



Students, Computers and Learning: Making the Connection

Country note Colombia

- Despite rapidly expanding access to ICT among households, in 2012 some 37% of 15-year-old students in Colombia still had no access to a computer at home (in 2009, this proportion was 52%). Furthermore, home access remains strongly determined by socio-economic differences: in 2012, **only 17% of disadvantaged students** – those among the bottom 25% in socio-economic status – **had access to the Internet at home**, compared to 86% among students from advantaged backgrounds (those among the top 25% in socio-economic status). (Tables 1.1, 5.1)
- In Colombia, schools provide in general good access to computers to their students. In 2012, all 15-year-old students went to schools which had computers available for instruction. On average, schools had **about one school computer available for every four 15-year-old students**. The students-per-computer ratio of 3.7-to-1 is the lowest among Latin American countries participating in PISA and is lower than the average value for OECD countries. Furthermore, the students-per-computer ratio does not differ significantly depending on the school's socio-economic profile: schools with the highest percentage of disadvantaged students had, on average, student-computer ratios similar to schools serving more advantaged students. This reflects recent investments in school ICT equipment: in 2009, the ratio was significantly higher (6.1-to-1), particularly among schools with a disadvantaged socio-economic profile. While not all school computers (71%) in Colombia were connected to the Internet in 2012, particularly in schools serving more disadvantaged populations, the recent investments were instrumental in reducing inequalities in access among students.. (Tables 2.11 and 5.5a).
- Fifteen-year-olds in Colombia perform significantly below the OECD average in digital reading (396 score points), but **performance in the PISA test of digital reading improved significantly between 2009 and 2012** (an increase by 27 score points). Students progressed across the performance distribution, with the largest improvement among Colombia's better-performing students. Over the same period, the performance of students in print reading or mathematics did not improve. Together, these findings suggest that students' greater access to digital tools helped familiarise students with digital texts, but did little to support students' progression in reading or mathematics (Figures 3.1 and 3.4; Tables 3.1, 3.2, 3.5)
- Despite recent improvements, **students in Colombia tend to perform worse in digital reading than students in other countries who have similar performance in print reading**. For instance, while students from Brazil and Colombia perform similarly in print reading, Brazilian students clearly perform above Colombian students in digital reading. This means that in the PISA assessment, a significant number of students in Colombia were not able to demonstrate the same proficiency when doing an online reading task as when they did a print reading task. Both a lack of familiarity with ICT devices, navigation tools or online texts, and difficulties in evaluating which links were worth following as they read on line, can explain the under-performance of Colombian students. Indeed, some 15% of students did not interact at all with the computer-based assessment tasks, the largest proportion among participating countries (only 8% of students in Brazil, and only 5% in Chile, belong to this group). Furthermore, among students who demonstrated at least some familiarity with navigation tools, the quality of navigation was often poor: an additional 17% of students were adrift when searching for information in the PISA test of digital reading. These students visited more task-irrelevant pages than task-relevant ones (in Brazil, 11% of students belong to this group; in Chile, 14% do). (Figures 3.7, 4.6 and 4.8)
- In 2009, Colombia had one of the strongest relationships between students' socio-economic status and their performance in digital reading. **By 2012, equity in digital reading had improved considerably**. The more equitable access to computers at school likely played a role in limiting the impact of socio-economic differences on digital reading performance. Learning outcomes, including digital ones, remain nevertheless

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strongly related to socio-economic differences among students. To further reduce inequalities in students' ability to benefit from digital tools, Colombia must ensure that more students reach a baseline level of proficiency in reading and mathematics. In 2012, about half of all 15-year-old students in Colombia (52%) did not reach the baseline level (Level 2) on the PISA (print) reading proficiency scale. These students were, at best, able to retrieve explicitly stated information from a text, but were not able to make simple inferences or to integrate different parts of a text to extract meaning. A lack of basic reading skills represents a major obstacle for engagement with online tools such as e-learning platforms, financial services, or job sites. (Table 5.16)

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.

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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