

One year ago, a milestone of sorts was reached in the world of chess. Artificial intelligence or AI beating the world's grand masters is old news but Google's AlphaZero program is very big news and if you haven't considered the future consequences, you should – so hear me out.

In 2016 an algorithm called Stockfish was the world's chess champion. It had access to centuries of accumulated human experience in chess, as well as decades of computer experience. In contrast, AlphaZero's human creators had not taught it any chess strategies. It was merely shown the rules, without any other information, not even standard openings. Rather, AlphaZero used the latest machine-learning principles to self-learn chess by playing against itself.

Big deal you say! What has this got to do with me and my family's future? How long do you think it took AlphaZero to teach itself chess from scratch and prepare for the match against Stockfish? AlphaZero went from utter ignorance to creative mastery without the help of any human guidance in four hours. Out of 100 matches it won twenty-eight and tied seventy-two - not losing once? To put that in some sort of perspective a computer program mastered one of western civilization's crowning glories of human intelligence in a half day at the office!

We are in the early stages of an unprecedented revolution, with AI poised to hack humans and outperform them in what are normally considered uniquely human skills. This

revolution is combining information technology and biotechnology and is changing every aspect of our lives.

Babies born today will be thirtysomething in 2050. What should we teach them now that will help them survive and flourish in the world of 2050? What kind of skills will they need in order to get a job, understand what is happening around them, and navigate the maze of life?

Education spent the 20th Century teaching the 3 R's - reading, writing and arithmetic but maybe now it is time to change and teach the 4 C's - critical thinking, creativity, communication, and collaboration. Most important of all, our youngsters will need to deal with change, learn new things, and preserve their mental balance in unfamiliar situations on the way to the world of 2050.

Unfortunately, teaching kids to embrace the unknown while maintaining their mental balance is far more difficult than teaching them an equation in math or the causes of the First World War. You cannot learn resilience by reading a book or listening to a lecture. Teachers themselves usually lack the mental flexibility that the twenty-first century demands, since they themselves are the product of the old educational system.

Our children and grandchildren will not merely need to invent new ideas and products but above all to reinvent themselves again and again and again.