Getting ready for the digital world

While people have different views on the role that digital technology can and should play in schools, we cannot ignore how digital tools have so fundamentally transformed the world outside of school. Everywhere, digital technologies are offering firms new business models and opportunities to enter markets and transform their production processes. They can make us live longer and healthier, help us with boring or dangerous tasks, and allow us to travel into virtual worlds. People who cannot navigate through the digital landscape can no longer participate fully in our social, economic and cultural life.

PISA shows how access to new technologies has increased at a remarkable rate. In the 2009 PISA assessment, about 15% of students in OECD countries, on average, reported that they did not have access to the Internet at home. By 2018, that proportion had shrunk to less than 5%. The growth in access to online services is likely to be even steeper than suggested by these percentages, which hide the improvements in the quality of Internet services and the explosion of mobile Internet access over the past decade.

Furthermore, in all countries that distributed an optional questionnaire on students' familiarity with these technologies as part of PISA 2018, the amount of time that 15-year-old students in OECD countries spent on line outside of school increased between 2012 and 2018 – by an average of more than 1 hour per day (on both weekdays and weekends). Students now spend about 3 hours on line outside of school on weekdays, on average, and almost 3.5 hours on line on weekend days. For young people, the digital world is becoming a sizeable part of the real world.

While improved access to new technologies provides unprecedented opportunities, it also raises the bar of what it means to be proficient in reading. Students growing up with a great smartphone but a poor education will face real risks. The smartphone has transformed the ways in which people read and exchange information; and digitalisation has resulted in the emergence of new forms of text, ranging from the concise (text messages; annotated search-engine results) to the lengthy and unwieldy (tabbed, multipage websites or complex archival material). In the past, students could find clear and often singular answers to their questions in carefully curated and government-approved textbooks, and they could generally trust those answers to be true. Today, they will find hundreds of thousands of answers to their questions on line, and it is up to them to figure out what is true and what is false, what is right and what is wrong. While in many offline situations readers can assume that the author of the text they are reading is competent, well-informed and benevolent, when reading online blogs, forums or news sites readers must constantly assess the quality and reliability of the information, based on implicit or explicit cues related to the content, format or source of the text.

This is not exactly a new phenomenon, but the speed, volume and reach of information flows in the current digital ecosystem have created the perfect conditions for fake news to thrive, affecting public opinion and

political choices. In this "post-truth" climate, quantity seems to be valued more than quality when it comes to information. Assertions that "feel right" but have no basis in fact become accepted as truth. Algorithms that sort people into groups of like-minded individuals create social media echo chambers that amplify views, and leave individuals uninformed of and insulated from opposing arguments that may alter their beliefs. There is a scarcity of attention, but an abundance of information.

The more knowledge that technology allows students to search and access, the more important becomes deep understanding and the capacity to make sense of content. Understanding involves knowledge and information, concepts and ideas, practical skills and intuition. But fundamentally it involves integrating and applying all of these in ways that are appropriate to the learner's context. Reading is no longer mainly about extracting information; it is about constructing knowledge, thinking critically and making well-founded judgements. Contrast this with the findings from this latest round of PISA, which show that fewer than 1 in 10 students in OECD countries was able to distinguish between fact and opinion, based on implicit cues pertaining to the content or source of the information. Education has won the race with technology throughout history, but there is no guarantee that it will do so in the future.

The PISA assessments have evolved to better capture these demands. In the 2018 assessment, the description of what top-performing students are able to do in reading included not only being able to understand and communicate complex information, but also the capacity to distinguish between fact and opinion when reading about an unfamiliar topic. The nature of texts and the type of problems included in the PISA 2018 assessment of reading reflected the evolving nature of reading in increasingly digital societies. Specifically, the 2018 reading assessment placed greater emphasis on the ability to find, compare, contrast and integrate information across multiple sources. In order to assess multiple-source reading, new assessment tasks were designed, based on texts composed of several smaller units, each created by a different author or authors or at different times. Examples of these kinds of texts are an online forum with multiple posts and a blog that links to a newspaper article. Computer delivery made it possible to use various digital navigation tools, such as hyperlinks or tabs, and to present such tasks in realistic scenarios, in which the amount of available text sources increases as the student progresses through the assessment. (To see what some of these tasks were like, go to www.oecd.org/pisa/test/)

The results from the PISA 2018 assessment suggest that improvements in education have not kept up with these rising demands. The proportion of 15-year-old students who scored at the highest levels rose only marginally across OECD countries, from 7% in 2009 to 9% in 2018. These students, who attained Level 5 or 6 in the PISA reading test, were able to comprehend lengthy texts, deal with concepts that are abstract or counterintuitive, and establish distinctions between fact and opinion, based on implicit cues pertaining to the content or source of the information. Even in Singapore, the country with the largest share of top performers, only one in four 15-year-old students was able to reach this level. In the four participating Chinese provinces/municipalities, Canada, Finland and Hong Kong (China), at least one in seven students were able to do so.

Beyond the requisite knowledge and skills, PISA also shows that students seem to read less for leisure and to read fewer books of fiction, magazines or newspapers because they want to (as opposed to because they have to). Instead, they read more to fulfil practical needs, and they read more in online formats, such as chats, online news or websites containing practical information. In 2018, more students considered reading "a waste of time" (+5 percentage points, on average across OECD countries) and fewer students read for enjoyment (-5 percentage points) than their counterparts did in 2009.

Humans were always better at inventing new tools than using them wisely, but as the influence that schools – and families – have over what students read declines, it is essential that schools redouble their efforts to promote reading proficiency to meet the demands of the digitalised world. All students need to be able to read complex texts, distinguish between credible and untrustworthy sources of information, and between fact and fiction, and question or seek to improve the accepted knowledge and practices of our times.

Beyond that, in a world shaped by artificial intelligence, education is no longer just about teaching people something, but about helping people build a reliable compass and the navigation tools to find their own way through an increasingly volatile, uncertain and ambiguous world. Tomorrow's schools will need to help students think for themselves and join others, with empathy, in work and citizenship. They

will need to help students develop a strong sense of right and wrong, a sensitivity to the claims that others make on them, and a grasp of the limits on individual and collective action. At work, at home and in the community, people will need a deep understanding of how others live, in different cultures and traditions, and how others think, whether as scientists or artists. The PISA 2018 assessment of global competence explored some of these capacities. Results from that assessment will be published in 2020.

Read more about these issues in Chapters 1 and 5 in *PISA 2018 Results (Volume I): What Students Know and Can Do.*
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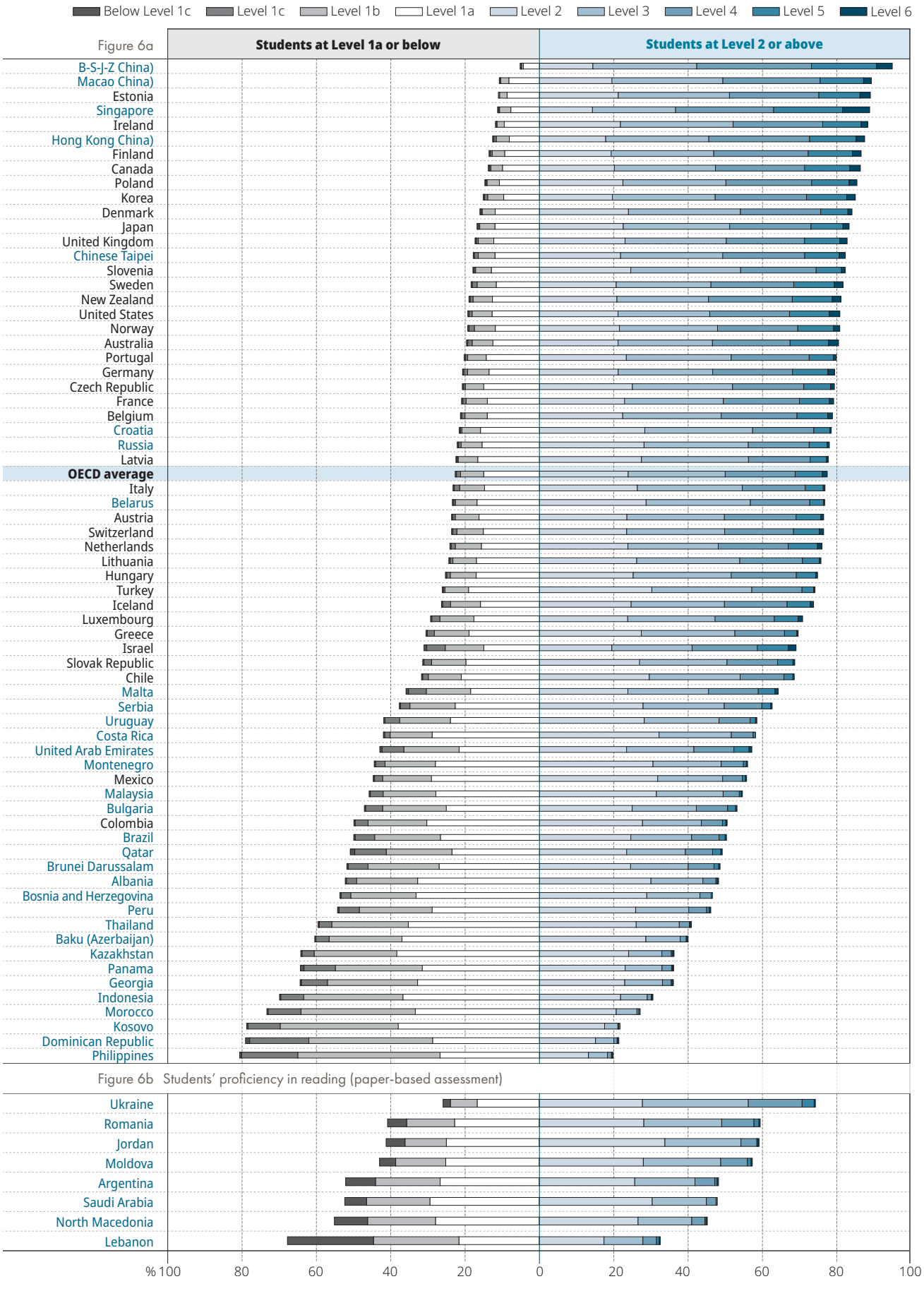
Figure 6 • Students' proficiency in reading (6a: computer-based assessment/6b: paper-based assessment)



Note: *Countries and economies are ranked in descending order of the percentage of students who performed at or above Level 2.*

Source: OECD, PISA 2018 Database, Tables I.B1.1 and I.A2.1; Figures I.5.1 and I.5.2.