

VIEWING THE UNITED KINGDOM SCHOOL SYSTEM THROUGH THE PRISM OF PISA

1. This note summarises the results for the United Kingdom in the PISA 2009 assessment. Since the focus of the PISA 2009 assessment was on reading, results on reading are examined in greater detail than results in mathematics and science. Unless noted otherwise, references to tables and figures refer to those that appear in the five volumes of OECD's PISA 2009 report.

2. Trend comparisons, which are a feature of the PISA 2009 reporting are not reported here because for the United Kingdom it is only possible to compare 2006 and 2009 data. As the PISA 2000 and PISA 2003 samples for the United Kingdom did not meet the PISA response-rate standards, no trend comparisons are possible with these years.¹

Learning outcomes

Mean performance of United Kingdom 15-year-olds in the middle of the rankings

3. In the 2009 PISA assessment of 15-year-olds, the United Kingdom performs around the average in reading (rank 20²) and mathematics (rank 22³) and above the average in science (rank 11⁴) among the 34 OECD countries (see Figures I.2.15, I.3.10 and I.3.20). The average reading score of students in the United Kingdom stands at 494 – not statistically significantly different from the OECD average and comparable with France, Germany, Sweden and the United States but well below the highest-performing countries examined by PISA. Average scores for mathematics and science are 492 and 514 respectively.

4. There is also significant performance variability within the United Kingdom and in general, the differences in performance within the United Kingdom are slightly larger than in other countries. For example the difference in the reading score of the top and bottom 10 percent of students is 246 score points in the United Kingdom, while for OECD countries on average it is 241. More strikingly, 77% of the between schools differences in student performance in the United Kingdom is explained by differences in socio-economic background. Among OECD countries, only Luxembourg has a higher figure (OECD average 55%).

5. Performance also varies by gender but less so than in many OECD countries. Girls outscore boys in reading in all countries in PISA 2009 and by more than 25 score points in all OECD countries except Chile, Mexico, the Netherlands, the United Kingdom and the United States (OECD average 39 score points). Thus, the gap in reading performance in favour of girls in the United Kingdom is relatively low when compared internationally. In mathematics, however, boys outscore girls in 21 out of 34 OECD countries and at 20 score points, the gap in favour of boys in the United Kingdom, is second highest after Chile among OECD countries (OECD average gap is 12 score points). In science, boys outscore girls in 9 OECD countries and the opposite is true in 5 OECD countries. In the United Kingdom, boys outscore girls in science by 9 score points, the third largest gap among OECD countries after the United States (with 14 score points) and Denmark (with 12 score points).

6. Average performance needs to be seen against a range of socio-economic background indicators, most of which give the United Kingdom an advantage compared with other industrialised countries (see Box 2.1 and Table I.2.20 in the PISA 2009 report).

A context for interpreting the performance of countries

- **Only seven OECD countries spend more per student than the United Kingdom.** While GDP per capita reflects the potential resources available for education in each country, it does not directly measure the financial resources actually invested in education. However, a comparison of countries' actual spending per student, on average, from the age of 6 up to the age of 15 puts the United Kingdom at an advantage, since only seven countries spend more than the United Kingdom on school education per average student. Across OECD countries, expenditure per student explains 9% of the variation in PISA mean reading performance between countries. Deviations from the trend line suggest that moderate spending per student cannot automatically be equated with poor performance by education systems. For example, Estonia and Poland, which spend around US\$ 40 000 per student, perform at the same level as Norway and the United States, which spend over US\$ 100 000 per student. Similarly, New Zealand, one of the highest performing countries in reading, spends well below the average per student. While the United Kingdom spends almost US\$ 85 000, Germany or Hungary achieve a similar average performance and spend around US\$ 63 000 and US\$ 44 000 respectively.
- It is not just the volume of resources that matters but also how countries invest these, and how well they succeed in **directing the money where it can make the most difference**. The United Kingdom is one of the 13 OECD countries in which, for example, socio-economically disadvantaged schools have similar student-teacher ratios to socio-economically advantaged schools. Furthermore, the quality of the teachers or other resources is also similar across schools with different socio-economic backgrounds. With respect to spending on instruction, the United Kingdom spends as much as the average OECD country on the salaries of high-school teachers. At the same time, high-school teachers in the United Kingdom teach more hours, which reduces costs, but much smaller class sizes are driving costs upward (Table B7.3 in the 2010 edition of OECD's *Education at a Glance*). By contrast, Japan or Korea pay their teachers comparatively well and provide them with ample time for other work than teaching, which drives costs upward, while paying for this with comparatively large class sizes. Finland puts emphasis on non-salary aspects of the working conditions of high-school teachers and also pays for the costs with comparatively large class sizes. Finally, the OECD indicators also show that the United Kingdom spends 7.6% of its resources for schools on capital outlays, a figure that is at the OECD average and lower than in the Netherlands, Norway, Luxembourg and Greece (OECD average 7.6%) (Table B6.2b in the 2010 edition of OECD's *Education at a Glance*).
- **Parents in the United Kingdom are better educated than in many other countries.** Given the close interrelationship between a student's performance and their parents' level of education observed in Volume II of the PISA 2009 report, it is also important to bear in mind the educational attainment of adult populations when comparing the performance of OECD countries, since countries with more highly educated adults are at an advantage over countries in which parents have less education. A comparison of the percentage of 35-to-44-year-olds that have attained upper secondary or tertiary levels of education, which roughly corresponds to the age group of parents of the 15-year-olds assessed in PISA, ranks the United Kingdom 16th among the 34 OECD countries.
- **The share of students from disadvantaged backgrounds in the United Kingdom is well below average.** Socio-economic disadvantage and heterogeneity in student populations pose other challenges for teachers and education systems. As shown in Volume II of the PISA 2009 report, teachers instructing socio-economically disadvantaged children are likely to face greater challenges than teachers with students from more privileged socio-economic backgrounds. A comparison of the proportion of students at the lower end of an international scale of the

economic, social and cultural background of students, which is described in detail in Volume II, puts the United Kingdom at rank 7 among the 34 OECD countries. The average socio-economic context of students in the United Kingdom, as measured by the PISA index, is above that of a typical OECD country and the proportion of students in disadvantage is much lower in the United Kingdom than that of OECD countries in general⁵.

- ***Among OECD countries the United Kingdom has a relatively large proportion of students with an immigrant background.*** Integrating students with an immigrant background is part of the socio-economic challenge and the performance of students who immigrated to the country in which they were assessed in PISA can only be partially attributed to the education system of their host country. With 10.6%, the United Kingdom has the 14th highest share of students with an immigrant background among OECD countries. However, the share of students with an immigrant background explains just 3% of the performance variation between countries. Among OECD countries that have at least 5% of students with an immigrant background, most show a larger performance gap in favour of native students than is the case in the United Kingdom. Only Australia, Canada and New Zealand show a lower performance gap between native and immigrant students than the United Kingdom (Figure II.4.3 in the PISA 2009 report). And language spoken plays a part in this relationship. For instance, in the United Kingdom, second generation students who speak the language of assessment at home perform at similar levels as students without an immigrant background. On the other hand, first and second generation students who do not speak the assessment language at home lag behind considerably (more than 30 and 40 score points respectively), which highlights the importance of acknowledging the diversity within the student population with an immigrant background and the key role that language plays in integration policies targeted to immigrant students or parents (Table II.4.4 in the PISA 2009 report).

Relative shares of students ‘at risk’

7. 18% of 15-year-olds in the United Kingdom do not reach the PISA baseline Level 2 of reading proficiency, a *percentage that is around the OECD average*. Excluding students with an immigrant background reduces the percentage of poorly performing students slightly to 17%. By contrast, in Canada, Finland and Korea, the proportion of poor performers is only between 6 and 9% (see Figure I.2.14).

8. Level 2 on the PISA reading scale can be considered a baseline level of proficiency, at which students begin to demonstrate the reading competencies that will enable them to participate effectively and productively in life. Students proficient at Level 2 are capable of very basic tasks such as locating information that meets several conditions, making comparisons or contrasts around a single feature, working out what a well-defined part of a text means even when the information is not prominent, and making connections between the text and personal experience.

9. A follow-up of students who were assessed by PISA in 2000 as part of the Canadian Youth in Transitions Survey shows that students scoring below Level 2 face a disproportionately higher risk of poor post-secondary participation or low labour-market outcomes at age 19, and even more so at age 21, the latest age for which data are currently available. For example, the odds of Canadian students who had reached PISA Level 5 in reading at age 15 to achieve a successful transition to post-secondary education by age 21 were 20 times higher than for those who had not achieved the baseline Level 2, even after adjustments for socio-economic differences are made (OECD, 2010a)⁶. Similarly, of the Canadian students who performed below Level 2 in 2000, over 60% had not gone on to any post-school education by the age of 21; by contrast, more than half of the students (55%) who had performed at Level 2 as their highest level were at college or university.

10. In mathematics, 20.2% of students do not reach the baseline of Level 2 and are thus only capable of answering questions involving familiar contexts and where all relevant information is present and the

questions are clearly defined (OECD average is 22.0%). In science, the proportion of students below Level 2 on the PISA science scale is at, 15%, below the OECD average of 18% and in fact has declined slightly from 17% in 2006 (Table V.3.5 in the PISA 2009 report). To reach Level 2 requires competencies such as identifying key features of a scientific investigation, recalling single scientific concepts and information relating to a situation, and using results of a scientific experiment represented in a data table as they support a personal decision. In contrast, students not reaching Level 2 in science often confuse key features of an investigation, apply incorrect scientific information, and mix personal beliefs with scientific facts in support of a decision.

Relative shares of top performing students

11. At the other end of the performance scale, the United Kingdom has an average proportion of performers at the very highest levels of reading proficiency (Levels 5 and 6), while in mathematics there is a below average share of top performers and in science an above average share of top performers (Figures I.2.14, I.3.9 and I.3.20 in the PISA 2009 report).

12. Students proficient at Level 6 on the PISA reading scale are capable of conducting fine-grained analysis of texts, which requires detailed comprehension of both explicit information and unstated implications; and capable of reflecting on and evaluating what they read at a more general level. At 1.0%, the United Kingdom has a slightly higher share of the highest-performing readers than the average (0.8%). However, in Australia, Canada, Finland, Japan, New Zealand, Singapore or Shanghai-China the corresponding percentages are even higher, ranging from 1.8 to 2.9%.

13. At the next highest level, Level 5 on the PISA reading literacy scale, students can still handle texts that are unfamiliar in either form or content. They can find information in such texts, demonstrate detailed understanding, and infer which information is relevant to the task. The United Kingdom has, at 7%, an average share of students who perform at Level 5 or above (average 6.8%). However, in Shanghai (17%), New Zealand and Singapore (13%), Finland (13%) and Japan (12%) the corresponding percentages are higher.

14. Only 1.8% of students in the United Kingdom reach the highest level of performance in mathematics, compared with an OECD average of 3.1%, and figures ranging up to 27% in Shanghai-China (Table I.3.1 in the PISA 2009 report). Students proficient at Level 6 on the mathematics scale are capable of advanced mathematical thinking and reasoning. Some 10% of students in the United Kingdom reach at least the PISA mathematics Level 5, compared with 13% on average across OECD countries. In Shanghai-China half of the students reach Level 5 or higher, in Singapore and Hong Kong-China it is still over 30% and in Chinese Taipei, Korea, Switzerland, Finland, Japan and Belgium over 20%.

15. Students proficient at Level 6 in science can consistently identify, explain and apply scientific knowledge and knowledge about science in a variety of complex life situations. Some 1.9% of students in the United Kingdom reach the science Level 6, which is slightly above the OECD average of 1.1%. In Singapore, the percentage is 4.6%, in Shanghai-China 3.9%, in New Zealand 3.6%, in Finland 3.3% and in Australia 3.1%.

16. Some 11.4% of students in the United Kingdom reach at least level 5, which is above the OECD average of 8.5%. In Shanghai-China it is 24.3%, In Singapore 19.9%, in Finland 18.7%, in New Zealand 17.6% and in Japan, Hong Kong-China, Australia, Germany, the Netherlands and Canada it is between 12.1 and 16.6%.

Equity in the distribution of learning opportunities

17. PISA explores equity in education from three perspectives: First, it examines differences in the distribution of learning outcomes of students and schools; second, it studies the extent to which students and schools of different socio-economic backgrounds have access to similar educational resources, both in

terms of quantity and quality; and third, it looks at the impact of students' family background and school location on learning outcomes. The first perspective was discussed in the preceding section; the last two are discussed below. For the remainder of this note the focus is on reading performance.

Equity in access to resources

18. A first potential source of inequalities in learning opportunities lies in the distribution of resources across students and schools. In a school system characterised by an equitable distribution of educational resources, the quality or quantity of school resources would not be related to a school's average socio-economic background as all schools would enjoy similar resources. Therefore, if there is a positive relationship between the socio-economic background of students and schools and the quantity or quality of resources, this signals that more advantaged schools enjoy more or better resources. A negative relationship implies that more or better resources are devoted to disadvantaged schools. No relationship implies that resources are distributed similarly among schools attended by socio-economically advantaged and disadvantaged students.

19. In around half of OECD countries, the student-teacher ratio relates positively to the socio-economic background of schools, in other words, disadvantaged schools tend to have more teachers per student. This positive relationship is particularly pronounced in Belgium, Denmark, Estonia, Germany, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, the Netherlands, Portugal and Spain. This important measure of resources allocation indicates that these countries use the teacher-student ratio to moderate disadvantage. The United Kingdom is one of a fewer number of OECD countries that favour socio-economically advantaged schools with access to more teachers, though only in Israel, Slovenia, Turkey and the United States is this relationship significant. (Figure II.2.3).

20. In the United Kingdom, as in the majority of OECD countries, PISA shows also that disadvantaged students tend to be in schools with higher proportions of full-time teachers. In most countries, when taking into account the proportion of those full-time teachers who have an advanced university degree, it is the more advantaged students who tend to enjoy a higher proportion of better-qualified full-time teachers. In the United Kingdom, however, schools tend to be similar in this respect regardless of whether they are attended by advantaged or disadvantaged students. All of this suggests that for many countries ensuring an equitable distribution of teaching resources is still a major challenge. For many countries, this is a challenge more related to quality than quantity, though for the United Kingdom, the equitable distribution of the quantity of teaching resources seems more to be of an issue (Figure II.2.3).

Moderating the impact of socio-economic background on learning outcomes

21. Students who did not surpass the most basic performance level on PISA were not a random group and the results show that, as in many other countries, socio-economic disadvantage has a strong impact on student performance in the United Kingdom: 14% of the variation in student performance is explained by students' socio-economic background (OECD average 14%). This contrasts with just 9% in Canada or Japan. In other words, in the United Kingdom two students from a different socio-economic background vary as much in their learning outcomes as is normally the case in the typical OECD country and more so than in Canada or Japan. Hungary, Belgium, Turkey, Luxembourg, Chile and Germany show the largest impact of socio-economic background on reading performance among OECD countries at 18% or more of explained variance. It is important to emphasise that these countries do not necessarily have a more disadvantaged socio-economic student intake than other countries, but socio-economic differences among students translate into a particularly strong impact on student learning outcomes (Figure II.2.3 in the PISA 2009 report). Taking the wider family context into account, including immigrant background or language spoken at home, for example, differences in family background characteristics explain 22% of the performance differences across students in the typical OECD country. While in Canada, Japan, Finland or Korea this figures is lower than 19% in the United Kingdom is higher than 25%.

22. If social inequalities in societies were always closely linked to the impact which social disadvantage has on learning outcomes, the role for public policy to improve equity in the distribution of learning opportunities would be limited, at least in the short term. However, there is almost no relationship between income inequalities in countries and the impact which socio-economic background has on learning outcomes (Figure II.1.3 in the PISA 2009 report), that is, some countries succeed even under difficult conditions to moderate the impact of socio-economic background on educational success.

23. It is useful to examine four aspects of socio-economic background and their relationship to student performance in greater detail.

- **Community size:** While students in the United Kingdom in large cities (students attending schools located in cities with over 1 million inhabitants) perform at 487 score points on the PISA reading scale, below the OECD average of 493 score points, schools in smaller communities perform higher. The performance challenges for the United Kingdom are therefore tougher in larger communities, which are also characterised by lower average socio-economic background⁷.
- **Family composition:** While results from PISA show that single parent families are more prevalent in the United Kingdom than on average across OECD countries (22% of 15-year-olds in the United Kingdom come from a single parent family compared with an OECD average of 17%), they also show that 15-year-olds in the United Kingdom from single parent families are outperformed by students from other family types but they also come from a more disadvantaged socio-economic background; in fact adjusting by socio-economic background there is no difference between students of different family types (Table II.2.5 in the PISA 2009 report).
- **Immigrant students:** 12% of United Kingdom schools have more than a quarter of students with an immigrant background (OECD average 14%). 6% of students in the United Kingdom are enrolled in schools in which the share of immigrant students even exceeds 50% (OECD average 4%; Table II.4.9 in the PISA 2009 report). What PISA data also show is that students in the United Kingdom with an immigrant background tend to attend schools with less students per teacher but these schools are otherwise similar to those attended by native students in terms of the average socio-economic intake, quality of educational resources or teacher shortage as reported by students and school principals (Table II.4.6 in the PISA 2009 report). While it might be tempting to attribute a performance lag of countries to the challenges which immigrant inflows pose to the education system, the reading performance of students in the United Kingdom without an immigrant background is, at 499 score points, only slightly higher than the performance of all students. In fact, as noted earlier, the reading performance gap between students with and without an immigrant background is half the size in score points in the United Kingdom than the average gap across OECD countries (Table II.4.1 in the PISA 2009 report) and that is true if the socio-economic background of students is accounted for (Table II.4.1 in the PISA 2009 report). The same holds if, instead of the immigrant background of the student, the language spoken at home is used for comparing student groups. Among the countries that took part in the latest PISA assessment as Australia, Canada or New Zealand have a larger immigrant intake than the United Kingdom but score significantly better (Figure II.4.3).
- **Concentration in schools:** In the United Kingdom there are 27% of students in schools with a socio-economically disadvantaged intake, of which 48% are students who are socio-economically disadvantaged themselves (i.e. they are overrepresented), while 23% of students are in socio-economically privileged schools of which only 6% are socio-economically disadvantaged themselves. Disadvantaged students tend to do worse than expected in disadvantaged schools, but by about the same margin as in many other OECD countries, and advantaged students tend to do much worse than expected, in this case by a larger margin than average. In schools with a mixed socio-economic intake, disadvantaged students tend to do better than expected and advantaged students tend to do worse than expected by about the same margin as in the OECD in general. In

schools with a privileged socio-economic intake, disadvantaged students tend to do better than expected (but by a margin less than in the OECD) and advantaged students tend to do better than expected (with a similar margin as in other OECD countries) (Table II.5.11 in the PISA 2009 report). In fact, in the United Kingdom, both the within and between school impact of socio-economic background are well above the OECD average. Indeed, the United Kingdom stands in second place after Luxembourg in terms of the between-school performance variance explained by the socio-economic intake of schools, with similar levels to that of the United States or New Zealand and Colombia, Uruguay, Peru and Montenegro among partner countries (all above 70%).

24. It is possible to identify substantial numbers of *resilient students* in practically all OECD countries⁸. In the United Kingdom 24% of disadvantaged students can be considered resilient, in the sense that they come from the 25% of the socio-economically most disadvantaged students and nevertheless, perform much better than what would be predicted based on their socio-economic background 31% is the average in the OECD) (Figure II.3.6). However, in Finland, Japan, Turkey, Singapore, Korea, Macao-China, Hong Kong-China and Shanghai-China more than two of every five (40%) disadvantaged students excel at school despite their disadvantaged background.

The cost of the achievement gap

25. The international achievement gap is imposing on the United Kingdom economy an invisible yet recurring economic loss. A recent study carried out by the OECD in collaboration with the Hoover Institute at Stanford University suggests that a modest goal of having the United Kingdom boost its average PISA scores by 25 points over the next 20 years – which corresponds to the performance gains that some countries achieved between 2000 and 2009 alone – could imply a gain of US\$ 6 trillion for the United Kingdom economy over the lifetime of the generation born in 2010 (as evaluated at the start of reform in terms of real present value of future improvements in GDP). Bringing the United Kingdom up to the average performance of Finland, the best performing education system in PISA in the OECD area, could result in gains in the order of US\$ 7 trillion. Narrowing the achievement gap by bringing all students to a baseline level of minimal proficiency for the OECD (approximated by a PISA score of 400), could imply GDP increases for the United Kingdom of US\$ 6 trillion according to historical growth relationships (OECD, 2010b). The predictive power of student performance at school on subsequent successful education and labour-market pathways is also demonstrated through longitudinal studies (OECD, 2010a).

26. Although there are uncertainties associated with these estimates, the gains from improved learning outcomes, put in terms of current GDP, exceed today's value of the short-run business-cycle management. This is not to say that efforts should not be directed at issues of economic recession, but it is to say that the long-run issues should not be neglected.

Student engagement and learning strategies

27. In almost all countries, students who enjoy reading are significantly more likely to be good readers. Across OECD countries, this difference accounts for an average of 18% of the variation in reading performance. In Australia and Finland, two of the best-performing countries overall, over 25% of differences in reading performance are associated with how much students enjoy reading. In the United Kingdom, 22% percent of the differences in student performance are explained by differences in how much they enjoy reading. In the United Kingdom more than 50% of boys read for enjoyment and almost 70% of girls do, both percentages are slightly below average (52% and 73%). Overall close to 40% of students report they do not read for enjoyment in the United Kingdom (OECD average 37%).

28. In all countries, boys are not only less likely than girls to say that they read for enjoyment, they also have different reading habits when they do read for pleasure. Girls are more likely than boys to be frequent readers of fiction, and are also more likely than boys to read magazines. However, over 65% of boys regularly read newspapers for enjoyment and only 59% of girls do so. Although relatively few

students say that they read comic books regularly, on average across OECD countries, 27% of boys read comic books several times a month or several times a week, while only 18% of girls do so. In the United Kingdom, for example, 20% of boys read fiction at least monthly whereas 36% of girls do so.

29. Students in high-performing countries tend to be characterised by their knowledge of how to summarise information. Across OECD countries, the difference in reading performance between those students who know the most about which strategies are best for summarising information and those who know the least is 107 score points. And students who say that they begin the learning process by figuring out what they need to learn, then ensure that they understand what they read, figure out which concepts they have not fully grasped, try to remember the most important points in a text and look for additional clarifying information when they do not understand something they have read, tend to perform better on the PISA reading scale than those who do not. PISA results show that students perform better in reading, on average, if they know what strategies to adopt to summarise what they read. In Finland, Korea, Japan and the partner country Singapore, the 25% of students with the least knowledge of summarising information are three times more likely to fall among the quarter of students with the poorest performance. In the United Kingdom, these students are 2.5 times more likely to poor performers.

The learning environment in the classroom and at school

30. The effects of educational policies and practices on student achievement depend heavily on how they translate into increased learning in the classroom. Results from PISA suggest that, across OECD countries, schools and countries where students work in a climate characterised by high performance expectations and the readiness to invest effort, good teacher-student relations, and high teacher morale tend to achieve better results, on average across countries and particularly in some countries. Even after accounting for socio-economic background and other aspects of the learning environment measured by PISA, the results show that reading performance is positively related in most countries (including the United Kingdom) to higher values on the *PISA index of teacher-student relationship*; the *index of disciplinary climate*; and on the *index of teacher-related factors affecting school climate* (Table IV.2.13c in the PISA 2009 report).

31. The learning environment is also shaped by parents and school principals. Parents who are interested in their children's education are more likely to support their school's efforts and participate in school activities. These parents also tend to come from a high socio-economic status. PISA shows that school principals' perceptions of parents' constant pressure to adopt high academic standards and to raise student achievement tend to be positively related to higher school performance in 4 OECD countries although that relationship is not visible in the United Kingdom. In some other countries much of this relationship is mediated by socio-economic factors (Tables IV.2.13b and IV.2.13c in the PISA 2009 report).

32. PISA also shows that the socio-economic background of students and schools and key features of the learning environment are closely interrelated and that both link to performance in important ways. These relationships are examined in greater detail in the following sections.

Student-teacher relationships

33. Positive student-teacher relationships can help to establish an environment that is conducive to learning. Research finds that students, particularly disadvantaged students, tend to learn more and have fewer disciplinary problems when they feel that their teachers take them seriously. One explanation is that positive student-teacher relationships help foster social relationships, create communal learning environments and promote and strengthen adherence to norms conducive to learning. PISA asked students to agree or disagree with several statements regarding their relationships with the teachers in school (Figure IV.4.1 in the PISA 2009 report). For example, close to 80% of students in the United Kingdom agree or strongly agree that their teachers are interested in their well-being whereas only 28% of students

in Japan do so (OECD average 66%). As in the majority of countries, there is a positive relationship between student-teacher relationships and student performance in both the United Kingdom and Japan. For example, the quarter of students in the United Kingdom reporting the poorest student-teacher relationships are 1.6 times more likely to be also among the quarter of the poorest performing students (for Japan the odds is 2.0)⁹. Differences in student-reported teacher interest in their well-being may reflect either different student expectations of the level of involvement of their teachers, or different roles that teachers assume with respect to their students. A low percentage of agreement with these statements suggests a possible mismatch between student expectations and what teachers are actually doing. A large proportion of students in the United Kingdom strongly agree with statements like “if I need extra help, I will receive it from my teachers” (88% compared with an OECD average of 79%) or “most of my teachers treat me fairly” (83% compared with an OECD average of 79%).

Disciplinary climate

34. The disciplinary climate in the classroom and school can also affect learning. Classrooms and schools with more disciplinary problems are less conducive to learning, since teachers have to spend more time creating an orderly environment before instruction can begin. More interruptions within the classroom disrupt students’ engagement and their ability to follow the lessons. The disciplinary climate is indicated in PISA by how often student don’t listen to the teacher in language of instruction class; there is noise and disorder; the teacher has to wait a long time for students to quiet down; students cannot work well; and students don’t start working for a long time after the lesson begins. The majority of students in OECD countries enjoy orderly classrooms in their language classes. Some 75% of students report that they never or only in some lessons feel that students don’t start working for a long time after the lesson begins (81% in the United Kingdom), 71% of students report that they never or only in some lessons feel that students don’t listen (73% in the United Kingdom), 68% report that noise never or only in some lessons affects learning (68% in the United Kingdom), 72% say that their teacher never or only in some lessons has to wait a long time before students settle down (74% in the United Kingdom), and 81% of the students attend classrooms where they feel they can work well practically most of the time (86% in the United Kingdom) (Figure IV.2.2 in the PISA 2009 report).

35. Evidently, the United Kingdom does reasonably well on this measure (and the differences among schools in these measures is very similar to that of the OECD average) but the benchmark countries Japan, Korea or Germany show a significantly better disciplinary climate. What is also noteworthy is that there is considerable variation on this measure among students in the United Kingdom and the quarter of students reporting the poorest disciplinary climate are 1.8 times as likely to be also poor performers. This odds ratio is the third highest among all countries participating in PISA (OECD average odds 1.4) (Table IV.4.2 in the PISA 2009 report).

36. It is noteworthy that the judgment of school principals on the disciplinary climate in the United Kingdom is as positive as students’ reports. For example, 85% of students attend schools in the United Kingdom where the principal reports that disruption of classes by students does not at all (or very little) hinder the learning of students (OECD average 60%). While the United Kingdom scores lower than Korea or Japan in the index of the school principals’ views on how student behaviour affects students’ learning, it does score above the OECD average. 97% or more students attend schools where the principal reports that student learning is not at all or very little hindered by “student use of alcohol or illegal drugs” and “students intimidating or bullying other students” (Table IV.4.4 in the PISA 2009 report)¹⁰.

Teacher-related factors affecting the school climate

37. To determine the extent to which teacher behaviour influences student learning, school principals in PISA were asked to report the extent to which they perceived learning in their schools to be hindered by such factors as teachers’ low expectations of students, poor student-teacher relations, absenteeism among

teachers, staff resistance to change, teachers not meeting individual students' needs, teachers being too strict with students and students not being encouraged to achieve their full potential. The United Kingdom performed around the OECD average on these measures but the reports from school principals highlight a number of challenges: 21% of students in the United Kingdom are enrolled in schools whose principals report that teachers low expectations of students hinder learning to some extent or a lot (in contrast, in the benchmark country Finland that percentage is just 6%), 23% that this is the case because teachers do not meet individual students needs, and 17% because staff are resisting change (Figure IV.4.5). In contrast, only 2% of students attend school where the principals see teachers being too strict with students as a problem, 8% where the principal reports students are not being encouraged to achieve their full potential, 3% for poor student-teacher relationships or 13% for teacher absenteeism.

Parent expectations

38. Parents' expectations in the United Kingdom are high. In OECD countries, approximately 19% of students attend schools whose principals reported that many parents expect high academic standards from the school. In the United Kingdom 34% of students do so (OECD average 19%) and in New Zealand, Ireland, the United States, and Sweden over one-third of students attend such a school, but in Finland, Austria, Germany, Switzerland, the Netherlands and Luxembourg, less than 10% of students attend such a school (Table IV.4.7).

Principal's leadership

39. In the United Kingdom, principals play more of a leadership role in the day to day operations of the school and in learning than in most OECD countries. Among OECD countries, the index of principal's leadership is highest in the United Kingdom, the United States, Chile and Poland. In these countries, the average student attends a school where the index of principal leadership is over half a standard deviation above the OECD average. Principal leadership is lowest in Japan, Finland and Korea. In particular, the average student in Japan attends a school that scores more than one standard deviation below the OECD average in the index of principal's leadership. In Finland, for example, very few students attend schools whose principals monitor teaching practices in the classroom or use examination results to make decisions about the curriculum. This could indicate different roles for teachers and principals in Finnish schools as compared to other school systems.

40. Among OECD countries, 93% of students attend schools whose principals reported that he or she ensures that teachers' work reflects the school's educational goals "quite often" or "very often"; whereas in the United Kingdom 100% of student do so. On average across OECD countries, over 86% of students attend schools whose principal "quite often" or "very often" takes the initiative to discuss a problem teachers may have in their classrooms; whereas in the United Kingdom 90% of students do. On average in the OECD, half of students attend schools whose principal "quite often" or "very often" observes classes; meanwhile in the United Kingdom 93% do so. Among OECD countries, 61% of students attend schools whose principal "quite often" or "very often" considers exam results when making decisions regarding curriculum development; while in the United Kingdom 97% do (see Figure IV.4.6)..

How schooling is organised

Governance of school systems

41. Many countries have pursued a shift in public and governmental concern away from mere control over the resources and content of education towards a focus on outcomes, a shift that becomes visible when the distribution of decision-making responsibilities in education is reviewed across successive PISA assessments. Coupled with this have been efforts to devolve responsibility to the frontline, encouraging

responsiveness to local needs, and strengthening intelligent accountability. PISA shows a clear relationship between the relative autonomy of schools and schooling outcomes across systems when autonomy is coupled with accountability. Of course, the United Kingdom is a decentralised education system too, but while many systems have decentralised decisions concerning the delivery of educational services while keeping tight control over the definition of outcomes, the design of curricula, standards and testing, the United Kingdom is different in that it has decentralised both inputs and control over outcomes. Moreover, in the United Kingdom schools have very often more discretion in decision-making than is the case in many OECD countries. In fact, the United Kingdom is one of the four OECD countries where schools have higher levels of autonomy in setting curricula and assessment practices (together with Japan, the Netherlands, the Czech Republic and New Zealand and the partner economies Hong Kong-China and Macao-China)

42. Important organisational features of school systems are the degree to which students and parents can choose schools, and the degree to which schools are considered autonomous entities that make organisational decisions independently of district, regional, or national entities. Results from PISA suggest that school autonomy in defining the curriculum and assessment relates positively to the systems' overall performance (Figure IV.3.3 and Figure IV.2.4a in the PISA 2009 report). For example, school systems that provide schools with greater discretion in making decisions regarding student assessment policies, the courses offered, the course content and the textbooks used, tend to be school systems that perform at higher levels.

43. Data from PISA also show that in school systems where most schools post achievement data publicly, schools with greater discretion in managing their resources tend to show higher levels of performance. In school systems where schools do not post achievement data publicly, a student who attends a school with greater autonomy in resource management than the average OECD school tends to perform 3.2 score points lower in reading than a student attending a school with an average level of autonomy. In contrast, in school systems where schools do post achievement data publicly, a student who attends a school with above-average autonomy scores 2.6 points higher in reading than a student attending a school with an average level of autonomy (Table IV.2.5 in the PISA 2009 report).

44. PISA classifies OECD countries into four groups that share similar profiles in the way they allow schools and parents to make decisions that affect their children's education. The grouping is based on the levels of school autonomy and school competition. Two categories are identified for each dimension and the interplay between these dimensions results in four groups: School systems that offer high levels of autonomy to schools in designing and using curricula and assessments 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 with limited competition between schools; and school systems that offer low levels of autonomy to schools, yet encourage more competition between schools (Figure IV.3.5 in the PISA 2009 report).

- Across OECD countries, the most common configuration is the one that gives schools the freedom to make curricular decisions, yet restricts competition for enrolment among schools. These school systems have relatively limited levels of choice for parents and students and there is little competition for enrolment among schools. Private schools are not widely available in these countries. Twenty-two OECD countries, including the United Kingdom, fall into this category.
- School systems that offer relatively low levels of autonomy to schools and low levels of choice to parents are also fairly common across OECD countries: 4 OECD countries share this configuration and 11 partner countries and economies do.
- Six other OECD countries offer high levels of autonomy and choice, either in the form of a high prevalence private schools or competition among schools for enrolment. In these school systems, schools have the freedom to choose teaching methods to meet learning objectives, and parents and students can choose among a variety of schools for enrolment.

45. Some of the variables underlying this classification are examined in greater detail below.

School choice

46. Students in some school systems are encouraged or even obliged to attend their neighbourhood school. However, reforms over the past decades in many countries have tended to give more authority to parents and students to choose schools that meet their educational needs or preferences best. 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 for this. Giving money to students and their families through, for example, scholarships or vouchers, to spend in public or private educational institutions of their choice is another method (Figure IV.3.4).

47. According to the responses of school principals in PISA, across OECD countries, 76% of students attend schools competing 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 for enrolment. In contrast, in the Netherlands, Australia, Belgium, the Slovak Republic and Japan, over 90% of the students attend schools that compete with other schools for enrolment (Table IV.3.8a in the PISA 2009 report).

48. Some 13 OECD countries allow parents and students to choose public schools and also incorporate vouchers or tax credits in their school-choice arrangements. Eleven OECD countries provide for freedom in the choice of public schools, but do not offer vouchers or tax credits; two OECD countries 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, parents and students must attend the public school nearest to where they live and are not offered any kind of subsidy to attend other schools (Table IV.3.7 in the PISA 2009 report).

49. Among schools within a country, competition and performance do seem related; but once the socio-economic profile of students and schools are taken into consideration, the relationship weakens, since privileged students are more likely to attend schools that compete for enrolment (Tables IV.2.4b and IV.2.4c in the PISA 2009 report). This may reflect the fact that socio-economically advantaged students, who tend to achieve higher scores, are also more likely to attend schools that compete for enrolment, even after accounting for location and attendance in private schools (Table IV.2.6 in the PISA 2009 report).

50. Why are socio-economically advantaged students more likely to attend schools of their choice? To understand differences in how parents choose schools for their children, PISA asked a series of questions regarding school choice in the questionnaire for parents that was distributed in eight OECD countries (no data from parents are available for the United Kingdom). On average, socio-economically disadvantaged parents are over 13 percentage points more likely than advantaged parents to report that they considered “low expenses” and “financial aid” to be very important determining factors in choosing a school (Table IV.2.7 in the PISA 2009 report). While parents from all backgrounds cite academic achievement as an important consideration when choosing a school for their children, socio-economically advantaged parents are, on average, 10 percentage points more likely than disadvantaged parents to cite that consideration as “very important”. It is possible that there can be differences in the parent’s reasons due to socio-economic status, because, some of the priorities are already met in schools available to advantaged parents. Still, these differences suggest that socio-economically disadvantaged parents consider that they have more limited choices of schools for their children because of financial constraints. If children from socio-economically disadvantaged backgrounds cannot attend high-performing schools because of financial constraints, then school systems that offer parents more choice of schools for their children will necessarily be less effective in improving the performance of all students.

Public and private schools

51. School education takes place mainly in public schools. 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 costs and benefits more equitably. Privately provided education is not only a way of mobilising resources from a wider range of funding sources, it is sometimes also considered a way of making education more cost-effective. Publicly financed schools are not necessarily also publicly managed. Instead, governments can transfer funds to public and private educational institutions according to various allocation mechanisms. Indeed, publicly funded private schools are the most common model of private education in OECD countries (see section on school choice, above).

52. Across OECD countries, 15% of students are enrolled in privately managed schools that are either privately or government funded, although in many countries government authorities retain significant control over these schools, including the power to shut down non-performing schools. Enrolment in privately managed schools exceeds 50% of 15-year-old students in the Netherlands, Ireland and Chile and in Australia and Korea it is between 35% and 40%. In contrast, in Turkey, Iceland and Norway, more than 98% of students attend schools that are publicly managed (Table IV.3.9 in the PISA 2009 report).

53. On average across OECD countries, privately managed schools display a performance advantage of 30 score points on the PISA reading scale (in the United Kingdom even of 62 score points). However, once the socio-economic background of students and schools is accounted for, public schools come out with a slight advantage of 7 score points, on average across OECD countries (in the United Kingdom public schools outscore privately managed schools by 20 score points once the socio-economic background is accounted for).

Selection of students into schools, grades and programmes

54. This section looks at how school systems are organised to allocate students to programmes, schools and classes.

55. In high-performing countries, it is the responsibility of schools and teachers to engage constructively with the diversity of student interests, capacities, and socio-economic contexts, without having the option of making students repeat the school year or transferring them to educational tracks or school types with lower performance requirements. The data from PISA show that creating homogeneous schools and/or classrooms through selection is unrelated to the average performance of education systems, but clearly associated with larger variation in student achievement and a significantly larger impact of socio-economic background on learning outcomes. In particular, the earlier in the student's career the selection occurs, the greater the impact of socio-economic background on learning outcomes. That suggests that selection tends to reinforce inequalities as students from disadvantaged backgrounds tend to be exposed to lower quality learning opportunities when compared to their peers from more advantaged socio-economic backgrounds (Figure IV.2.1 in the PISA 2009 report).

56. PISA data also show grade repetition to be not only negatively related to equity but also negative related to the average performance of education systems. That is, school systems with high levels of grade repetition rates tend to also be school systems with lower student performance. Moreover, the more schools group students by ability across all subjects and the more frequently schools transfer students to other schools because of students' low academic achievement, behavioural problems or special learning needs, the lower the school systems' overall performance, even after accounting for national income. While transferring students with difficulties out of a school may be advantageous to the school, it thus seems to relate negatively to the performance of the education system as a whole, and to larger performance differences between schools (Figure IV.2.1a in the PISA 2009 report). Also, in systems where transferring

students or grade repetition is commonplace, teachers and the school community have an incentive to evade problems by transferring students rather than committing effort and resources to solving the underlying problems. Equally important, higher prevalence of student transfers seem also be related to greater socio-economic inequities.

57. In sum, the data suggest that in most of the countries that performed well in PISA, it is the primary responsibility of schools and teachers to engage constructively with the diversity of student interests, capacities, and socio-economic contexts, without having the option of making students repeat the school year, or transferring them to educational tracks or school types with lower performance requirements. Many of the successful countries have developed elaborate support systems to foster the motivation of the full diversity of students to become independent and lifelong learners. They tend to train teachers to be better at diagnosing learning issues so that they can address them by personalised instruction methods. Second, they help individual teachers to become aware of specific weaknesses in their own practices, which often means not just creating awareness of what they do but also changing the underlying mindset. Third, they then seek to provide their teachers with an understanding of specific best practices and, last but not least, motivate them to make the necessary changes with instruments that go well beyond material incentives. As noted above, the personalisation in these countries is in terms of flexible learning pathways through the education system rather than through establishing individualised goals or institutional tracking, which have often been shown to lower performance expectations for students and tend to provide easy ways out for teachers and schools to defer problems rather than solving them.

Assessment and accountability arrangements

Educational standards

58. One trend across countries over recent years has been the effort in countries to articulate the expectations that societies have in relation to learning outcomes and to translate these expectations into educational goals and standards. The approaches to standard-setting that OECD countries have pursued range from the definition of broad educational goals up to the formulation of concise performance expectations in well-defined subject areas.

Examinations

59. The establishment of performance standards has, in turn, driven the establishment of accountability systems. As discussed in the 2009 edition of *OECD's Education at a Glance*, over the last decade, assessments of student performance have become common in many OECD countries – and often the results are widely reported and used in public debate, as well as by those concerned with school improvement. However, the rationale for assessments and the nature of the instruments used vary greatly within and across countries. Methods employed in OECD countries include different forms of external assessment, external evaluation or inspection, and schools' own quality assurance and self-evaluation efforts. For students, tests may have direct and high stakes and may thus serve as an incentive to put forth the effort needed to learn. For teachers, student-based standardised assessments can provide information regarding the learning needs of students and may be used to personalise learning opportunities accordingly.

60. One aspect relating to accountability systems concerns the existence of standards-based external examinations. Across OECD countries, students in school systems that require standards-based external examinations perform, on average, over 16 points higher than those in school systems that do not use such examinations (Figure IV.2.6a in the PISA 2009 report).

61. Among OECD countries, in the Czech Republic, Denmark, Estonia, Finland, France, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, the Netherlands, New Zealand, Norway, Poland, the Slovak Republic, Slovenia, Turkey and the United Kingdom, standards-based external examinations

exist throughout the systems for students attending secondary education level. In Australia they cover 81% of the secondary students, in Canada 51% and in Germany 35%. In Austria, Belgium, Chile, Greece, Mexico, Portugal, Spain, Sweden, Switzerland and the United States such examinations do not exist or only exist in minor parts of the system (Table IV.3.11 in the PISA 2009 report).

Assessment policies and practices

62. In PISA 2009, school principals were asked to report the types and frequency of assessment used: standardised tests, teacher-developed tests, teachers' judgemental ratings, student portfolios, or student assignments. An average of 76% of students in OECD countries is enrolled in schools that use standardised tests. Standardised tests are relatively uncommon in Slovenia, Belgium, Spain, Austria and Germany, where less than half the students attend schools that assess students through standardised tests. In contrast, the use of standardised tests is practically universal in Luxembourg, Finland, Korea, the United States, Poland, Denmark, Sweden and Norway, where over 95% of the students attend schools that use this assessment at least once a year. In the United Kingdom the use of standardized tests is common, 67% of students attend schools that use them at least once a year, but 33% of students attend schools that never use them (Table IV.3.10 in the PISA 2009 report).

63. The purposes of assessments vary greatly across countries. 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 use achievement data to compare their students' achievement levels with those in other schools or regional/national benchmarks. 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 (Table IV.3.12 in the PISA 2009 report).

64. It is more common for schools to use achievement information to monitor school progress from year to year: on average across OECD countries, some 77% of students are in schools doing so. In 21 countries, including the United Kingdom, 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.

65. 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 report doing so, and over 90% of students in New Zealand, the United States, the United Kingdom, Iceland, Poland, Mexico, Chile, Spain and Israel attend schools that report using achievement data in this way. Curriculum and instructional assessment using achievement data is less common in Greece and Switzerland, where less than 50% of students attend schools that use achievement data this way.

66. In contrast to standards-based external examinations, PISA does not show the prevalence of standardised tests to be systematically related to performance (Figure IV.2.6b in the PISA 2009 report). This may be because, in part, the content and use of standardised tests vary considerably across schools and systems. However, education systems with a higher prevalence of standardised tests tend to show smaller socio-economic inequalities between schools and consequently show a smaller impact of school socio-economic background on performance (Table IV.2.10 in the PISA 2009 report). The same holds for the use of assessment data to identify aspects of instruction or the curriculum that could be improved and the high proportions of schools where achievement data tracked over time by administrative authorities.

67. PISA groups OECD countries into four groups sharing similar profiles based on three dimensions (Figure IV.3.6 in the PISA 2009 report). 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 idea 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, to 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 to evaluate teachers' instruction.

- A first group of countries, composed of 16 OECD countries including the United Kingdom, tend to use achievement data for benchmarking and information purposes and also for decisions that affect the school.
- Four OECD countries use achievement data for benchmarking and information, but not for decisions affecting the school.
- A third group, comprising four OECD countries, uses achievement data for decisions affecting the school, but not for benchmarking and information.
- The fourth group, composed of nine OECD countries, is less likely to have schools that use achievement data for either for benchmarking and information or for decision making.

68. Some of the factors underlying this classification are examined in greater detail below.

Accountability arrangements

69. Where school performance is systematically assessed, the primary purpose is often not to support contestability of public services or market-mechanisms in the allocation of resources. Rather it is to provide instruments to reveal best practices and identify shared problems in order to encourage teachers and schools to develop more supportive and productive learning environments. The trend among OECD countries here is leading towards multi-layered, coherent assessment systems from classrooms to schools to regional to national to international levels that: support improvement of learning at all levels of the system; are increasingly performance-based; add value for teaching and learning by providing information that can be acted on by students, teachers, and administrators; and are part of a comprehensive and well-aligned instructional learning system that includes syllabi, associated instructional materials, matching exams, professional scoring and teacher training.

70. 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 (Table IV.3.13 in the PISA 2009 report). Some school systems make achievement data public to make stakeholders aware 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 that make achievement data available to the public, but in Belgium, Finland, Switzerland, Japan, Austria and Spain, less than 10% of students attend schools that make their data publicly available. In the United Kingdom and the United States, by contrast, more than 80% of students attend schools that make student achievement data publicly available. Schools whose school principals report that student achievement data are posted publicly perform better than schools whose achievement data is not made publicly available in seven OECD countries and in nine partner countries/economies when not accounting for the socio-economic and demographic background of students and schools, but no relationship is seen for the United Kingdom. Moreover, since in most of the countries the schools that post achievement data publicly tend to be socio-economically advantaged schools, this performance advantage is often not observed once socio-economic background is accounted for (Figure IV.2.6b in the PISA 2009 report).

71. School-level achievement data is often tracked over time by administrative authorities: across OECD countries, an average of 66% of students attends schools that are tracked over time by administrative authorities. In 25 OECD countries, among them the United Kingdom with one of the highest

percentage (94%), more than 50% of students attend schools in which the schools' achievement is tracked over time (Table IV.3.13 in the PISA 2009 report).

72. Achievement data can also be used to determine how resources are distributed. Across OECD countries, an average of 33% of students attends schools that use achievement data in this way. In Israel, Chile and the United States, more than 70% of students attend schools in which the principal reports that instructional resources are allocated according to the school's achievement data. In the United Kingdom 58% of students attend schools in which the principal reports this use for achievement data, an above average figure but lower than these benchmark countries. This practice is least common in Iceland, Greece, Japan, Czech Republic and Finland, where less than 10% of the students attend schools in which is achievement data used this way.

73. Some school systems make achievement data available to parents in the form of report cards and by sending teacher-formulated assessments home. Some school systems 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 in the PISA 2009 report). Across OECD countries, an average of 52% of students attend schools that use achievement data relative to national or regional benchmarks and/or as a group relative to students in the same grade in other schools; but in 17 countries, over 50% of students attend schools that do not provide any information regarding the academic standing of the students neither of these ways. In contrast, in Sweden, the United States, Korea, Chile, Norway and Turkey, more than 80% of students attend schools that provide parents with this information compared with national or regional student populations. In the United Kingdom, 70% of students attend schools where the principal reports information to parents is provided in this way.

74. Achievement data from students can also be used to monitor teacher practices in several ways, and an average of 59% of students across OECD countries attends schools which report doing so. Over 80% of students in Poland, Israel, the United Kingdom, Turkey, Mexico, Austria and the United States attend schools that report using 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. Most schools across OECD countries use either student-derived, direct observations or reviews to monitor teachers, but school principals in Finland rarely use either to monitor teacher practices. While only 18% of students in Finland attend schools that 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 in the PISA 2009 report).

75. Last but not least, there has also been a growing trend among OECD countries to use outstanding performance in teaching as criteria for base salary and additional payments awarded to teachers in public institutions. While in 2002 such practices were used in 38% of 29 countries with available data, in 2008 these were 45% (Table D.3.3 in the 2010 edition of OECD's *Education at a Glance*).

Resources

76. Effective school systems require the right combination of trained and talented personnel, adequate educational resources and facilities, and motivated students ready to learn. Among the successful PISA countries, Canada, Finland and Shanghai-China invest the money where the challenges are greatest rather than making the resources that schools get a function of the wealth of the local communities in which schools are located, and they put in place incentives and support systems that attract the most talented school teachers into the most difficult classrooms. They have often reformed inherited, traditional

and bureaucratic systems of recruiting and training teachers and leaders, of paying and rewarding them and of shaping their incentives, both short-term and long-term.

77. The generally weak relationship between resources and performance observed in past research is also seen in PISA. At the level of the education system and net of the level of national income, the only type of resource that PISA shows to be correlated with student performance is the level of teachers' salaries relative to national income (Figure IV.2.8 in the PISA 2009 report). Teachers' salaries are related to class size in that if spending levels are similar, school systems often make trade-offs between smaller classes and higher salaries for teachers. The findings from PISA suggest that systems prioritising higher teacher salaries over smaller classes tend to perform better.

78. Importantly, many of the high performing countries share a commitment to professionalised teaching, in ways that imply that teachers are on a par with other professions in terms of diagnosis, the application of evidence-based practices, and professional pride. To achieve this, they often do four things well: First, they attract the best graduates to become teachers, realising that the quality of an education system cannot exceed the quality of its teachers. For example, the benchmark countries Finland or Korea recruit their teachers from the top 10 percent of graduates. Second, they develop these teachers into effective instructors, through, for example, coaching classroom practice, moving teacher training to the classroom, developing strong school leaders and enabling teachers to share their knowledge and spread innovation. Singaporean teachers, for example, get 100 hours of fully paid professional development training each year. Third, they put in place incentives and differentiated support systems to ensure that every child is able to benefit from excellent instruction. The image here is of teachers who use data to evaluate the learning needs of their students, and are consistently expanding their repertoire of pedagogic strategies to address the diversity in students' interests and abilities. Such systems also often adopt innovative approaches to the deployment of differentiated staffing models.

79. It is also important that, within school systems, much of the relationship between school resources and student performance is closely associated with schools' socio-economic and demographic profile. This suggests the need for more consideration on how to distribute resources for schools more equitably. Across OECD countries, and considering aspects that relate to class size, instruction time, participation in after-school lessons, availability of extra-curricular activities, and the school principal's perception of teacher shortages and a lack of material resources that adversely affects instruction, only 5% of the variation in student performance is attributable solely to the differences in the educational resources available to the schools. In contrast, 18% of the variation in student performance is attributable jointly to spending on education and to socio-economic and demographic background (Figure IV.2.9 and Table IV.2.12a in the PISA 2009 report). Improving equity will thus require considering the disparities in resources among schools.

80. In other words, while much of the variation in student performance cannot be predicted solely by levels of resources, resources are closely related to the socio-economic composition of individual schools, such that socio-economically advantaged students attend schools with better resources.

The quality of school's material resources and extra-curricular activities

81. The quality of material resources is not a particularly serious problem in the United Kingdom. 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).

82. 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).

83. 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. 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).

Pre-primary education

84. PISA 2009 results show that, in general, students who attended pre-primary education perform better in reading at the age of 15 than students who did not attend pre-primary education (Figure II.5.9 and Table II.5.5 in the PISA 2009 report). In 32 OECD countries, students who attended pre-primary education for more than one year outperformed students who did not attend pre-primary education at all, in many countries by the equivalent of well over a school year. This finding remains unchanged in most countries even after the socio-economic background of students is accounted for. However, across countries, there is considerable variation in the impact of students' attendance at pre-primary education on their 15-year-old reading performance. Among OECD countries, in Israel, Belgium, Italy and France, students who attended pre-primary education for more than one year perform at least 64 score points higher in reading than students who did not attend pre-primary education, which corresponds to the equivalent of roughly one and a half school years. This was the case even after students' socio-economic background was accounted for. On the other hand, in Estonia, Finland, the United States and Korea, there is no marked difference in reading scores between attendees (for more than one year) and non-attendees of pre-primary education after the socio-economic background of students is accounted for. In the United Kingdom the performance advantage of students having attended pre-primary education for one year or less is 56 score points on the PISA reading scale – more than the equivalent of one school year at age 15 – and the advantage of students having attended pre-primary education for one year or more is 76 score points — the equivalent to a full proficiency level. In the United Kingdom a small part of that advantage is explained by socio-economic characteristics, that is, students from more privileged socio-economic backgrounds tend to take greater advantage of pre-primary education but only to a limited extent. In fact, the socio-economic gap between these two groups of students in the United Kingdom is relatively small when compared internationally. The difference between those having attended for more than a year and those who did not attend stands at 57 score points after adjusting for socio-economic background, among OECD countries this gap is higher only in Denmark, Switzerland, France, Italy, Belgium and Israel.

85. One hypothesis to explain the variability in the impact of pre-primary education on later school performance is the quality of pre-primary education. This hypothesis is supported by the fact that the impact of pre-primary education attendance on performance tends to be greater in education systems with a longer duration of pre-primary education, smaller pupil-to-teacher ratio in pre-primary education or higher public expenditure per pupil at the pre-primary education level (Table II.5.6 in the PISA 2009 report).

86. When the impact of pre-primary education attendance on performance in reading at age 15 is compared between different socio-economic backgrounds, no significant difference is found between students with socio-economically disadvantaged and socio-economically advantaged backgrounds (Table II.5.8 in the PISA 2009 report). Socio-economically disadvantaged and advantaged students benefit equally from pre-primary education attendance in 31 OECD countries and 25 partner countries and economies.

87. When the impact of pre-primary education attendance on performance at age 15 is compared between the performance of students with immigrant backgrounds and native students, a significant difference is found in some countries (Table II.5.9 the PISA 2009 report). In Finland, Ireland, Canada and the partner country Qatar, the impact of pre-primary education attendance on performance is greater for immigrant students than for native students.

88. In countries that spend more public resources on pre-primary education per student, students with immigrant backgrounds tend to benefit more from pre-primary education attendance than native students (Table II.5.10 in the PISA 2009 report). However, other measures of quality of pre-primary education such as a higher enrolment rate for pre-primary education, a longer duration of pre-primary education and smaller pupil-to-teacher ratio in pre-primary education are more closely related to the higher performance advantage observed by PISA.

¹ In PISA 2000, the initial response rate for the United Kingdom fell 3.7% short of the minimum requirement. At that time, the United Kingdom had provided evidence to the PISA Consortium that allowed for an assessment of the expected performance of the non-participating schools. On the basis of that evidence, the PISA Consortium concluded that the response bias was likely negligible and the results were included in the international report. In PISA 2003, the United Kingdom's response rate was such that sampling standards had not been met, and a further investigation by the PISA Consortium did not confirm that the resulting response bias was negligible. Therefore, these data were not deemed internationally comparable and were not included in most types of comparisons. For PISA 2006 and PISA 2009, more stringent standards were applied, and PISA 2000 and PISA 2003 data for the United Kingdom are therefore not included in comparisons.

² Though rank 20 is the best estimate, due to sampling and measurement error the rank could be between 15 and 22.

³ Though rank 22 is the best estimate, due to sampling and measurement error the rank could be between 17 and 25.

⁴ Though rank 11 is the best estimate, due to sampling and measurement error the rank could be between 9 and 13.

⁵ Defined here as the share of students in their country whose PISA index of economic, social and cultural status is below one standard deviation of the international mean.

⁶ No such data are available for the United Kingdom

⁷ Students in the United Kingdom attending schools located in a city with between 100 000 and 1 000 000 inhabitants performed, on average, at 493 score points, students attending schools in towns with between 15 000 and 100 000 inhabitants reached 497 score points, students attending schools located in a small town with between 3 000 and 15 000 inhabitants reached 505 score points.

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- 8 Resilient students are those who come from a disadvantaged socio-economic background and perform much higher than would be predicted by their background. To identify these students, first, the relationship between performance and socio-economic background across all students participating in the PISA 2009 assessment is established. Then the actual performance of each disadvantaged student is compared with the performance predicted by the average relationship among students from similar socio-economic backgrounds across countries. This difference is defined as the student's residual performance. A disadvantaged student is classified as resilient if his or her residual performance is found to be amongst the top quarter of students' residual performance from all countries.
- 9 In the United Kingdom, one unit of the PISA index of student-teacher relationship is positively associated with 17.7 score points on the PISA reading scale (Table IV.4.1).
- 10 An average proportion of school principals in the United Kingdom report that a number of student-related factors hinder learning "to some extent" or "a lot."