





# New Landscape

## Adapting to the Fourth Industrial Revolution

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In January 2020, I was kicking around an idea for this article that had the working concept of “Education in the Fourth Industrial Revolution.” In February, the article gained some shape when I spoke on the topic.

By the time the deadline was becoming real enough that I put words on a computer screen, Covid-19 had shuttered schools in Connecticut, closed restaurants and prompted a recommendation for public gatherings to be limited to 10 people. Within this reality, I looked back at my notes about the context for the Fourth Industrial Revolution. What would define it and give it shape, and what would be its attributes?

I had no intention of writing this as a first-person essay, and I hope you will pardon me for doing so, but things felt very real and personal in March when I looked at what would define the Fourth Industrial Revolution.

As background, we commonly recognize the First Industrial Revolution as one of harnessing steam power for mechanized production and the Second as utilizing electricity for mass production. The Third was often thought of as an information revolution using digital power. The Fourth Industrial Revolution is then one of a fusion of technologies at an incredible velocity.

Here was a working list of the qualities for the Fourth Industrial Revolution I had gleaned from futurists, economists and educators: Smart technology, artificial intelligence, big data, augmented reality, blockchain, internet of things, automation, mobile

supercomputing, intelligent robots, self-driving cars, neuro-technological brain enhancements, genetic editing, quantum computing, 3-D printing and more.

But authors also said the Fourth Industrial Revolution would be shaped by rapid population growth, climate change, growing inequity and pandemic illness. That last one certainly resonated.

The question for us as educators is: What does it mean for students who will be part of this epoch, this definable moment of time? Our collective experience in the spring of 2020, and the presence of a pandemic, give us some fairly tangible insights.

History suggests that with each industrial revolution, new technologies or innovations came on line, and those new technologies or innovations caused disruption to the world economy, to the role of workers, and to the education of people who became those workers. In fact, at times education has been the industrial process that produces workers for the needs of industry.

It may be trite to say now, but the World Economic Forum in 2016 stated that 65 percent of students entering primary school will work in a job that doesn't exist yet. If that is true, and it likely is, then education has to mean so much more than it has meant previously. The value is not in a teacher who has memorized information and processes, teaches those bits of information and processes, and successful students who can repeat those back at a rate of 92% accuracy on a test.

Munozovepi Gwata, founder of Kukura Capital,

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wrote about rethinking three things in the Fourth Industrial Revolution, including education. In a piece published by the World Economic Forum on August 5, 2019, Gwata wrote: “Traditionally education has been monodisciplinary, and the further a person went along in their studies, the more focused and narrowed those studies became.”

I think most of us have experienced this, and yet Gwata wrote that learning now needs to be more “interdisciplinary.” I would add that includes stitching together social emotional

skills with higher cognitive skills and the development of technical expertise. Gwata also said that people need “in-depth knowledge” as well as a broad skill set

so they have the ability to learn in fields outside of their specialization.

This duality of both in-depth knowledge and the ability to learn on one’s own will be essential. No one will “leave school” with a complete knowledge set that will serve them throughout their careers. Further, with the need for interdisciplinary learning, independent schools and students have already “de-silo-ed” the traditional subject-center curriculum and have begun to infuse it with both social emotion and technological understanding. In my tours of independent schools, I believe this is happening.

In the writings of the Fourth Industrial Revolution, this quote from American writer and futurist Alvin Toffler is often referenced: “The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn.”

I believe this means that “education” will have to promote skills and dispositions that go beyond content to providing an opportunity to innovate, think critically, solve abstract problems and integrate technology. Education will have to prepare students for viruses, among other things, that have not previously been discovered, that act differently, and

that disrupt society.

Bernard Marr in his article “8 Things Every School Must Do to Prepare for the 4th Industrial Revolution” wrote that the challenge was, “how to prepare the next generation to take advantage of the plethora of opportunities and overcome the challenges by ever-increasing technological change.”

Marr wrote that we would have to redefine the purpose of education. In all industrial revolutions, education has responded to the needs of society, and in this revolution, education would not need to prepare students to “do something” but rather prepare students to “do anything.”

Further, today’s students are beginning to learn—anywhere and everywhere. This goes beyond the early, experimental days of “distance learning” where we simply digitized 19th and 20th century educational practices. Early programs standardized content so it could be delivered to lots of people, cheaply. Now we will have to call upon distance learning to aid students and teachers working together to help both be designers of education and thus design the education for an individual student. Independent schools were well-prepared for this new landscape, and already

engaged in it, and leapt into the opportunity Covid-19 mandated.

Distance learning, or the more appropriately called “Continuity of Learning,” meaning it moves easily in and out of classrooms, on and off campuses, must help students develop the essential future skills necessary to use technology (e.g., blockchain) to address world problems (e.g., pandemic response) such as creativity, empathy, ingenuity, entrepreneurship and collaboration. And it needs to provide students the opportunity to use them across continents and time zones and to provide a dynamic and responsive platform for meaningful interaction.

This also means helping students see their investment in themselves and student peers is not just to help a tech company boost its IPO, or develop better algorithms to sell products. In our post-Covid-19 days we want students to invest their skills and talents, their time and their passion into helping all of us succeed in a time that we cannot yet imagine, but perhaps they can.

The Fourth Industrial Revolution marks a time of rapid innovation that changes the business we do and how we do it in schools. It also marks a time of

education revolution with an opportunity to rethink how and what we teach and learn, the role of teacher and student, and the future of education design and delivery.

It is often said that machines will “take over our jobs” in the Fourth Industrial Revolution. I think it's safe to say that more jobs that exist currently can and will be performed by machines. It is difficult to imagine, simply from a lack of understanding what the future holds, what new jobs will emerge. Again, we may not have imagined those jobs would exist.

There are, of course, things that humans do and have and experience that cannot be replicated: creativity, physical and emotional agility, entrepreneurship, a passion for discovery, mindful social interaction, collaboration. With the recognition that teaching will be less about delivery and more about design, the role of teachers changes as well.

In a 2018 policy brief from the Organisation for Economic Co-operation and Development (OECD), the authors wrote that the textbook and measurement system that currently drives educational delivery can itself be replaced by a computer. I think that is what we witnessed in the early days of distance learning.

But the OECD wrote that what is unique about human teachers is “the personal and social activity that caters to unique needs, talents, interests, passions and can change.”

While we might well focus on the changing educational landscape for students, the success lies in the work of our teachers and their design capabilities, their innovation and their collaboration. From first-hand experience in our independent schools, I believe teachers are beyond ready for this work, and again, amid Covid-19, they demonstrated, as did our students, the ability to readily adapt and innovate as school leaders gave them the necessary support and tools as well as the independence.

Covid-19 gave schools and communities motivation to press forward and a glimpse of what could be, and I believe, what needs to be. I do not think we are waiting for another precipitating factor to inspire us, as the future in the Fourth, or Fifth, Industrial Revolution is now. I am confident our independent schools are ready for whatever the future may bring, and they have demonstrated their agility and commitment to the evolving role of teachers, learners and leaders. ■

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