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## [21st Century Skills in the time of COVID-19](#)

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ICT in education

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**The authors re-examine the ‘four pillars of learning’ within the framework of 21st Century Skills (21CS) and what it means in the context of the Covid-19 pandemic. While digital skills and socio-emotional skills have become highly valuable for remote-learning and the future workforce, the notion of resilience is yet to be integrated into a 21CS framework.**

Rapidly changing trends of Industry 4.0, compounded by issues of the skills gap in the labour force and pupil disengagement from schooling, are putting pressures on education and learning systems to act on 21st Century Skills (21CS). These skills, despite varied interpretation and a lack of concise definition, have been broadly referred to and understood as, an array of essential skills that go beyond content knowledge and vocational skills to enable learners to thrive in the world today. The recent outbreak of the COVID-19 pandemic and its on-going worldwide effects are transforming the way we live, learn, and work across sectors. As schools and training institutions around the world are reopening and adjusting their operations to ensure a smooth transition for students to a ‘new normal’ school life, we must rethink what 21CS may mean when learners are confronted with unprecedented challenges and reflect on the opportunities offered by the pandemic. This may mean expanding or refocusing the definitions of 21CS and emphasizing their constituent skills or skill sets, for example in the curriculum framework.

### **A Renewed Perspective on 21CS**

Pioneering international work on learning, skills and learning outcomes was summarised in a UNESCO report, [Learning: The treasure within](#), which proposed ‘four pillars of learning’. The pillars include ‘learning to know’, ‘learning to do’, ‘learning to live together’, and ‘learning to be’, providing a framework for understanding what can be crucial for learning in the 21st century. A further element of ‘learning to learn’ has been suggested to guide policymaking, curriculum design, and teaching and learning.

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More recently, COVID-19 has drawn attention to [specific highly demanded skills in the workforce in 2020](#), including creativity, collaboration, and adaptability to solve complex and uncertain problems. Amidst the heightened threats on students' [learning outcomes](#) and [mental](#) and physical wellbeing under COVID-19 circumstances, it is important to highlight digital skills and socio-emotional skills in the existing framework while acknowledging that the two skills are very different in nature, like many other types of 21CS, and thus difficult to translate into curriculum and assessment.

## Digital skills

Digital skills are encompassed in 'learning to do', alongside diverse problem-solving abilities, communication, and innovation, for students to work effectively in teams and overcome challenges. While learners adjust to the new remote learning environment, they have to hone digital resources and use novel tools with limited support from teachers or within the household. The rapid digital uptake has also demanded [enhanced skills from workers](#) across all industries – from those working remotely or at the frontline, to teachers and school administrators. Despite efforts to [virtually upskill teachers](#) and raise students' digital competence by embedding digital skills across subject curricula, digital skills remain a top priority to ensure no groups are left behind in the [transition towards a digital economy](#).

In teaching and learning digital skills, a major challenge lies in the 'digital gap', illustrated by the fact that [almost half of the world](#) still has no access to a computer or the internet, leading to widening disparities in learning opportunities and outcomes. While [radio- and television-based learning](#) provides temporary solutions in low-resource regions, learners in vulnerable settings have to be resilient, resourceful and flexible to overcome constraints and maximize gains.

## Socio-emotional skills

Socio-emotional skills are mentioned in 'learning to be' and are associated with the abilities to learn across different domains and throughout one's life. To learn remotely, learners are urged to become highly independent and autonomous to keep progressing at home. In order to self-monitor and maintain motivation, learners' awareness and insight into their development, strengths, and weaknesses, and mental wellbeing became increasingly important.

[Socio-emotional learning](#) includes elements of self-awareness, self-management, social awareness, relationship skills, and responsible decision making. The skills can be fostered through digital activities such as [virtual internships](#) and [video games](#), which offer the agility to be used in both remote and physical classroom-based settings. However, socio-emotional skills are highly contextual (dependent not only on school but also home and society environments) and have [limited assessment tools](#), meaning that it is difficult to teach and far more challenging to measure. Although socio-emotional skills can help learners solve the problem and cope here and now, greater resilience is required to overcome the adverse effects of COVID-19 and to improve 21CS in the long run.

## Gaps in resilience building

Resilience has been understood as achieving 'good outcomes in spite of serious threats to adaptation or development' in the [literature](#) (Masten, 2001, p.228). Given the uncertainties caused by COVID-19, resilience and flexibility have become key to adapting and forward planning. For instance, children and students with resilience are able to identify and solve problems including mitigating the [psychological stress](#) of remote learning by approaching adults for support, appropriately deploying

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different skills, and be self-sufficient in their learning. Based on the [UNESCO Education Research and Foresight review](#), resilience is not clearly emphasized in the ‘four pillars of learning’ framework, although referred to as a key element in ‘the other 3 Rs’ framework.

While there is tension between whether resilience is an intrinsic character trait or a capacity that develops and interacts with the environment, it is generally accepted that resilience has context-dependent pathways. During adversities, the experience of supportive networks can enable the individual to tackle the specific challenge in the future, whilst structured socio-emotional learning may build a general emotional capacity. However, it remains unclear how a learner’s resilience may interact with other 21CS, or with surrounding parents and teachers’ resilience. In order to prevent the knock-on effects of the adults’ negative experiences, policymakers and school managers can allocate resources to [help strengthen adults’ resilience as well](#).

Further research on resilience is needed to refine and develop a comprehensive 21CS framework which can guide teaching and learning and ultimately help build [more resilient education systems](#). Beyond remote learning, resilience also empowers students to cope with and effectively manage through learning disruption in [future shocks](#) that may arise, be it a global pandemic or climate crisis.

## Concluding Remarks

Building on the understanding of 21CS and reflecting on the challenges caused by the COVID-19 pandemic, digital skills and socio-emotional skills have been flagged as highly valuable for remote learning and in the future workforce. Additionally, resilience has been identified as a mechanism to help learners flexibly adapt to current and future crises. However, the process of resilience building, the skills involved and its interactions with other factors remain unclear. While the ‘four pillars of learning’ have been effective in mapping the constituent parts of 21CS, the notion of resilience is yet to be integrated into a 21CS framework. A comprehensive understanding of 21CS is crucial in guiding approaches and priorities upon schools’ reopening.

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