# OECD Going Digital Summit - Issues Note

Session 10: Education and Skills for the Digital Age

Digital technologies change the skills people need to thrive in work and life; and the dilemma for education is that the kinds of skills that are easiest to teach and test are those that are also easiest to digitise and automate. Digitalization also impacts on education and training systems, providing many new opportunities in delivery modes and in adapting content and methods to the needs of learners.

For a start, digital skills are scarce: The OECD Survey of Adult Skills showed that in many countries even among youths only a minority were able to solve problems of medium-level complexity in technology rich environments (Figure 1). In some countries, intergenerational progress has been significant though: In Singapore only 6% of 55-65 year-olds fared well on the test, while two-thirds of young adults did so, the highest figure among the countries tested. In contrast, the United States comes second after New Zealand among older adults whereas American youths rank in the lowest quarter of countries.

Figure 1: Skills to solve problems in technology-rich environments (2012-15)
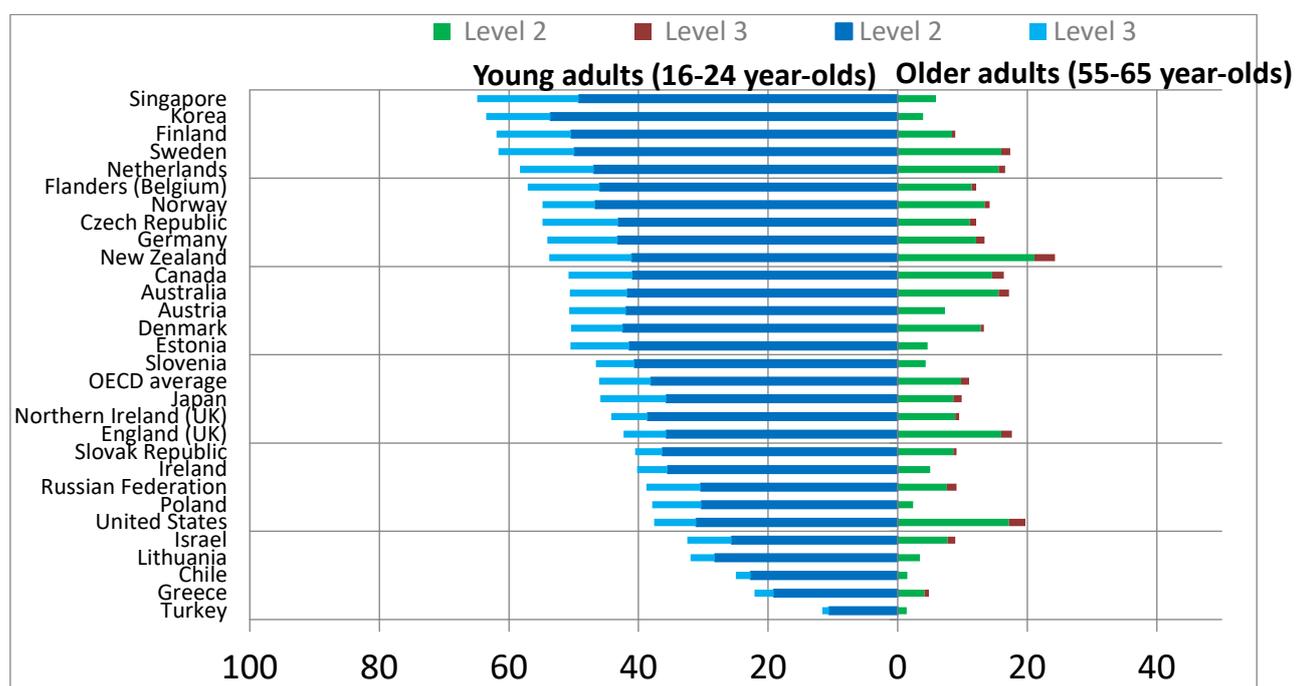
The use of Internet by most workers, the possibility to automate an increasing range of tasks, the opportunities to supply skills through online platforms are all different facets of the digital transformation that affect what people do on the job, or how and where they work. Almost all occupations are changing because of these transformations. To face these

changes, most workers need to adjust their skills mix through continuous learning. We used to learn to do the work, now learning is the work.

When in the past one could still assume that what is learned in school will last for a lifetime, memorizing content knowledge and exercising routine cognitive skills was naturally at the centre of education. Today, the world no longer rewards people just for what they know – Google knows everything – but for what they can do with what they know. The more knowledge that technology allows people to search and access, the more important becomes deep understanding and the capacity to navigate ambiguity and make sense out of content. Understanding involves knowledge and information, concepts and ideas, practical skills and intuitions. But fundamentally, it involves bringing them together, integrating and applying them. And in a structurally imbalanced world, the imperative of reconciling diverse perspectives and interests requires people to become adept in handling tensions and dilemmas; striking a balance between competing demands – equity and freedom, autonomy and community, or innovation and continuity.

Tomorrow's educational institutions need to help learners think for themselves and join others in work and citizenship. They need to help learners develop a strong sense of right and wrong and sensitivity to the claims that others make. At work, at home and in the community, people will need a deep understanding of how others think, whether as scientists or artists, and how others live, in different cultures and traditions. Whatever tasks machines may be taking over from humans at work, the demands on our capabilities to contribute meaningfully to social and civic life will always keep rising. Digital technologies do not oblige us to enter an impossible war with machines, but invite us to reconsider what it means to be 'human'.

Digital technologies also bring important changes and opportunities to the way education is delivered. Technology can enable educators and learners to access knowledge in multiple formats and in ways that can bridge time and space. Technology can support new ways of teaching that focus on learners as active participants. There are good examples of technology enhancing experiential learning by supporting project- and enquiry-based teaching methods, facilitating hands-on activities and co-operative learning, and delivering formative real-time assessments. There are also interesting examples of technology supporting learning with interactive, non-linear courseware based on state-of-the-art instructional design, sophisticated software for experimentation and simulation, social media and educational games. These are precisely the learning tools that are needed to develop 21st-century knowledge and skills. Not least, one teacher can now educate and inspire millions of learners and communicate their ideas to the whole world.

Perhaps the most distinguishing feature of technology is that it not only serves individual learners and educators, but it can build an ecosystem around learning that is predicated on collaboration. Technology can build communities of learners that make learning more social and more fun, recognising that collaborative learning enhances goal orientation, motivation, persistence and the development of effective learning strategies. Technology generates data to feed learning analytics that can foster the development and constant redesign of adaptive courseware. Similarly, technology can build communities of teachers to share and enrich teaching resources and practices, and also to collaborate on professional growth and the institutionalisation of professional practice. It can help system leaders and governments develop and share best practice around curriculum design, policy and pedagogy.

But the reality in classrooms looks quite different from these promises. Results from OECD's PISA survey showed that technology has not yet been widely adopted in

classrooms. More importantly, even where such technologies are used in the classroom, their impact on student performance seems mixed, at best: Students who use computers moderately at school tend to have somewhat better learning outcomes than students who use computers rarely. But students who use computers very frequently at school do a lot worse in most learning outcomes, even after accounting for social background and student demographics.

Why does more technology in schools not deliver on its promise to improve learning? As the TALIS survey of teachers demonstrates, teachers indicate that they often lack the necessary skills to make full use of the potential of technology in classrooms. Limited technology skills of teachers reduce the use of technology to simple communication and process management tools. Also, despite the fact that they are seen as 'digital natives', technology skills of students often are limited to basic communication and browsing capabilities. Finally, the available software, edu- and courseware is often lacking in quality and does not easily find its way into the teaching and learning process. To overcome the gap between actual and potential usage of technology in schools, governments should reorient their policies from securing availability of hardware to investments in appropriate training and professional development of teachers.

Improving the use of digital technologies in schools and better delivering on the promise of open education requires redefining the design of teaching and learning resources and processes.

Q1: What can governments do to foster the redesign of curricula that enhance the capacity of education and training systems to meet the skill needs of the digital age?

Q2: What policies are needed to ensure that investments in ICT in educational institutions lead to better outcomes?

Q3: How can governments create a level playing field for the education industry to collaborate with education systems and define shared principles?

Q4: How can the OECD help in addressing these challenges?