Students, Computers and Learning: Making the Connection

Country note
Japan

- Computers do not have as much of a presence in Japanese schools as they do on average across OECD countries. In 2012, there was only **one school computer available for every four 15-year-old students** in Japan. Only **three out of five students (59.2%) reported using computers at school**, and fewer than one in four students (23.8%) used a computer in mathematics class during the month prior to the PISA test.

- Japan is **one of the top performers in the PISA test of digital reading**, and its mean score improved markedly compared to 2009. Japan's score of 545 is **26 score points above the mean score for 2009** (a similar, though smaller improvement, was observed in Japan's achievement in the PISA paper-based reading test too). Between 2009 and 2012, performance improved the most among the top 10% of students.

- When navigating online, a vast majority of Japanese students carefully selects the links to follow. But **16% of students were adrift when searching for information in the PISA test of digital reading**: they visited more task-irrelevant pages than task-relevant ones.

- Access to computers and the Internet at home remains strongly linked to socio-economic status in Japan. **Only 75% of disadvantaged students** (those among the bottom 25% in socio-economic status) **have access to the Internet at home**, compared to 97% of advantaged students. Regardless of socio-economic status, students spend about 2 hours on line, on average, each weekend day. But disadvantaged students are more likely to use this time for playing online games, while advantaged students are more likely to read news or search the Internet for information.

Key international findings

Over the past 10 years, there has been no appreciable improvement in student achievement in reading, mathematics or science, on average, in countries that have invested heavily in information and communication technologies for education. In 2012, in the vast majority of countries, students who used computers moderately at school had somewhat better learning outcomes than students who used computers rarely; but students who used computers very frequently at school did a lot worse, even after accounting for the students' socio-economic status.

The top-performing country in the PISA 2012 assessment of digital reading was Singapore, followed by Korea, Hong Kong-China, Japan, Canada and Shanghai-China. Students in Australia, Canada, Ireland, Korea, Singapore and the United States showed the most advanced web-browsing skills. More often than students elsewhere, they carefully selected links to follow before clicking on them, and followed relevant links for as long as was needed to answer the question. To use and understand online sources of information, students need such web-browsing skills in addition to the reading skills required for printed texts.

In most countries, differences between advantaged and disadvantaged students in access to computers and the Internet at home shrank between 2009 and 2012. In all but five OECD countries with available data, in 2012 disadvantaged students – those from the bottom 25% in socio-economic status – typically spent at least as much time on line, outside of school, as advantaged students did. But traditional socio-economic differences persist when looking at how students use their time on line, and they continue to have a strong impact on performance in reading. Indeed in all countries, advantaged students are significantly more likely to use their time on line to read news or obtain practical information. To benefit from online information about education, health or financial services and improve one's personal situation, having sufficient basic skills in reading is perhaps more important than easy access to the Internet.

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Students' exposure to computers at school varies significantly across countries and schools. While the availability of devices and of an Internet connection at school explains much of this variation, teachers' readiness to integrate technology into instruction also depends on other factors, such as whether the devices can be accessed in the classroom or only in separate rooms, whether the school has a digital skills curriculum, and whether teachers in the school have learned how to use these devices to enhance student learning. Among all teachers, those who are more inclined to use and better prepared for practices such as group work, individualised learning and project work are more likely to use digital resources.

To learn more…

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