal, according to school principals' reports, in Luxembourg, Finland, Korea, the United States, Poland, Denmark, Sweden and Norway, where over 95% of students attend schools that use this form of assessment at least once a year. In the partner countries and economies Qatar, Singapore, Hong Kong-China, Azerbaijan, Kyrgyzstan, Latvia, Indonesia and Tunisia, the use of standardised tests is also almost universal according to school principals' reports, whereas in Uruguay and Serbia, less than half the students attend schools that use such tests (Table IV.3.10).

The purpose of assessments, whether standardised tests or other forms, vary. At the school level, these assessments can be used by schools to compare themselves to other schools, to monitor progress, or to make decisions about instruction. Some 59% of students across OECD countries are in schools whose principals reported that they use achievement data to compare their students' achievement levels either with those in other schools or to national or regional performance measures. This practice is most common in the United States, New Zealand and the United Kingdom, where over 90% of students attend schools that use achievement data for comparative purposes. In Belgium, Japan, Austria, Spain and Greece, less than one-third of students attend schools that use achievement information this way (the last column in Table IV.3.12).

It is more common for schools to use achievement information to monitor school progress from year to year; on average some 77% of students in OECD countries attend schools that do so. In 21 OECD countries, more than 80% of students attend schools that use achievement data this way. Only in Denmark, Luxembourg, Switzerland and Austria do less than 50% of students attend schools that use achievement data to monitor progress.

Data on student achievement can also be used to identify aspects of instruction or the curriculum that could be improved. Across OECD countries, 77% of students are in schools that reported doing so, and in New Zealand, the United States, the United Kingdom, Iceland, Poland, Mexico, Chile, Spain and Israel, more than 90% of students attend schools that use achievement data to identify areas of instruction or the curriculum that need improvement. Using achievement data for these purposes is less common in Greece and Switzerland, where less than 50% of students attend schools that use achievement data this way.

Among the partner countries and economies, the use of such achievement data also varies: over 90% of students in the Russian Federation, Kazakhstan, Singapore, Kyrgyzstan, Azerbaijan, Latvia, Romania, Indonesia and Tunisia attend schools that use achievement data to compare themselves to other schools or with national/regional performance; yet in Uruguay and Macao-China, less than 25% of students attend schools that use achievement data in this way. As across OECD countries, the use of achievement data to monitor school progress is common among the partner countries and economies: in 26 of the 31 partner countries and economies, over 80% of students attend schools that use achievement data for monitoring purposes. It is also common for schools in the partner countries and economies to use achievement data to identify aspects of the curriculum that could be improved: in 19 partner countries and economies, over 90% of students attend schools that use achievement data in this manner.

### Accountability arrangements

The shift in public and government concern away from mere control over the resources for and content of education towards a focus on outcomes has resulted in the establishment of standards of quality for educational institutions. Standard-setting among countries ranges from defining broad educational goals to formulating explicit performance expectations in well-defined subject areas.

Performance standards are typically associated with accountability systems. Over the past decade, accountability systems based on student performance have become more common in many OECD countries, and results are often widely reported and used in public debate to inform parents about school choice and to prompt improvements in schools. The rationale for and nature of these accountability systems, however, vary greatly within and across countries. The OECD countries use different forms of external assessment, external evaluation or inspection, and schools' own quality-assurance and self-evaluation efforts.

Given the importance of accountability systems in the policy and public debate, and given the diversity of accountability systems across OECD countries (OECD, 2007), PISA 2009 collected data on the nature of accountability systems and the ways in which the resulting information was used and made available to various stakeholders and the public at large.

Some school systems make achievement data publicly available to inform stakeholders of the comparative performance of schools and, where school-choice programmes are available, to make parents aware of the choices available to them. Across OECD countries, an average of 37% of students attend schools whose principals reported that they make achievement data available to the public, while in Belgium, Finland, Switzerland, Japan, Austria and Spain, less than 10% of students attend schools that make their data publicly available. In contrast, in the United States and the United Kingdom, more than 80% of students attend schools that make student achievement data publicly available (Table IV.3.13).

School-level achievement data can also be tracked over time by administrative authorities: across OECD countries, an average of 66% of students attend schools whose principals reported that achievement data are tracked over time by administrative authorities. In 25 OECD countries, more than 50% of students attend schools in which the schools' achievement is tracked over time. In the United States, the United Kingdom and New Zealand, over 90% of students attend schools that are tracked over time in this manner.

Achievement data can also be used to determine how resources are distributed. Across OECD countries, an average of 33% of students attend schools whose principals reported that they use achievement data in this way. In Israel, Chile and the United States, more than 70% of students attend schools in which the principal reported that instructional resources are allocated according to the school's achievement data. This practice is rare in Iceland, Greece, Japan, the Czech Republic and Finland, where less than 10% of students attend schools that use achievement data in this way.

Similar accountability arrangements exist within the partner countries and economies. It is common for student achievement data to be made public in Azerbaijan and Kazakhstan. In these countries, more than 80% of students attend schools where principals reported that student achievement data is publicly posted. It is not common for





achievement data to be made public in Shanghai-China, Argentina, Panama, Tunisia and Uruguay, where less than 10% of students attend schools that make their achievement data public (Table IV.3.13). Achievement data is tracked by administrative authorities in practically all schools in the Russian Federation, Kazakhstan, Montenegro, Kyrgyzstan and Singapore. Less than half of the students in Chinese Taipei, Liechtenstein and Macao-China attend schools where achievement data is tracked by administrative authorities. Achievement data is widely used in Indonesia, Singapore, Kyrgyzstan and Kazakhstan to allocate instructional resources. This is not the case in the majority of schools in Croatia, Lithuania and Serbia, where less than 20% of students attend schools that use achievement data in this way.

Most school systems make students' achievement data, relative to other students in the same school, available to parents. This can take the form of report cards or teacher-formulated assessments that are sent home. Other schools also provide information on the students' academic standing compared with other students in the country or region or within the school (Table IV.3.14). Across OECD countries, an average of 52% of students attend schools whose principals reported that they provide parents with information on their students' academic standing, either compared to a national/regional population or compared with other students in the school. But in Austria, Italy and the Netherlands, and the partner countries and economies Macao-China, Hong Kong-China, Uruguay and Lithuania, over 80% of students attend schools that do not provide any information regarding the academic standing of the students, either compared to a national/regional population or compared with other students in the school (the last column in Table IV.3.14). In contrast, in Sweden, the United States, Korea, Chile, Norway and Turkey, and the partner countries and economies Azerbaijan, Kyrgyzstan, Colombia, Kazakhstan, the Russian Federation, Qatar and Romania, more than 80% of students attend schools that provide parents with this kind of information.

Students' achievement data can also be used to monitor teacher practices, and an average of 59% of students across OECD countries attend schools whose principals reported doing so. Over 80% of students in Poland, Israel, the United Kingdom, Turkey, Mexico, Austria and the United States attend schools that use achievement data to monitor teacher practices. Many schools across OECD countries complement this information with qualitative assessments, such as teacher peer reviews, assessments for school principals or senior staff, or observations by inspectors or other persons external to the school. School principals in Finland, however, rarely use student achievement data, reviews or observations to monitor teacher practices. Some 18% of students in Finland attend schools that use student assessments to monitor teachers; around 20% of students attend schools that use more qualitative and direct methods to monitor teacher practices; and only 2% of students attend schools that monitor teacher practices using observations of classes by inspectors or other persons external to the school (Table IV.3.15). Among the partner countries and economies, most schools in Singapore, the Russian Federation, Azerbaijan, Kazakhstan, Kyrgyzstan and Albania use student achievement data to monitor teacher practices.

### Country profiles in assessment and accountability policies

To summarise the results and patterns of evaluation and accountability arrangements across countries, this section presents the results of a latent profile analysis. This analysis divides the OECD countries into four groups that share similar profiles based on two features (Figure IV.3.6). The first is whether achievement data are used for various benchmarking and information purposes. The second is whether achievement data are used to make decisions that affect the school. The assumption is that school systems that use achievement data for benchmarking and information purposes are more likely to use this data to compare themselves with other schools, monitor progress across time, have their progress tracked by administrative authorities, make their achievement data public and provide parents with their child's achievement benchmarked to national or regional populations. School systems that use achievement data for decision-making are more likely to use achievement data to determine the allocation of resources, make curricular decisions, and evaluate teachers' instruction.

The cross-classification of these two categories for each feature renders four groups. Most OECD countries (16) and partner countries and economies (24) are classified into groups that use achievement data for benchmarking and information purposes and for making decisions that affect the school. Three OECD countries and three partner countries use achievement data for benchmarking and information purposes, but not for making decisions affecting the school. A third group, comprising three OECD countries and five partner countries and economies, uses achievement data for making decisions affecting the school, but not for benchmarking and information purposes. The fourth group, composed of nine OECD countries and one partner country, is less likely to have schools that use achievement data either for benchmarking and information purposes or decision making.

Chapter 2 shows that the existence of standards-based external examinations is associated with higher levels of performance, while there is no clear relationship between performance and various uses of assessment for accountability purposes. However, the use of achievement data to make decisions about the curriculum and track achievement data over time is related to higher levels of socio-economic equity in school systems (Table IV.2.1a). When the countries are grouped according to the various aspects of assessment and accountability arrangements, no clear relationship with performance is discerned (Table IV.1.1).

■ Figure IV.3.6 ■

### How school systems use student assessments


		Infrequent use of assessment or achievement data for benchmarking and information purposes	Frequent use of assessment or achievement data for benchmarking and information purposes
		Provide comparative information to parents: 32%	Provide comparative information to parents: 64%
		Compare the school with other schools: 38%	Compare the school with other schools: 73%
		Monitor progress over time: 57%	Monitor progress over time: 89%
		Post achievement data publicly: 20%	Post achievement data publicly: 47%
		Have their progress tracked by administrative authorities: 46%	Have their progress tracked by administrative authorities: 79%
<b>Infrequent use of assessment or achievement data for decision making</b>	Make curricular decisions: 60% Allocate resources: 21% Monitor teacher practices: 50%	Austria, Belgium, <sup>1</sup> Finland, <sup>2</sup> Germany, Greece, Ireland, Luxembourg, Netherlands, <sup>1</sup> Switzerland, <sup>1</sup> Liechtenstein	Hungary, Norway, <sup>2</sup> Turkey, Montenegro, Tunisia, Slovenia
<b>Frequent use of assessment or achievement data for decision making</b>	Making curricular decisions: 88% Allocating resources: 40% Monitor teacher practices: 65%	Denmark, Italy, Japan, <sup>2</sup> Spain, Argentina, Macao-China, Chinese Taipei, Uruguay	Australia, <sup>1</sup> Canada, <sup>2</sup> Chile, Czech Republic, Estonia, <sup>2</sup> Iceland, <sup>2</sup> Israel, Korea, <sup>2</sup> Mexico, New Zealand, <sup>1</sup> Poland, <sup>1</sup> Portugal, Slovak Republic, Sweden, United Kingdom, United States, Albania, Azerbaijan, Brazil, Bulgaria, Colombia, Croatia, Dubai (UAE), Hong Kong-China, <sup>2</sup> Indonesia, Jordan, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Panama, Peru, Qatar, Romania, Russian Federation, Shanghai-China, <sup>1</sup> Singapore, <sup>1</sup> Thailand, Trinidad and Tobago, Serbia

Note: The estimates in the grey cells indicate the average values of the variables used in latent profile analysis in each group. See Annex A5 for technical details.

1. Perform higher than the OECD average in reading.

2. Perform higher than the OECD average in reading and where the relationship between students' socio-economic background and reading performance is weaker than the OECD average.

Source: OECD, *PISA 2009 Database*.

StatLink  <http://dx.doi.org/10.1787/888932343399>

## RESOURCES INVESTED IN EDUCATION

Effective school systems require the right combination of trained and talented personnel, adequate educational resources and facilities and motivated students ready to learn. In the public debate, factors such as class and school size, the quality of teaching materials, perceived staff shortages and teacher quality are frequently associated with performance.

Chapter 2 shows that some high-performing school systems tend to prioritise higher salaries for teachers over smaller classes. At the level of individual schools, higher student scores tend to be related to more learning time in mathematics and science, a higher percentage of students who attended pre-primary schools for more than one year, and better educational resources. Chapter 2 also shows that most of the relationship between school resources and schools' performance is also related to schools' socio-economic intake. In other words, school resources are the most important set of mediators through which the socio-economic background of students and schools affects performance.

### Time resources

#### Learning time

Because the PISA population is composed of 15-year-olds, students in many countries are drawn from various grade levels and from both lower and upper secondary schools. It is important to keep this in mind when comparing the amount of time students invest in classes on the language of instruction, because these lessons may be compulsory at one level but not at another.



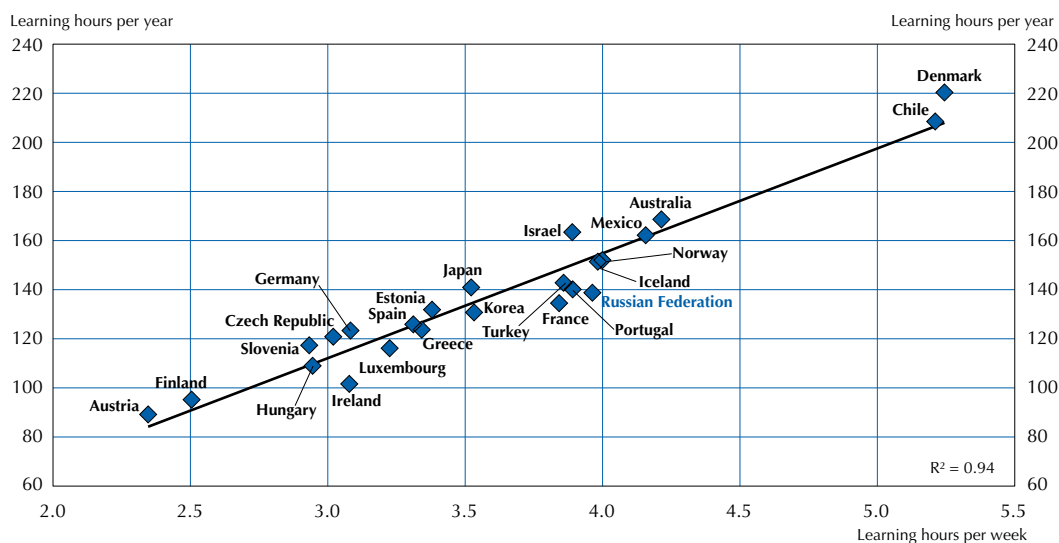
On average across OECD countries, students reported spending approximately 3 hours and 40 minutes per week in classes on the language of instruction. Students spend over five hours per week in classes on the language of instruction in Canada, Chile and Denmark, but less than three hours per week in Austria, Finland, the Netherlands, Hungary, Slovenia, the Slovak Republic and Ireland. Although there is widespread variation in the amount of time students spend in classes on the language of instruction across OECD countries, there are also noteworthy variations within countries. Whereas in Norway, Poland, Ireland, Slovenia and Finland all students are exposed to a similar amount of learning time on the language of instruction across the school system, in Chile, Israel and Canada, there is a wide variation in the amount of learning time on the language of instruction (Table IV.3.16a).

### Box IV.3.1 Interpreting data on student learning time


The data on students' learning time used in this report are based on 15-year-old students' self-reports on their "typical" use of time per week at the time of the PISA data collection. The time students spend learning each subject might vary according to the week. The number of instruction weeks per year may also vary across education systems, depending on the length of the school year and vacation time. The scatter plot below presents the relationship between the numbers of hours per week and the number of hours per year students spend in regular school lessons on the language of instruction. The system-level data on the number of weeks of instruction time, as part of the teachers' working time (OECD, 2009c), is used as a proxy for the number of instruction weeks per year in each education system. This is then multiplied by the number of school lessons per week, taken from the students' reports. This linear relationship between two indicators, as seen in the scatter plot, confirms that the numbers of hours per week spent in regular school lessons is a good proxy for the number of hours per year spent in regular school lessons.

■ Figures IV.3.a ■

#### Relationship between learning hours per week and learning hours per year in the language of instruction



Source: OECD, *PISA 2009 Database*; OECD, 2009c, Table D4.2.

StatLink  <http://dx.doi.org/10.1787/888932343399>

There are several reasons to be careful when interpreting the data. The learning time in regular school lessons that students reported in PISA may be only partially indicative of the learning time that shapes students' educational experiences. Earlier schooling experiences should be considered in order to develop a complete picture of a student's learning time. Students might also spend more time in after-school lessons or individual study during a year when they have an entrance or exit examination.

Variation in the amount of time that is invested in learning the language of instruction is observed both among and within schools. High levels of between-school variation indicate that certain schools offer more time for learning the language of instruction than other schools, such that students attending different schools may be exposed to very different amounts of time learning the language of instruction. High levels of within-school variation indicate that students attending the same school may receive different amounts of time learning the language of instruction. Between-school variation in the language of instruction learning time is greatest in Korea, the Slovak Republic, Poland and Japan, while within-school variations in the amount of time spent learning the language of instruction are greatest in Hungary, France and Portugal. Again, such between-school variation can reflect the fact that 15-year-olds attend different levels of education in the school system.

Among the partner countries and economies, average learning time on the language of instruction does not exceed five hours per week. It is less than three hours per week in Bulgaria, Serbia, Thailand, Montenegro, Latvia, Croatia and Azerbaijan. Variation in learning time on the language of instruction is lowest in Tunisia, Montenegro, Serbia and Macao-China, indicating that 15-year-olds across those school systems receive similar amounts of class time on the language of instruction. Variation is greatest in Argentina, Peru, Indonesia and Singapore.

Although reading was the focus of the 2009 PISA assessment, it is worth considering the time spent learning mathematics and science as well, since learning time in different subjects is related to performance in those subjects in different ways (OECD, 2010b). Learning time in mathematics and science differs among OECD countries, with the OECD average for both subjects combined at 6 hours and 40 minutes per week. The learning time for both subjects is around 10 hours or more per week in Canada and Chile, but is less than 6 hours per week in Norway, Hungary, Ireland, Turkey, the Netherlands, Austria and Slovenia. Similar levels of variation are seen in instruction in mathematics and science across the partner countries and economies. The average amount of learning time devoted to mathematics and science is highest in Singapore, where the average student is exposed to more than 11 hours of mathematics and science instruction per week. In contrast, in Romania, Montenegro and Croatia, the average student is exposed to less than five hours of mathematics and science classes per week. In general, across OECD countries, students in lower secondary schools tend to spend more time in classes in the language of instruction than students in upper secondary schools, while students in upper secondary schools tend to spend more time in science classes than students in lower secondary schools (Table IV.3.16b).

Formal instruction can occur both in and outside of school. Students can take part in after-school lessons in the form of enrichment or remedial courses with individual tutors or in group lessons provided by school teachers, or other independent courses, and may spend different amounts of time in them (Table IV.3.17b). These lessons can be financed publicly and offered as a free resource for students in need, or can be paid for by students and their families. On average across OECD countries, 28% of students attend at least one enrichment course and 26% attend at least one remedial course. In ten OECD countries, more than one-third of students attend at least one enrichment course; in Greece, Israel and Poland more than half the students do. Remedial courses are most common in Korea, Greece, the United Kingdom and Japan. In contrast, remedial and enrichment courses are generally uncommon in Denmark and Norway (Table IV.3.17a).

Among the partner countries and economies, enrichment courses are very common in Kazakhstan, Indonesia, Azerbaijan and Trinidad and Tobago, where over two-thirds of students reported taking part in enrichment courses. Over two-thirds of the students in Kazakhstan and the Russian Federation take part in some kind of remedial course. Remedial after-school classes are relatively uncommon in Latvia, Uruguay, Liechtenstein, Brazil and Montenegro.

### **Early childhood education**

Whether and how long students are enrolled in pre-primary education also figures into the amount of time invested in education. Many of the inequalities that exist within school systems are already present when students enter formal schooling and persist as students progress through the school system (Entwisle, Alexander and Olson, 1997; Downey, Von Hippel and Broh, 2004). Because inequalities tend to grow when school is out-of-session, earlier entrance into the school system may reduce educational inequalities. In addition, with earlier entrance into pre-primary school, students are better prepared to enter and succeed in formal schooling (Hart and Risely, 1995; Heckman, 2000).

As discussed in Chapter 2, in most countries, students who have attended pre-primary schools tend to perform better than those who have not, even after accounting for students' socio-economic background.



On average across OECD countries, 72% of students reported that they had attended more than one year of pre-primary education. Attendance in pre-primary education is practically universal in Japan, the Netherlands, Hungary, Belgium, Iceland, France, where over 90% of 15-year-olds reported that they had attended pre-primary school for more than one year. More than 90% of students in 27 OECD countries attended pre-primary school for at least some time, and 98% of students in Japan, Hungary, France and the United States reported having done so. Pre-primary education is rare in Turkey, where less than 30% of 15-year-olds went to pre-primary school for at least a year. More than one year of pre-primary education is uncommon in Chile, Ireland, Canada and Poland, where less than 50% of students attended pre-primary school for that length of time (Table IV.3.18).

Among the partner countries and economies, in Liechtenstein, Hong Kong-China and Singapore, more than 90% of students attended more than one year of pre-primary schooling. In 10 of the 34 partner countries and economies, more than 90% of students attended pre-primary education for some time. Only in Liechtenstein and Chinese Taipei did more than 98% of students reported that they attended pre-primary school for some time. In contrast, in Azerbaijan, Kyrgyzstan and Kazakhstan, less than 50% of students attended pre-primary education; and in Azerbaijan, Kyrgyzstan, Tunisia, Qatar and Indonesia, less than 25% of students attended pre-primary education for more than one year.

### **Extra-curricular activities**

Extra-curricular activities take many forms, including sports activities, academic activities, and courses in the arts and culture, and they can also improve students' non-cognitive skills. Skills such as task persistence, independence, following instructions, working well within groups, dealing with authority figures and fitting in with peers are, in turn, related to students' success in school - and beyond (Farkas, 2003; Carneiro and Heckman, 2005; Covay and Carbonaro, 2009).

In PISA 2009, school principals were asked to report whether the following extra-curricular activities are offered by the school: a band, an orchestra or choir; school plays or school musicals; a school yearbook, a newspaper or magazine; volunteering or service activities; a book club; a debating club or debating activities; a school club or competition for foreign language, math or science; an academic club; an art club or art activities; a sport team or sports activities; lectures and/or seminars; collaboration with local libraries; and collaboration with local newspapers. An *index of extra-curricular activities* captures the array of extra-curricular activities offered by the school. Higher levels of this index indicate greater availability of extra-curricular activities (Table IV.3.19).

The availability of extra-curricular activities is greatest in New Zealand, the United States, Korea and the United Kingdom. In these countries, the average student attends a school in which the availability of extra-curricular activities is over one standard deviation above that of the OECD. In contrast, Denmark, Norway and Switzerland score lowest on the index of extra-curricular activities, so that the average student attends a school in which the availability of extra-curricular activities is less than one half of a standard deviation of that in the OECD. Within countries, schools vary in how many extra-curricular activities they offer. This variation is greatest in Greece, Mexico, Austria and Chile, but relatively modest in Japan, Estonia, the Czech Republic, Switzerland and the Netherlands.

Among the partner countries and economies Kazakhstan, Hong Kong-China, Qatar, Singapore, Romania and Thailand show high levels of extra-curricular offerings: in these six countries and economies, the average student attends a school that is over one standard deviation above the OECD average on the measure of extra-curricular offerings. In contrast, Argentina, Uruguay, Brazil and Indonesia show the lowest levels of extra-curricular activities. The variation among schools is greatest in Tunisia, Shanghai-China, Brazil, Albania, Jordan, Montenegro, Azerbaijan, Indonesia and Thailand, while Liechtenstein, Lithuania, Latvia and Serbia offer all of their students similar levels of extra-curricular activities.

## **Human resources**

### **Teacher shortages and salaries**

Teachers are widely believed to be the most essential resource for learning (Greenwald, Hedges and Laine, 1996; Gamoran, Secada, and Marrett, 2000; Rivkin, Hanushek and Kain, 2005). A shortage of teachers implies that teachers are often overloaded with instructional and administrative work, unable to meet the variety of student needs, and often designated to teach subjects outside their expertise. Sometimes, less qualified teachers are hired, undermining students' opportunities to learn or certain courses may be dropped from the curriculum.

School principals surveyed by PISA reported on the extent to which they think instruction in their school is hindered by a lack of qualified teachers and staff in key areas. This information was combined to create a composite *index of teacher shortage*, such that the index has an average of 0 and a standard deviation of 1 for the OECD countries. Higher values on the index indicate the perception of more problems with instruction due to teacher shortages. Caution is required in interpreting these results: school principals across countries and economies, or even within countries and economies, may have different expectations and benchmarks to determine whether there is a lack of qualified teachers. Nonetheless, these school principals' reports provide valuable information that can be used to assess whether school leaders can provide their students with adequate human resources (Table IV.3.20).

School principals in Turkey and Luxembourg are more likely to have reported that instruction in their schools is hindered by a lack of adequate human resources. This was less likely to be reported in Portugal, Spain, Poland and Slovenia. Although school systems vary in the extent to which a lack of human resources is seen to hinder instruction, countries vary, too, in how they interpret a lack of human resources. School principals in Portugal, Poland, Slovenia and Spain share similar opinions concerning how human resources hinder instruction within their schools. In contrast, the reports of school principals in Turkey and Chile varied widely: some school principals considered the lack of qualified human resources a hindrance in their schools, while others did not share this view.

Lower secondary teachers' salaries in the average OECD country are 118% of the per capita GDP, corrected for differences in purchasing power parities. Relative to their country's national income, lower secondary teachers in Korea, Mexico, Germany, Portugal and Switzerland earn the most. Annual earnings for Korean lower secondary teachers, for example, are almost twice the level of national income, while those of Mexico, Germany, Portugal and Switzerland still exceed 150% of the per capita GDP. In contrast, teachers in Estonia, Norway, Iceland, Hungary, Israel, the Czech Republic, Sweden, the United States and Poland earn less than the national per capita income. Salaries relative to national income provide a rough indicator of the competitiveness of teaching positions. In absolute terms with adjusting for differences in purchasing power parities, lower secondary teachers with 15 years of experience earn more than USD 50 000 per year in Luxembourg, Switzerland, Germany, Ireland and Korea and less than USD 30 000 per year in Estonia, Hungary, Poland, Israel, the Czech Republic, Mexico and Iceland. The distribution of teachers' salaries for upper secondary teachers is similar to that of lower secondary teachers (Tables IV.3.21a and IV.3.21c).

Among the partner countries and economies, school principals in Kyrgyzstan, Thailand and Jordan were more likely to have reported that a lack of adequate human resources hinders instruction in their schools. This notion is less common in Romania, Bulgaria and Serbia. Yet within countries, schools vary in the extent to which school principals reported that a lack of human resources hinder instruction in their schools. This variation is greatest in Shanghai-China, Jordan, Macao-China, Chinese Taipei, Kazakhstan, Colombia, and relatively modest in Romania, Bulgaria, Tunisia, Montenegro and Serbia.

### **Class size**

Class size can affect how much time and attention a teacher can give to individual students, as well as the social dynamics among students. However, research on class size has generally found a weak relationship between class size and student performance (Ehrenberg *et al.*, 2001; Piketty, 2006). Class size also seems to be more important in the earlier years of schooling than it is for 15-year-olds (Finn, 1998).

Among OECD countries, students reported an average of 24.6 students in their class on the language of instruction. Country averages range from fewer than 20 students per classroom in Belgium, Switzerland, Iceland, Finland and Denmark, to more than 30 students per classroom in Japan, Chile, Korea and Mexico. Class sizes also differ within countries. Most students in Finland, Denmark, Switzerland, Poland and Greece, for example, attend classes of similar size, while there is more variation in class size in Mexico, Turkey, Israel and the United States. In many countries, the size of classes varies more across than within schools. In Korea, Japan, Greece and Slovenia, over 80% of the variation in class size occurs between schools, with little variation occurring within school. In Turkey, Ireland and the United States, over 65% of the variation in class size occurs within schools, indicating that students attending the same school may attend classes of different sizes (Table IV.3.22).

The distribution of class size in partner countries and economies follows a similar pattern to that of OECD countries. There are fewer than 20 students per class in Liechtenstein, Azerbaijan and Latvia, and more than 30 students per class in 10 partner countries and economies. In Chinese Taipei, Shanghai-China, Macao-China, Thailand, Hong Kong-China and Colombia, the average class size is more than 35 students. Variations in class size within each country tend to be greater in partner countries and economies than in OECD countries.



## Material resources

While an adequate physical infrastructure and up-to-date textbooks do not guarantee good learning outcomes, the absence of such resources is likely to have an adverse effect on learning. School principals were asked to report on the extent to which the school's capacity to provide instruction was hindered by the shortage or inadequacy of several types of resources, including: science laboratory equipment, instruction materials, such as textbooks, computers for instruction, Internet connectivity, computer software for instruction, library materials and audio-visual resources.

### Box IV.3.2 Availability and use of resources: School libraries

Research on the effects of school resources has generally found a weak independent relationship to student learning, particularly in industrialised countries (Coleman, 1966; Heyneman and Loxley, 1983; Fuller, 1987; Buchmann and Hannum, 2001). One explanation of these weak effects is the "black box assumption of educational production". This assumption treats school resources as educational inputs for producing student learning and measures the relationship between student learning and the availability of various resources at the school or in the students' households. Yet what matters for student achievement and other educational outcomes is not necessarily the availability of resources. What matters is the quality of the resources, the availability and use of those resources, and the quality of their use (Gamoran, Secada and Marrett, 2000).

To understand the interplay between the availability of educational resources, their quality and the quality of their use and the eventual educational impact of this use, PISA asked students and school principals about the availability of a school library, the quality of the school library and how students use libraries, including the school library or another type of library, such as a public library (Table IV.3.24).

In general, most students in the OECD reported having access to a school library: an average of 90% of students in OECD countries reported having access to a school library. But over a quarter of all students do not have access to a quality library: 29% of students attend schools in which the school principal reported that instruction is hindered "to some extent" or "a lot" by a lack of sufficient library materials. Even the availability of a good library does not guarantee that it is used: only 64% of students borrow books for school-related activities a few times or more a year, and only 52% borrow books for pleasure a few times a year.

The availability of a school library does not seem to influence students' use of a library much: students reported using libraries at similar rates, regardless of whether the school offers a library or not. Compared to 66% of students who have access to a good-quality school library and reported borrowing books for school-related activities a few times or more per year, 56% of students who do not have access to a school library reported borrowing books for school-related activities a few or more times per year; a nine percentage-point difference. Compared to 54% of students who have good-quality school libraries and borrow books for pleasure, 47% borrow books for pleasure even though they do not have access to a school library - a difference of only slightly more than six percentage points.

Also, the quality of the resource does not seem to affect its use: whether the library is of good or poor quality does not seem to affect the frequency with which students borrow books for pleasure or school-related activities. Compared to the 54% borrowing rate for books for pleasure when students have a good library available to them, 52% of students borrow books for school-related activities when only an insufficient library is available. Compared to 66% of students who borrow books for school-related activities when they have a good library available to them, 62% of students who have a poor school library borrow books for school-related activities.

In sum, the availability of school resources seems at most weakly related to students' use of libraries. Students who borrow books for pleasure or school-related activities will use whatever library they can find to borrow books, while students who do not wish to borrow books are minimally more likely to borrow books if they have a school library available to them.

	School with no library	School with library		Total
		Principals reported a lack of sufficient library materials hinders instruction "to some extent" or "a lot"	Principals reported a lack of sufficient library materials hinders instruction "very little" or "not at all"	
Students borrow books for pleasure	47%	52%	54%	52%
Students borrow books for school-related activities	56%	62%	66%	64%

Note: The OECD averages are shown. For the results by country, see Table IV.3.24.

This information was combined to create a composite *index of material resources* such that the index has an average of zero and a standard deviation of one for the OECD countries. Higher values indicate less hindrance of instruction due to a lack of resources. It is best to be cautious when analysing these results: school principals within and across countries might have different benchmarks to judge the lack of instructional resources within their schools. Nonetheless, these responses provide valuable information on the school leaders' ability to provide what they consider to be necessary for quality instruction.

School principals in Switzerland, the United States, Japan, Slovenia, the United Kingdom, Australia and Iceland were less likely to have reported that instruction in school is hindered by a lack of adequate material resources, while school principals in Turkey and Mexico were more likely to have reported this. Although school systems vary in the extent to which a lack of material resources may hinder instruction, countries differ in the extent to which they perceive this as a problem. School principals across the school system in Norway, the Czech Republic, Estonia, Turkey and Denmark have relatively similar opinions concerning how a lack of material resources hinders instruction within their schools. In contrast, these opinions vary widely in Mexico, Chile, Australia, Ireland and Israel (Table IV.3.23).

Among the partner countries and economies, school principals in Singapore, Liechtenstein, Dubai (UAE) and Hong Kong-China were less likely to have reported that a lack of adequate material resources hinders instruction in their schools. This view was more commonly reported in Kyrgyzstan, Indonesia, Colombia and Peru. Yet schools vary in the extent to which school principals reported this problem. The variation is greatest in Panama, Argentina and Peru, and relatively modest in Montenegro, Lithuania, Latvia and Bulgaria.

### Spending on education

Spending on educational resources as discussed above can be summarised in overall spending per student. Depending on the way resources are allocated, this financial investment can take the form of buildings and infrastructure, salaries paid to teachers, administrators and support staff, and transportation and meals for students. For a student, these resources are allocated throughout his or her educational career, and countries spend different amounts per student. Total expenditure by educational institutions per student from age 6 to 15 exceeds USD 100 000 (PPP-corrected dollars) in Luxembourg, the United States, Switzerland and Norway. In Luxembourg, cumulative expenditure per student exceeds USD 150 000. In contrast, in Turkey, Mexico, Chile, the Slovak Republic and Poland, cumulative expenditure per student over this period is less than USD 40 000. In Mexico and Chile, cumulative expenditure is less than USD 25 000 per student; and in Turkey, cumulative expenditure is less than USD 13 000 dollars per student (Table IV.3.21b).

### Country profiles in resources invested in education

To summarise the results and patterns of spending on education across countries, this section presents the results of a latent profile analysis. This analysis groups countries according to the amount of resources they invest in education as measured by cumulative expenditure. Countries are also grouped according to how these resources are invested: whether priority is given to teachers' salaries or to providing smaller classes and better infrastructure. While other resources for education, such as time and extra-curricular activities, are considered important in understanding schooling, OECD data indicate that most spending is directed either towards increases in teachers' salaries or smaller class size (OECD, 2010a).

OECD countries can be grouped into four categories, depending on the amount of resources they invest and the spending choices they make (Figure IV.3.7). Countries may invest relatively small or large amounts of resources in education, and each of these countries may choose to focus this investment on factors such as teachers' salaries or smaller class size. Most OECD countries prioritise smaller class sizes: the Czech Republic, Estonia, Greece, Hungary, Israel, New Zealand, Poland, Portugal, the Slovak Republic and Turkey spend less on education and focus limited resources on smaller class sizes; Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Slovenia, Spain, Sweden, Switzerland, the United Kingdom and the United States spend more on education and also focus resources on smaller classes. Only four OECD countries prioritise teachers' salaries: two of these countries, Mexico and Chile, spend relatively small amounts on education and two, Japan and Korea, invest relatively large amounts in education.

All partner countries and economies are classified in the groups that spend relatively less on education. The partner countries and economies vary more with respect to how they invest their resources: 21 partner countries and economies focus their investment on smaller class sizes while 10 partner countries and economies focus their investment on higher salaries for teachers.





A corrigendum has been issued for this page. See: [http://www.oecd.org/about/publishing/corrigendum\\_PISA\\_2009\\_Volume\\_IV.pdf](http://www.oecd.org/about/publishing/corrigendum_PISA_2009_Volume_IV.pdf)

The average student performance between two OECD countries that invest heavily in education and privilege spending on teachers' salaries is 530 points, and only 10% of the variation in performance is explained by students' socio-economic background (Table IV.1.1a, Table IV.1.1b and Table IV.1.1c).

■ Figure IV.3.7 ■

### How school systems allocate resources for education

		Small class size and/or low teachers' salaries	Large class size and high teachers' salaries
		Class size for the language of instruction: 23	Class size for the language of instruction: 36
		Teachers' salaries relative to GDP/capita <sup>1</sup> : 118	Teachers' salaries relative to GDP/capita <sup>1</sup> : 172
<b>Low cumulative expenditure on education</b>	Cumulative expenditure by educational institutions per student aged 6 to 15: USD 39 463	Czech Republic, Estonia, <sup>3</sup> Hungary, Greece, Israel, New Zealand, <sup>2</sup> Poland, <sup>2</sup> Portugal, Slovak Republic, Turkey, Albania, Argentina, Azerbaijan, Bulgaria, Croatia, Dubai (UAE), Kazakhstan, Kyrgyzstan, Latvia, Liechtenstein, Lithuania, Montenegro, Panama, Peru, Qatar, Romania, Russian Federation, Serbia, Tunisia, Trinidad and Tobago, Uruguay	Chile, Mexico, Brazil, Colombia, Hong Kong-China, <sup>3</sup> Jordan, Indonesia, Macao-China, Shanghai-China, <sup>2</sup> Singapore, <sup>2</sup> Chinese Taipei, Thailand
<b>High cumulative expenditure on education</b>	Cumulative expenditure by educational institutions per student aged 6 to 15: USD 81 238	Australia, <sup>2</sup> Austria, Belgium, <sup>2</sup> Canada, <sup>3</sup> Denmark, Finland, <sup>3</sup> France, Germany, Iceland, <sup>3</sup> Ireland, Italy, Luxembourg, Norway, <sup>3</sup> Netherlands, <sup>2</sup> Slovenia, Spain, Sweden, Switzerland, <sup>2</sup> United Kingdom, United States	Japan, <sup>3</sup> Korea <sup>3</sup>


Note: The estimates in the grey cells indicate the average values of the variables used in latent profile analysis in each group. See Annex A5 for technical details.

1. This is the weighted average of upper and lower secondary teachers. The average is computed with weighting teachers' salaries for upper and lower secondary education according to the respective 15-year-old students enrolment (for countries with valid information on both if 15-year-old students are both at the upper and lower secondary schools).

2. Perform higher than the OECD average in reading.

3. Perform higher than the OECD average in reading and where the relationship between students' socio-economic background and reading performance is weaker than the OECD average.

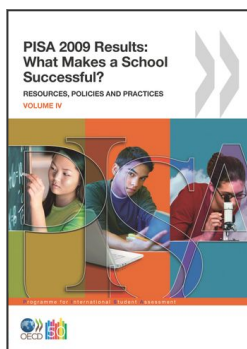
Source: OECD, *PISA 2009 Database*.

StatLink  <http://dx.doi.org/10.1787/888932343399>



## Notes

1. The two-year window refers to the two ages at which students most frequently started primary school in each country.
2. In some countries, 15-year-old students attend two different grade levels simply because of the relationship between the cut-off date for enrolling in schools and the date on which the PISA assessment began. PISA's target population is defined as all students aged from 15 years and 3 (completed) months to 16 years and 2 (completed) months at the beginning of the assessment period.
3. Highly selective schools are defined as schools where principals reported at least one of the following factors to be "always" considered for student admittance: "students' records of academic performance" or "recommendations of feeder schools".
4. This is measured by the between-school variation in performance, which is expressed as a percentage based on the average variance in student performance in reading across OECD countries (Table IV.2.2a).
5. In order to validate the responses of school principals, those responses are compared with the system-level data submitted by the national authorities in each participating country/economy regarding the level of schools' influence in determining the curriculum, assessment policy and allocation of resources. Although the questions are not identical to those asked of school principals in the PISA questionnaire, the responsibility in the resource-allocation index derived from the school principals' reports correlates at 0.730 with responses from national authorities regarding schools' influence in managing personnel across the 35 countries with comparable data, and at 0.674 with responses from national authorities regarding schools' influence in planning and structures.
6. This does not mean that vouchers or tax credits are universally available in these countries. In some countries, vouchers or tax credits are available in education systems, but only a limited proportion of students practice these. For further information, see *Education at a Glance* (OECD, 2010a) Annex 3, available on line: [www.oecd.org/edu/eag2010](http://www.oecd.org/edu/eag2010).
7. Only schools' autonomy in curricula and assessments is considered in this analysis, as school autonomy in resource allocation is not necessarily related to their autonomy in curricula and assessments. In addition, school autonomy in resource allocation is not related to performance at the system level (Table IV.2.1).
8. At the country level, the correlation between autonomy in resource allocation as measured for all students and those attending lower secondary schools only and upper secondary schools only is 0.891 and 0.800, respectively. The correlation between curricular autonomy as measured for all students and those attending only lower secondary and only upper secondary schools is 0.916 and 0.872, respectively. The correlation between school competition calculated for all students and that calculated for students who attend only lower secondary and only upper secondary schools is 0.576 and 0.326, respectively. The correlation between the proportion of private schools as calculated for all students and that calculated for students who attend only lower secondary and only upper secondary schools is 0.713 and 0.625, respectively.



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