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Briefing note
Japan

Introduction

1. How well equipped are today's school-leavers to meet the challenges of the knowledge society? Can they penetrate complex texts and understand what they are reading? Can they use the mathematics and science they have learned in school to succeed in world increasingly relying on technological and scientific advances?

2. First results from the OECD Programme for International Student Assessment (PISA) provide some answers. PISA, a major new activity of the 30 Member countries of the OECD, aims at assessing how far students approaching the end of compulsory education have acquired some of the knowledge and skills that are essential for full participation in society. Approximately 265,000 students in 32 countries took part in the first round PISA assessment in 2000. The survey will be repeated at three-yearly intervals, making it the most comprehensive international survey to date of student knowledge and skills.

3. The survey covers literacy in reading, mathematics and science as well as student attitudes and approaches to learning. It also provides insights into the factors that influence the development of literacy skills at home and at school, examines how these factors interact and considers the implications for policy development. By providing internationally comparable information on student outcomes, it provides a unique benchmarking tool on which to evaluate policy choices.

Japan emerges as one of the top performing countries in PISA

4. Japan emerges as one of the top performing countries in PISA. Japan and Korea occupy the first two rank order positions in mathematical and scientific literacy (see Figure 3.5). This is similar to earlier international studies of mathematics and science (such as IEA's TIMSS) although the distance between Japan and Korea and the other OECD countries is smaller in PISA than it was in TIMSS.

5. In reading literacy, Japan is placed at rank 8 but, due to the fact that several countries score within a very close range and statistical uncertainty, this could range from rank 3 to rank 10 (see Figure 2.4).

6. In all three subject areas, Japan also succeeds with keeping the gap between the best and poorest performing students comparatively narrow (see Table 2.3). Together with Finland and Korea, Japan thus shows that greater equality of student outcomes is not incompatible with high overall performance. By contrast Germany, one of the countries with the largest gap between the highest and lowest performing students, has a mean performance below the OECD average, with much of this variation accounted for by differences between schools.

7. The result of high average performance and low disparities is that only 10% of 15-year-olds perform at the lowest level of reading proficiency in PISA (compared with an OECD average of 18%), at which students are only able to complete very basic reading tasks, such as locating a simple piece of information or identifying the main theme of a text (see Table 2.1a). Nevertheless, this is still a significant minority of students who show important gaps in the foundation of literacy skills needed for further learning. They may not be able to fully benefit effectively from available educational opportunities and fail to acquire the necessary knowledge and skills to do so effectively in their further school career and beyond.

8. On the other hand, the low internal variation in results implies, despite strong average performance, that Japan is not exceptional in the numbers of highly proficient readers – only an average

proportion of 10% reach the highest literacy level, at which students are able to understand complex texts, evaluate information and build hypotheses, and draw on specialised knowledge (see Table 2.1a). In other countries with a similar level of average performance, such as Australia, New Zealand or the United Kingdom, the proportion of top-performers is larger (between 15% and 19%) mainly because the gap between the lowest and highest performing students in these countries is larger. In mathematical and scientific literacy, on the other hand, the score above which the top 10% of students perform is higher in Japan than for any other country, and the same is true for the top 25%.

Gender differences

9. In every country, girls are, on average, better readers and in many countries this difference is large in both statistical and substantive terms. In about half of the countries boys perform better in mathematical literacy while in the case of scientific literacy differences are smaller and tend to even out among countries. There is, however, significant variation between countries in the size of gender differences. Some countries do manage to provide a learning environment or broader context that benefits both genders equally. In Japan, girls are 30 score points ahead in reading (compared with an OECD average of 32 points) (see Table 5.1a). In mathematical and scientific literacy, gender differences in Japan are small and not statistically significant.

10. An important policy concern emerges from the large gender differences in reading literacy among the lowest performing students. In all participating countries, boys are more likely than girls to be at Level 1 or below in reading. This is also true in Japan: 15% of boys are not proficient above reading Level 1 compared with only 6% of girls (see Table 5.2a).

11. In this context, it is noteworthy that, in most countries boys also tend to spend much less time reading for enjoyment than girls. On average across OECD countries, 45 per cent of girls report that they read for enjoyment for more than 30 minutes each day (the proportion ranging from 27 per cent of girls in Japan to more than twice that figure in the Czech Republic, Finland, Poland and Portugal). The comparable figure for boys is 30 per cent, the proportion ranging from 20 per cent or less in Austria, the Netherlands and Switzerland to over 40 per cent in Greece, Korea and Poland (Figure 5.5 and Table 5.3). Japan is an exception to this general pattern in that an equal and unusually high proportion of boys and girls (55%) report not reading for enjoyment (Table 5.3). This may in part be due to the high incidence of student participation in after-school programmes that leaves students in Japan simply less time for reading on their own. However, it remains noteworthy in particular because the performance of these students is markedly lower than that of students that report reading for enjoyment, even if also these students still perform above the OECD average (Table 4.4).

Investment in education and country performance

12. Across OECD countries, higher average spending per student tends to be associated with higher average performance in the three areas of literacy, but the relationship is not straightforward. Japans performance, for example, exceeds the performance one would expect from national income (GDP/capita) and expenditure per student (see Table 3.6). There are other countries where the reverse is true. A comparatively high incidence of out-of-school education in Japan (see Table 7.7) for which expenditure is not accounted for in this comparison may account in part for this result.

Home background and student performance

13. Home background influences educational success, and socio-economic status may reinforce its effects. Although PISA shows that poor performance in school does not automatically follow from a disadvantaged socio-economic background, it appears to be one of the most powerful factors influencing performance on the PISA reading, mathematical and scientific literacy scales. However, while all countries show a clear positive relationship between home background and educational outcomes, some countries

demonstrate that high average quality and equality of educational outcomes can go together: Canada, Finland, Iceland, Japan, Korea and Sweden all display above-average levels of student performance on the combined reading literacy scale and, at the same time, a below-average impact of economic, social and cultural status on student performance (see Table 6.1). Furthermore it should be noted that, at 512 points, less advantaged students in Japan score better than the average for all students across the OECD (500 points).

14. The relationship between family wealth and student performance is also comparatively weak in Japan, similar to the Nordic countries, Austria, Belgium, Italy, Latvia and Poland. Furthermore, in several OECD countries a relative lack of wealth is not a barrier to performance above the international average. Indeed, students in the bottom national quarter of wealth have mean scores at or above the OECD average literacy scores in about a third of countries. Among students in the bottom quarter for wealth, high scores are found in Finland (in reading literacy) and in Japan (in all three domains) (see Table 6.2 for reading literacy and www.pisa.oecd.org for mathematical and scientific literacy). Students in the bottom quarter of wealth in these countries have higher mean scores than those of students in the top quarter of wealth in many other OECD countries.

15. As a result, family background matters less to student performance in Japan than in other countries. This means that unlike in most OECD countries, students from less advantaged homes in Japan are not in general underperforming at school – they have literacy levels close to average for all OECD students.

The learning environment and student performance

16. Students in Australia, Brazil, Canada, New Zealand, Portugal, the United Kingdom and the United States have the most positive perceptions of their teachers' supportiveness. By contrast, students in Austria, Belgium, the Czech Republic, France, Germany, Italy, Japan, Korea, Latvia, Luxembourg and Poland report below-average support from their teachers of the language of assessment (Table 7.1). For example, in Australia, Canada, Denmark, Iceland, New Zealand, Portugal, Sweden and the United Kingdom, between two-thirds and three-quarters of students report that their teachers of the language of assessment continue to teach until students understand, in most lessons or every lesson. Conversely, in the Czech Republic, Japan, Korea and Poland, less than half of students make such a report. Similarly, in Australia, Canada, Denmark, Hungary, Iceland, New Zealand, Portugal, Sweden and the United Kingdom, two-thirds or more of students report that their teachers of the language of assessment do a lot to help students in most lessons or every lesson, while less than half of students in France, Korea, Japan, Luxembourg and Poland make that report (for data see www.pisa.oecd.org). From the data available, there is no way of assessing the extent to which these results reflect true differences in teachers' attitudes and practices – within and between countries – rather than differences in students' subjective reports, since students in each country applied only their own judgement. Despite this caveat, some of the differences between countries are so large that they merit attention. It is also noteworthy that Japan, Korea, Latvia and Poland are countries with below-average values on the index of teacher support, but those students who benefit from more supportive teachers show higher PISA scores than other students.

17. Japan is one of the countries with the highest disciplinary climate in schools, according to reports from both students and school principals (see Tables 7.2 and 7.3). Nevertheless, even if these countries compare relatively well internationally with regard to their learning climate, responses from principals do not suggest the absence of problems. For example, in Japan, 5 per cent of principals report that learning is hindered a lot or to some extent by students intimidating or bullying other students (OECD average 14 per cent), 39 per cent that learning is hindered by to some extent or a lot by student absenteeism (OECD average 48 per cent), 18 per cent report that it is similarly hindered by students skipping classes (OECD average 33 per cent), 29 per cent that it is hindered by students lacking respect for teachers (OECD average 24 per cent), and (see Figure 7.2 and www.pisa.oecd.org).

18. School principals in Japan report an above-average but not highly positive teacher morale and commitment (see Table 7.5). Those schools in which principals perceive a better teacher morale and commitment, perform better on average.

19. PISA results suggest that school policy and schools themselves can play a crucial role (see Tables 8.5 and 8.5a). Performance tends to be better where teachers have high expectations and morale, and where classroom relations and discipline are good. The extent to which students make use of school resources, and the extent to which specialist teachers are available, tend both to have an impact on student performance. PISA results suggest that there is no single factor that explains why some schools or some countries have better results than others. Successful performance is attributable to a constellation of factors, including school resources, school policy and practice, and classroom practice. In Japan, the factors with the strongest relationship with student performance are good student-teacher relations and a positive disciplinary climate as perceived by the students, effective student use of school resources and a positive perception of teacher morale and commitment by school principals. Factors that show little influence on outcomes in Japan include the schools physical infrastructure, the frequency of the use of formal assessments, and the relative school autonomy.

20. It is noteworthy that several of the factors positively associated with student performance in Japan, such as the principals perception of teachers' morale and commitment, students' perception of student-teacher relations and the disciplinary climate at school are more prevalent in schools with better socio-economic intake (see Table 8.6).

Learning outside school

21. Homework policies and practices are another element in this equation that can have a substantial influence on how much time students devote to learning. In many OECD countries, homework constitutes a major part of students' learning time. In PISA 2000, students were asked to specify how much time they spent each week on homework in the language of assessment, mathematics and science (Figure 7.6).

22. Adding these responses results in an average of 4.6 hours per week in the three subject areas alone, ranging from 3.3 hours or less in Japan and Sweden to 5.8 hours or more in Greece and Hungary (Figure 7.6). This amount compares to an average of 12 hours per week of statutory instruction time in these subject areas (OECD, 2001). In addition, a substantial proportion of students report sometimes or regularly attending additional or remedial courses outside their school in order to improve their skills. For example, on average across OECD countries, 25 per cent of students report that, in the last three years, they sometimes or regularly attended courses in the language of assessment, courses in other subjects or additional courses outside their school. In the case of Japan and Korea, the figures are 71 and 64 per cent, respectively (Table 7.7).