



Policy Implications

Many nations declare that they are committed to children and education. This is put to the test when these commitments come up against other considerations. How do such nations pay teachers compared to the way they pay other professionals with the same level of education? When people are being considered for jobs, how are education credentials weighed against other qualifications? Would you want your child to be a teacher? How much attention do the media pay to schools and schooling? When it comes down to it, which matters more: a community's standing in the sports leagues or its standing in the school league tables? Are parents more likely to encourage their children to study longer and harder or would they want them to spend more time with their friends, participating in community activities, or taking part in sporting activities?

Some would argue that these are social and cultural matters, and that the substantial variation in the extent to which students in different countries acquire the knowledge and skills they will need to succeed in life is not often altered by public policy. However, in some of the high-performing countries that have very few natural resources, such as Finland, Singapore and Japan, education appears to have a high status at least in part because the general public understands that the country must live by its human resources, which depend on the quality of education. Moreover, over the last decade, the rapid improvements in learning outcomes that some countries demonstrated in PISA across diverse cultures, languages and geographic location, as reported in Volume V, *Learning Trends*, have shown that there is still room for improvement. Perhaps most important, this volume of the PISA 2009 series has, more than any previous internationally comparable analysis, shown that there is a range of resources, policies and practices that is strongly associated with student outcomes, both in combination with and aside from socio-economic factors. Together, the factors measured by PISA account for 88% of the observed differences in school performance across the participating countries.

It is not surprising that performance is influenced by social and economic advantage, with some of the lowest-performing countries also being among the poorest in the survey, and students within each country being more likely to succeed if they are from socio-economically advantaged backgrounds. However, this is only part of the story and one that is least affected by public policy, at least in the short term. PISA has therefore placed greater emphasis on the characteristics of schools and school systems: the resources invested in them, their policies and practices and the learning environments that they create.

Overall, Volume I, *What Students Know and Can Do*, notes that differences in per capita GDP explain only about 6% of differences in mean student performance across OECD countries. In other words, most of the country differences are due to students doing better or worse in PISA regardless of the economic well-being of their country. The factors identified in this volume go a long way towards explaining these differences. A school's resources, policies, practices and environment help account both for whether students are more likely to succeed at one school compared to another and for the strength of educational advantage that students obtain in schools with more advantaged socio-economic backgrounds. As well as contributing to overall performance, they contribute to equity, which is defined as students from different backgrounds having equal chances of performing well.

Chapter 2 of this volume gives a detailed breakdown of the strength of association between these different features of schools and performance both within and across school systems. Some conclusions can be drawn from these results.



A COMMITMENT TO CHILDREN MATTERS, AS DOES THE BELIEF THAT ALL STUDENTS CAN ATTAIN HIGH LEVELS OF ACHIEVEMENT

Placing a high value on education can only get a country so far if the teachers, parents and citizens of that country believe that only a segment of the nation's children can or need to meet high standards. From a national perspective, these belief systems have a powerful effect on student performance. Systems that show high performance and an equitable distribution of learning outcomes tend to be comprehensive, requiring teachers and schools to embrace diverse student populations through personalised educational pathways. In contrast, school systems that assume that students have different destinations, and that hold different expectations of students and group them into different schools, classes and grades often show less equitable outcomes without an overall performance advantage.

Earlier PISA assessments showed these expectations to be mirrored in how students perceived their own educational futures. The results can be seen in the distribution of student performance within countries and in the impact that socio-economic background has on learning outcomes:

- In countries, and in schools within countries, where more students repeat grades, overall results tend to be worse.
- In countries where more students repeat grades, socio-economic differences in performance tend to be wider, suggesting that people from socio-economically disadvantaged groups are more likely to be negatively affected by grade repetition.
- In countries where 15-year-olds are sorted into tracks based on their abilities, overall performance is not enhanced, and the younger the age at which selection for such tracks first occurs, the greater the impact of socio-economic background on student performance by age 15, without improved overall performance.
- In school systems where it is more common to transfer weak or disruptive students out of a school, performance and equity both tend to be lower. Individual schools that make more use of transfers also perform worse in some countries.

These associations account for a substantial amount of the differences in the outcomes of schooling systems. For example, the frequency with which students are transferred across schools is associated with a third of the variation in country performance. This does not necessarily mean that if transfer policies were changed, a third of country differences in reading performance would disappear, since PISA does not measure cause and effect. Transferring difficult students who do badly may be partly a symptom, rather than a cause, of schools and school systems that are not producing satisfactory results. It is worth noting that the schools with lower transfer rates tend to have greater autonomy and other means of addressing these challenges. The results listed above suggests that, in general, school systems that seek to cater to different students' needs through a high level of differentiation in the institutions, grade levels and classes have not succeeded in producing superior overall results, and in some respects they have lower-than-average and more socially inequitable performance.

In such countries, schools have a different framework of incentives than in countries where schools are required to educate students in a less differentiated way. In the latter case, schools must find ways of doing the best they can with students from across the spectrum. In differentiated systems, on the other hand, there may be incentives for schools to select the students whom they can educate to the best of their ability, and fewer incentives to persist in getting the best results from difficult students if there is an option of transferring them to other schools. These different incentives may help explain the greater level of equity achieved in less differentiated systems. School systems that continue to differentiate need to consider how to create appropriate incentives to ensure that some students are not "discarded" by the system.

SETTING STANDARDS AND SHOWING STUDENTS HOW TO MEET THEM MATTERS

Most of the high-performing countries have developed world-class academic standards for their students and almost all have incorporated those standards into a system of external examinations that are used to construct clear paths into the workforce and good jobs or to the next stage of education or both. Indeed, PISA shows that the existence of such external examinations is positively associated with the overall performance of school systems.

These examinations are often linked to national qualifications systems. In countries with such systems, one cannot go on to the next phase of one's education or begin a career in a particular field without a document showing that one is qualified to do so, according to a set of rules and standards laid down by the state. Everyone knows what is required to get any given qualification, in terms of both the content studied and the level of performance that has to



be demonstrated to obtain such a qualification. And the qualification earned, in turn, determines the opportunities available to students. The stakes are high. Students do not get to go on to the next stage simply because they have put in the requisite time; they get to move on only if they have met the requisite performance standards. Parents and students know that neither the teacher nor the administration can change the grade, and therefore the only way to improve the outcome for the student is for the student to work harder and do better work.

In some countries, after an examination has been conducted, newspapers may publish some of the exam questions that ask students to write short essays. The ministry of education then publishes examples of answers that earned the highest grades. In this way, students, parents and teachers all learn what is considered to be high-quality work and students can compare their own work to a clear example of work that meets those standards. Standards in such systems consist of narrative statements of what students should know and what they should be able to do, the questions asked in the exams and the responses given by students who earned good grades.

AUTONOMY MATTERS WHEN COMBINED WITH ACCOUNTABILITY

The incentive to deliver good results for all students is not just a matter of how a school's student body is defined; it also depends on the ways in which schools are held accountable for their results and what forms of autonomy they are allowed to have – and how that could help influence their performance. PISA has looked at accountability both in terms of the information that is made available about performance and how that information is used – whether by administrative authorities through rewards or control systems, or by parents, through their choice of school. Thus the issues of autonomy, evaluation, governance and choice interact in providing a framework in which schools are given the incentives and the capacity to improve.

In this context, PISA 2009 found that:

- In countries where schools have greater autonomy over what is taught and how students are assessed, students tend to perform better.
- Within countries where schools are held to account for their results through posting achievement data publicly, schools that enjoy greater autonomy in resource allocation tend to do better than those with less autonomy. However, in countries where there are no such accountability arrangements, the reverse is true.
- Countries that create a more competitive environment in which many schools compete for students do not systematically produce better results.
- Within many countries, schools that compete more for students tend to have higher performance levels, but this is often accounted for by the higher socio-economic status of students in these schools. Parents with a higher socio-economic status are more likely to take academic performance into consideration when choosing schools.
- In countries that use standards-based external examinations, students tend to do better overall, but there is no clear relationship between performance and the use of standardised tests or the public posting of results at the school level. However, performance differences between schools with students of different social backgrounds are, on average, lower in countries where more schools use standardised tests.

In recent years, many school systems have moved away from a model of purely administrative control and towards one where schools become more autonomous organisations, accountable to their users and to the public for outcomes. The PISA results suggest that some features of autonomy and accountability are associated with better performance. However, this is not a simple relationship under which any policy to increase autonomy, accountability or choice will improve student outcomes.

Some accountability systems publish data on the performance of students and schools to inform the public and the system managers about their performance. In systems that permit parents and students to choose among schools, this data can also influence those choices and thus hold schools accountable. However, some features, most notably the prevalence of private schools and competition for students, have no discernible relationship with overall performance once socio-economic background is accounted for. While students who attend schools that compete with other schools for student enrolment also perform better than students who attend schools that do not compete with other schools, the cross-country analysis suggests that systems as a whole do not benefit from higher rates of school competition. 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. More worryingly, in the countries that administered the PISA parent

questionnaire, socio-economically disadvantaged parents are significantly 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. 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 this as “very important”. These differences suggest that socio-economically disadvantaged parents may consider that they have more limited choices of schools for their children because of the cost of some schools. 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.

The combination of some forms of autonomy and accountability has closer associations with student results. For example, schools’ autonomy in allocating resources is associated with good performance only in the systems where most of the schools post achievement data publicly. This suggests that it is combinations of these conditions, rather than each policy in isolation, that are related to better outcomes. The important thing about these PISA results is that they show differences in performance associated with both autonomy and accountability. These findings are compatible with the view that reforms in these directions can make a difference to outcomes, and should encourage countries to look at how a sound framework of autonomy and accountability can be implemented or strengthened.

HOW RESOURCES ARE ALLOCATED IN SCHOOLS MATTERS MORE THAN OVERALL SPENDING

Effective school systems require the right combination of trained and talented personnel, adequate educational resources and facilities and motivated students who are ready to learn. At the same time, demands for investments in education need to be balanced against other demands on public expenditure and the overall burden of taxation. School systems differ in the amount of time, human, material and financial resources they invest in education. Equally important, school systems also vary in how these resources are spent. Research usually shows a weak relationship between educational resources and student performance, with more variation explained by the quality of human resources (*i.e.* teachers and school principals) than by material and financial resources, particularly among industrialised nations. The generally weak relationship between resources and performance observed in past research is also seen in PISA:

- At the level of the school system and net of the level of national income, PISA shows that higher teachers’ salaries, but not smaller class sizes, are associated with better student performance. 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 teachers’ salaries over smaller classes tend to perform better, which corresponds with research showing that raising teacher quality is a more effective route to improved student outcomes than creating smaller classes.
- Within countries, schools with better resources tend to do better only to the extent that they also tend to have more socio-economically advantaged students. Some countries show a strong relationship between schools’ resources and their socio-economic and demographic background, which indicates that resources are inequitably distributed according to schools’ socio-economic and demographic profiles.
- In other respects, the overall lack of a relationship between resources and outcomes does not show that resources are not important, but that their level does not have a systematic impact within the prevailing range. If most or all schools have the minimum resource requirements to allow effective teaching, additional material resources may make little difference to outcomes.

Recent research has emphasised the importance of teaching quality for learning outcomes. If there are ways in which higher investments can be used to recruit more qualified teachers or provide professional training that increases their effectiveness, this could be money well spent. The bottom line is that the quality of a school system cannot exceed the quality of its teachers.

THE SCHOOL CLIMATE AND TEACHER-STUDENT RELATIONS MATTER

A final important feature of schools is whether they create a conducive climate for teaching and learning. Education policies and practices can only be as good as how effectively they translate into learning in the classroom. Results from PISA suggest that schools and countries where students work in a climate characterised by expectations of high performance and a readiness to invest effort, good teacher-student relations, and high teacher morale tend

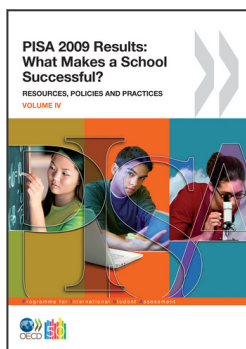


to achieve better results. Even after accounting for socio-economic background and other aspects of the learning environment measured by PISA, the results show that student performance is positively related to better teacher-student relations, a better disciplinary climate and favourable teacher-related factors that affects school climate:

- Across OECD countries, 13% of variation in student performance is associated with differences in school climate between schools. However, three-quarters of this effect is linked to the better school climate enjoyed by students from advantaged backgrounds, who also do better in reading, suggesting that this relationship is mediated by socio-economic background.
- Disciplinary climate has a relationship with performance that goes beyond the impact of social background. On the other hand, higher parental expectations of children are associated with stronger performance only to the extent that more socio-economically advantaged parents tend to have higher expectations.
- 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, thus adding to available resources. School principals can define their schools' educational objectives and guide their schools towards them. PISA shows that school principals' perceptions of parents' pressure for high academic standards and achievement are positively related to higher school performance, even if much of this relationship is mediated by socio-economic factors.

PISA shows that the socio-economic background of students and schools and the learning environment are closely interrelated, and that both factors link to performance in important ways, perhaps because students from socio-economically advantaged backgrounds bring with them a higher level of discipline and more positive perceptions of school values, or perhaps because parental expectations of good classroom discipline and strong teacher commitment are higher in schools with advantaged socio-economic intake. Conversely, disadvantaged schools may not face as much parental pressure to reinforce effective disciplinary practices or ensure that absent or unmotivated teachers are replaced. In summary, students perform better in schools with a better school climate, partly because such schools tend to have more students from advantaged backgrounds who generally perform well, partly because the favourable socio-economic characteristics of students reinforce a favourable climate, and partly for reasons unrelated to socio-economic variables.

What these findings tell policy makers is that, while it is possible to improve features such as school discipline separately from socio-economic issues, policies that address these two issues in tandem could have a much bigger impact. School systems need to look at how they can influence the learning climate in schools with large proportions of socio-economically disadvantaged students. This may be approached either through measures that change the social mix of students in some schools or by a change in attitudes and practices among teachers, students and parents in order to weaken the association between socio-economic disadvantage and a less favourable school climate.



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