



As the world's economy continues to evolve, in large part thanks to STEM (science, technology, engineering and mathematics) fields, our education system must in turn make a transformation of its own.

Our nationwide education system was originally designed to create an organized workforce, turning students into obedient employees who would fill the jobs of the Industrial Revolution.

As Northwestern University economist Joel Mokyr explained in a paper detailing the development of this approach,

“Workers who had always spent their working days in a domestic setting, had to be taught to follow orders, to respect the space and property rights of others, be punctual, docile, and sober. The early industrial capitalists spent a great deal of effort and time in the social conditioning of their labor force, especially in Sunday schools which were designed to inculcate middle class values and attitudes, so as to make the workers more susceptible to the incentives that the factory needed.”<sup>1</sup>

It should come as no surprise then, that some of the biggest champions of a universal education system in the late 1800s were in fact industrialists and factory owners who were in desperate need of a responsible and compliant workforce.<sup>2</sup>

## How Can We Help Students Thrive in a Changing Economy?

While today's economy is experiencing a paradigm shift similar to the Industrial Revolution, the skills needed to thrive within it are markedly different.

This remains a core message of the biannual “Future of Jobs Report” published by the World Economic Forum (WEF), an independent international organization that “engages business, political, academic and other leaders of society to shape global, regional and industry agendas.”<sup>3</sup>

As Saadia Zahidi, managing director of WEF, stated in the preface to the 2023 edition of this report, today's labor market is particularly difficult to navigate, led by the emergence of generative artificial intelligence and made even more complex by geopolitical disruptions and social and environmental pressures.<sup>4</sup> To provide the most accurate picture of what the future might bring, WEF compiled data from 803 companies

around the world that collectively employ more than 11.3 million workers across 27 different industries, making it the most comprehensive Future of Jobs report to date.<sup>5</sup>

Though predicting the future is an imperfect exercise, this report represents some of the most respected insights into our ever-evolving economy. A few key highlights from the report are as follows:

### Expect Technology to Continue Driving Business Transformation

Respondents believe technology adoption will remain an essential driver of business transformation over the course of the next five years. To that end, over 85% of the organizations surveyed “identify increased adoption of new and frontier technologies and broadening digital access as the trends most likely to drive transformation in their organization.”<sup>6</sup>

Among these “frontier technologies” is the mainstream emergence of artificial intelligence (AI). According to one University of Oxford study, AI could put 47% of U.S. jobs at risk<sup>7</sup>, including many white-collar jobs that have so far proved to be more resistant to technology-related job loss.

In an article published in *The Atlantic*, “How ChatGPT Will Destabilize White-Collar Work,” Annie Lowrey spoke with Massachusetts Institute of Technology professor David Autor, who explains how AI's ability to improvise and improve over time makes it categorically different from previous disruptive categories.

“Before, progress was linear and predictable,” Autor explained. “It followed the procedure; it didn't learn and it didn't improvise.” Now, however, ChatGPT and other generative AI programs like it do both.<sup>8</sup>

Lowrey notes that it likely will take some time before AI is integrated fully into a business' day-to-day operations. For example, while groundbreaking technologies including electric lights, the circuit and rudimentary electric motors were developed in the early 1800s, it took another 100 years before all of these contributed to a rise in America's gross domestic product. Similarly, though computers were commercially available in the early 1950s, it wasn't until the 1990s that worker productivity began to rise nationwide.<sup>9</sup>

1. McDermott, J. (2001). The Rise and Fall of the Factory System: Technology, Firms and Households Since the Industrial Revolution: A Comment. *Carnegie-Rochester Conference Series on Public Policy*, 55(1), 47-54. [https://doi.org/10.1016/S0167-2231\(01\)80002-6](https://doi.org/10.1016/S0167-2231(01)80002-6)

2. Galor, O., & Moav, O. (2005, August 22). Das Human-Kapital: A Theory of the Demise of the Class Structure. *Paris School of Economics*. <http://piketty.pse.ens.fr/files/GalorMoavRES2006.pdf>

3. The World Economic Forum. Georgetown University. (2018, December 6). <https://president.georgetown.edu/wef/>

4. Zahidi, S. (2023, April 30). The Future of Jobs Report 2023 - Preface. World Economic Forum.

<https://www.weforum.org/reports/the-future-of-jobs-report-2023/in-full>

5. The Future of Jobs Report 2023. World Economic Forum. (n.d.).

<https://www.weforum.org/reports/the-future-of-jobs-report-2023/digest#report-nav>

6. Ibid.,

7. Lowrey, A. (2023, February 14). How ChatGPT Will Destabilize White-Collar Work. *The Atlantic*.

<https://www.theatlantic.com/ideas/archive/2023/01/chatgpt-ai-economy-automation-jobs/672767/>

8. Ibid.,

9. Ibid.,

One could argue, however, that because we already have the technological infrastructure in place to use AI, its widespread adoption could occur faster than previous technologies. In fact, according to one study, all industries already are using AI to some degree. The most popular use case for product creation is taking place in the financial services industry, where over 30% of respondents in that industry reporting using AI.<sup>10</sup>

Additionally, according to the 2023 Future of Jobs report, many of the Top 10 fastest growing jobs involve aspects that stand to benefit from AI integration.

## TOP 10 FASTEST GROWING JOBS

1.	AI and Machine Learning Specialties
2.	Sustainability Specialties
3.	Business Intelligence Analysts
4.	Information Security Analysts
5.	Fintech Engineers
6.	Data Analysts and Scientists
7.	Robotic Engineers
8.	Big Data Specialists
9.	Agricultural Equipment Operators
10.	Digital Transformation Specialists

### Promote the Importance of Analytical Thinking

Respondents listed analytical thinking as the most important skill for the future.<sup>12</sup> This refers to the ability to take a complex issue or problem and break it into smaller parts, often in order to solve it. By analyzing smaller pieces of information, those proficient in this skill set can remove unnecessary information to solve the problem more easily.

This ability, which was also listed as the most important skill in the 2020 Future of Jobs report, is especially crucial considering the sheer amount of information we produce on a daily basis – 328.77 terabytes according to one report.<sup>13</sup> Additionally, the amount of data generated has grown year over year. In 2023, we are on pace to produce a staggering 60 times the amount of data produced in 2010 at 120 zettabytes.

In his book “The Organized Mind: Thinking Straight in the Age of Information Overload,” Daniel J. Levitin explained that our brains can process only so much before they become overloaded. With an estimated bandwidth of around 120 bits per second, it’s no wonder many of us feel overwhelmed.<sup>14</sup>

Levitin said that while we have come a long way in terms of our hunter-gatherer ancestors, our brains simply are not equipped to handle the unprecedented amount of information we’re presented with each day. To help readers understand this challenge, he described our maximum information bandwidth in terms of having a conversation.

“With a processing limit of 120 bits per second, this means you can barely understand two people talking to you at the same time. Under most circumstances, you won’t be able to understand three people talking at the same time. We’re surrounded on this planet by billions of other humans, but we can understand only two at a time at the most! It’s no wonder that the world is filled with so much misunderstanding.”<sup>15</sup>

Levitin went on to state that those responsible for running companies or who are in positions of power employ other people who allow them to narrow the scope of their attention, acting as “extensions of their own brains, replicating and refining the functions of the prefrontal cortex’s attentional filter.”<sup>16</sup>

As the amount of daily information continues to grow, employees of the future will need to be able to sort through this information efficiently and in ways that will benefit their employers.

It stands to reason that those proficient in analytical thinking will continue to thrive.

### Develop Cognitive Skills to Mitigate Disruption

Within the next five years, surveyed employers estimate that 44% of workers’ skills will be disrupted, meaning that employees will need to learn additional skills to account for changes in their job responsibilities.<sup>17</sup>

While the dynamic of jobs changing over time is unsurprising, it does represent a stark difference compared to most jobs available during the Industrial Revolution – many of which were factory positions requiring workers to perform the same few actions ad infinitum to create products at scale.<sup>18</sup>

This is perhaps why, when it comes to the skills that employers will value over the next five years, cognitive skills and skills that support continued learning and adaptation were ranked highest by businesses in the report.

10. Thormundsson, B. (2023, May 15). Artificial Intelligence (AI) Adoption Worldwide 2022, by Industry and Function. Statista. <https://www.statista.com/statistics/1112982/ai-adoption-worldwide-industry-function/>

11. The Future of Jobs Report 2023 - Infographics . World Economic Forum. (n.d.-a). <https://www.weforum.org/reports/the-future-of-jobs-report-2023/infographics-2128e451e0#report-nav>

12. Ibid.,

13. Duarte, F. (2023, April 3). Amount of Data Created Daily (2023). Exploding Topics. <https://explodingtopics.com/blog/data-generated-per-day>

14. Levitin, D. (2015, September 23). Why It’s So Hard to Pay Attention, Explained by Science. Fast Company. <https://www.fastcompany.com/3051417/why-its-so-hard-to-pay-attention-explained-by-science>

15. Ibid.,

16. Ibid.,

17. Di Battista, A., Grayling, S., Hasselaar, E., Leopold, T., Li, R., Rayner, M., & Zahidi, S. (n.d.). The Future of Jobs Report 2023. World Economic Forum. <https://www.weforum.org/reports/the-future-of-jobs-report-2023/in-full>

18. Industrialization, Labor and Life. National Geographic. (n.d.). <https://education.nationalgeographic.org/resource/industrialization-labor-and-life/>

# BUSINESSES' TOP 10 SKILL PRIORITIES FOR 2027



1. Analytical Thinking



2. Creative Thinking



3. AI and Big Data



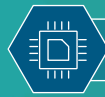
4. Leadership and Social Influence



5. Resilience, Flexibility and Agility



6. Curiosity and Lifelong Learning



7. Technology Literacy



8. Design and User Experience



9. Motivation and Self-Awareness



10. Empathy and Active Listening

TYPE OF SKILL



Cognitive Skills



Technology Skills



Self-Efficacy



Working With Others

19. The Future of Jobs Report 2023 - Infographics. World Economic Forum. (n.d.-a). <https://www.weforum.org/reports/the-future-of-jobs-report-2023/infographics-2128e451e0#report-nav>

However, the same disruptive factors that require adaptation often can cause us to default to what has worked in the past, or what is comfortable. This is known as the “adaptability paradox.” A report published by McKinsey & Co. advised that to avoid this, leaders actively should promote adaptability as an essential skill throughout their organization.<sup>20</sup>

As the researchers explained, “...people often don’t put in the hard work of learning and mastering something new unless there is a compelling reason to do so. When that motivation arrives, it’s often accompanied by pressure—to avert failure, for instance, or to attain a high-stakes reward or incentive.”<sup>21</sup>

To account for this, the researchers argue that “leaders must work on transforming their relationship with change and uncertainty by building adaptability as an evergreen skill that benefits themselves and their organizations at a deeper level.”<sup>22</sup>

## Adapting to Meet the Needs of the Future

It’s clear that to best prepare today’s students for the jobs of tomorrow, we must not be afraid to rethink traditional educational practices in favor of cultivating skill sets that embrace change and adaptability.

Now is the time to challenge the status quo. Thanks to the \$190.8 billion in Elementary and Secondary School Emergency Relief (ESSER) funding the federal government has provided to schools across the country to mitigate the negative social and academic impacts of COVID-19, district administrators have a unique opportunity to do just that.

To provide guidance and support in these efforts, the U.S. Department of Education has partnered with several organizations including the Afterschool Alliance, ASSA, the School Superintendents Association, National League of Cities, National Summer Learning Association and the National Comprehensive Center to promote using ESSER resources on effective, high-quality out-of-school-time (OST) learning opportunities.<sup>23</sup>

With research conducted by the RAND Corp.<sup>24</sup> and Centers for Disease Control and Prevention<sup>25</sup> speaking to the effectiveness of high-quality OST programming, it’s no wonder that school districts across the country continue to adopt this approach to spending their ESSER funds.

One style of OST programming, one that embraces invention education, a pedagogy that invites students to find solutions to real-world problems by designing and then building invention prototypes, increasingly has gained in popularity because it helps students develop the types of skills needed for the jobs of tomorrow.

As expressed in the 2023 Future of Jobs report, businesses are looking for employees who can thrive in uncertainty and solve problems that lack predetermined solutions. With a historical amount of funding available, now represents the ideal time for educators to provide this type of effective and engaging style of learning for their students.

20. Brassey, J., Zolley, S., Mugayar-Baldocchi, M., Lavoie, J., Kothari, A., & De Smet, A. (2021, August 2). Future Proof: Solving the “Adaptability Paradox” for the Long Term. McKinsey & Co. <https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/future-proof-solving-the-adaptability-paradox-for-the-long-term>

21. Ibid.,  
22. Ibid.,

23. A Bold Call to Action. Engage Every Student. (2023, July 13). <https://engageeverystudent.org/>

24. McCombs, J. S., & Whitaker, A. A. (2018, November 19). High-Quality Out-of-School-Time Programs Are Worthy of Investment. RAND Corp. <https://www.rand.org/blog/2018/11/high-quality-out-of-school-time-programs-are-worthy.html#:~:text=In%20a%20recent%20analysis%20of%20supervision%20and%20safety%20of%20youth>

25. Centers for Disease Control and Prevention. (2022, August 16). Out of School Time. Centers for Disease Control and Prevention. <https://www.cdc.gov/healthyschools/ost.htm>