



The Fourth Industrial Revolution: Schools of the future

Issue 1/2020: February 12, 2020

A newly-released report by the World Economic Forum asks how we can prepare students for the Fourth Industrial Revolution which will result in an explosion of careers in new fields including artificial intelligence, nanotechnology, biotechnology, renewable energy and quantum computing. In fact, the revolution has already begun. The top industry sector in 2020 will be technology and computational thinking, with the most in-demand job being data analyst. However, jobs in the caregiving sector will also be in high demand in 2020, particularly for medical technicians, physical therapists and workplace ergonomics specialists.

Regardless of whether we specialise in technology or caregiving fields, to thrive in 2020 and beyond we will need skills in complex problem solving, critical thinking, creativity, people management, coordination, emotional intelligence, judgement and decision making, service orientation, negotiation, and cognitive flexibility. But what does this mean for schools?

The World Economic Forum has identified eight critical characteristics in learning content and experiences which it believes will define high-quality learning in the Fourth Industrial Revolution. Students will require **global citizenship skills**, focusing on building awareness about the wider world, sustainability, and playing an active role in the global community; **innovation and creativity skills** including complex problem-solving, analytical thinking, creativity, and systems analysis; **technology skills** including programming, digital responsibility, and the use of technology; and **personal skills** in interpersonal emotional intelligence, including empathy, cooperation, negotiation, leadership and social awareness.

High quality schools will also provide students with **personalised and self-paced learning** where learning is individualised and students can work at their own pace; **accessible and inclusive learning** for all students, not just those traditionally able to access school buildings; **problem-based and collaborative learning** to mirror the more project- and problem-based collaborative learning of the future; and **lifelong and student-driven learning** so that education and upskilling can continue throughout the lifespan.

As the World Economic Forum notes, most of today's school children will work in new jobs that do not yet exist but most of which will centre on digital and social-emotional skills, rather than the repetitive, process-oriented manufacturing jobs created by the First and Second Industrial Revolutions. Not only will future workers be required to collaborate with peers living in different cities and countries, but they will also need to understand cultural nuances and, in many cases, use technology and digital tools to communicate and interact with fellow workers and customers.

Schools of the future will play a fundamental role in helping children to develop an awareness and understanding of the wider world, the interconnectedness of global issues, and what it means to be an active global citizen. This can range from incorporating sustainability into the science curriculum to community service and volunteering opportunities which foster global awareness.

Students will require new sets of skills taught in different ways. Virtual classrooms, video conferencing, online interactive maps, social media, and virtual and augmented reality will all play a key role, with the World Economic Forum stating that:

Such interactions can have a powerful effect on children's understanding of the world beyond their immediate surroundings and can help build the empathy necessary to support a more inclusive world.

High-quality schools will also focus on innovation, flexibility and adaptation to change, which have become the key drivers of growth and value creation in the Fourth Industrial Revolution. Countries that can quickly generate and adopt new ideas, processes and products have a competitive advantage, but this depends on students and workers learning skills in creativity, critical thinking, problem solving and systems analysis. Schools will also need to teach computational thinking, combining mathematics, science and digital literacies to help students understand how to develop possible solutions for complex problems (algorithms) to be solved by computers.

However, it is not just about the design and programming skills that workplaces will require, but also digital responsibility and the human-centric skills which robots and machines cannot emulate, including leadership, social influence and emotional intelligence. Developing non-cognitive skills in areas including empathy, inclusiveness and communication will enable students to collaborate and interact with people of differing backgrounds and perspectives. The development of interpersonal skills will also build young people's awareness of their duties as responsible developers and consumers of technology, and lead to improvements in managing digital risk and security.

With the Third and Fourth Industrial Revolutions introducing electronics, information technology, automation and globalisation, education systems will need to move from passive forms of learning based on direct instruction and memorisation to interactive methods that promote critical and individual thinking. From “playful learning” — which allows students to tap into their natural curiosity and learn by trial and error — to coding games which help students express themselves creatively using design and engineering, schools of the future will replace “top down” instruction with models where teachers are facilitators and coaches rather than lecturers.

The World Economic Forum's “Education 4.0” framework recognises that there is “an urgent need to update education systems to equip children with the skills to navigate the future of work and the future of societies”. Girls' schools, with their lack of gender stereotyping and focus on pastoral care and community service, are at the forefront of preparing students for the Fourth Industrial Revolution. Research shows that girls attending single-sex schools are more likely to take STEM subjects in their senior years and to study STEM fields at university — ranging from computing, engineering and physics to the caregiving medical and health sciences. In addition, the emphasis on community service, volunteering and interpersonal skills in girls' schools provides students with an outstanding launch pad for careers in our increasingly connected yet diverse global community. As the World Economic Forum concludes, it is the development of both technological *and* social-emotional characteristics that will equip students with the skills to create a more inclusive, cohesive and productive world.

References

Desjardins, J. (2018, July 2). 10 skills you'll need to survive the rise of automation. World Economic Forum. Retrieved from: <https://www.weforum.org/agenda/2018/07/the-skills-needed-to-survive-the-robot-invasion-of-the-workplace>

World Economic Forum. (2020, January). *Schools of the future: Defining new models of education for the Fourth Industrial Revolution*. Geneva: World Economic Form. Retrieved from: http://www3.weforum.org/docs/WEF_Schools_of_the_Future_Report_2019.pdf

AN INTRODUCTION TO GIRLS' SCHOOLS



Online on-demand course

The first program of its kind designed specifically for educators in Australian and New Zealand girls' schools