Human+ Skills

For The Future of Work

ROBOT-READY

Strada Institute FOR THE FUTURE OF WORK + Emsi

Executive Summary

The nature of work is changing rapidly. Technological changes—in particular advancements in machine learning and deep learning—have sparked alarmist predictions of massive job obsolescence. Even conservative estimates indicate that significant proportions of the work humans do today will be automated in the coming decade. At the same time, technological advancements will continue to give rise to entirely new types of jobs. Futurists estimate that up to 85 percent of the jobs that will exist in 2030 haven't been invented yet.[1]

These sorts of projections tend to paralyze audiences, but it is worth noting that machines and humans already collaborate and will continue to coordinate even more closely in the future. From chatbots that lead into customer service calls to predictive analytics for students married to human coaching and advising, the world is already evolving into a robo-human future.

Meanwhile, policymakers, educators, and employers are vigorously debating how best to prepare Americans for the future of work. There are those who believe that the "hard" skills of science, technology, engineering, and math (STEM) are most critical to the future, and those who believe the uniquely "human" skills of the liberal arts[2] are the ones that will endure in the face of automation. We say, "both, and": It is the integration of human and technical skills that will provide the best preparation for the future of work.

Indeed, most of the current literature on the future of work underscores this growing need for human skills such as flexibility, mental agility, ethics, resilience, systems thinking, communication, and critical thinking. Northeastern University President Joseph Aoun has devoted an entire book to the concept of "humanics": "a new model of learning that enables learners to understand the highly technological world around them and that simultaneously allows them to transcend it by nurturing the mental and intellectual qualities that are unique to humans—namely their capacity for creativity and mental flexibility."[3]

The skills needed now and for the future combine the technical with the human: programming + ethics, artificial intelligence (AI) + emotional intelligence, or logic + values or judgment. While employers are scrambling for this new talent, postsecondary education is falling behind. In spite of all the trends and forces reshaping the world of work, few colleges or universities are redesigning their educational models to keep pace with the future. As Stephanie Kasriel, co-chair of the World Economic Forum's (WEF) Global Future Council on Education, Gender and Work laments: "And while some leading universities now offer courses on the gig economy or new technologies like the blockchain, it's far from being the norm. The vast majority of high schools and colleges aren't adapting quickly enough to the change, leaving their students increasingly unprepared for the job market."[4] Educators are out of step with the changing needs of the economy, which are being driven by advanced technology, such as AI, robotics, and data analytics.

But the future of work is now, and standing still is not an option. In order to shape the work of the future, organizations have a tremendous opportunity to redesign and cultivate this mindset of "both, and" earlier on in the learning process. It makes little sense to continue to pit a college education against workforce training, as if they are somehow mutually exclusive. The debates that separate a broad-based college experience from the professionalization of workforce training are tired. The American Academy of Arts and Sciences put it best in its report on the future of undergraduate education: "Today, the long-standing debate over the value of a liberal arts education versus a more applied postsecondary program presents a false choice." The most valuable workers now and in the future will be those who can combine technical knowledge with human skills.

So where exactly will this learning occur? Over the last few decades, students have moved in large numbers to career-oriented majors, such as business, health, and engineering—clearly hearing that the surest path to a meaningful, financially stable career is also the most straightforward one. Those pursuing liberal arts degrees, on the other hand, are on the decline. Policymakers have been particularly down on the outcomes of liberal arts, questioning the value of these majors as relevant to the challenges ahead.

In general, it has been difficult to understand the outcomes of liberal arts graduates. The liberal arts seem to be particularly subject to bold claims about their relevance and value—often with little data underpinning them. Alexander McCormick, director of the National Survey of Student Engagement (NSSE), the longest-running survey of undergraduates that examines the educational experience, explains: "When you look at college mission statements, they're loaded with grand pronouncements about the skills and habits of mind they're going to inspire in their students," yet "even as they teach their students to back up their claims with evidence, they don't have much evidence to back up those claims."[5]

It's not that institutions of higher education have not been trying to document learning outcomes. Many have. There have been major efforts, such as Association of American Colleges & Universities' Liberal Education and America's Promise (LEAP)[6] and Valid Assessment of Learning in Undergraduate Education (VALUE),[7] as well as Lumina's Degree Qualifications Profile (DQP).[8] The challenge has been, however, in translating these learning outcomes for a much wider audience beyond academia. As a result, depending on who you ask, these graduates are either headed for a lifetime as a barista or are capable of doing absolutely anything. Most audiences probably don't know, for instance, that in recent years, the growth of liberal arts graduates entering the tech workforce has actually outstripped growth in computer science and engineering graduates doing so.[9] The data in this report, however, is not intended to defend liberal arts programs.

Instead, we wish to use the liberal arts to bring clarity to the popular concept of a skills gap. We argue that the time has come for a modern-day Rosetta Stone to translate and decode the intersection between postsecondary education and the workforce. The translation of skills into the marketplace must be made clearer in order to connect three critical audiences: people looking for good work, employers looking for good people, and educators looking to build good programs and engage students.

We can begin this work by illuminating the lesser-known connections between liberal arts graduates and the companies that hire them. These pathways provide an excellent case example of the transformative possibilities ahead to prepare all learners better to combine their human skills and technical skills.

At the same time, these programs will have to embrace the "both, and," articulating better and embedding in majors the skills that liberal arts graduates will need to thrive in the future. Liberal arts graduates are too often left to stumble upon the valuable mixture of layered skills. It's one of the reasons why, today, a liberal arts degree is under attack and fewer learners are pursuing liberal arts degrees. They lack visibility and clarity about the journey and the outcomes. This report provides an initial mapping of the landscape upon which stakeholders across **all** disciplines can build.

Taken together, our findings reveal opportunities for learners, learning providers, employers, entrepreneurs, and policymakers to unpack human skills across careers and industries and radically transform our education-to-employment pathways.

The findings illustrate areas for improvement when it comes to cultivating learners' abilities to integrate human and technical skills. Liberal arts programs, in particular, cannot ignore signals in the labor market. These provide the key to clarifying exactly how human skills transfer and develop into granular skills that are in demand.

Key Findings

+ **Human skills, like leadership, communication, and problem-solving, are among the most in-demand skills in the labor market.**
+ **Human skills are applied differently across career fields and must be effectively translated in terms of their relevance and application within a given field.**
+ **Liberal arts majors can break down barriers to entry through better identification and understanding of their human skills and the addition of targeted technical skills.** There is a discernible labor market demand for agile and resilient thinkers who have a handle on digital literacies—basic technical skills like data analysis and digital fluency.
+ **Liberal arts graduates' marketplace outcomes are positive but less predictable than their STEM peers.**

1. Institute for the Future, **The Next Era of Human | Machine Partnerships: Emerging Technologies' Impact on Society and Work in 2030,** 2017.
2. In this paper, we use the terms "human skills" and "liberal arts" extensively. We define these terms in detail in the full report.
3. Aoun, Joseph, **Robot-Proof,** 2018.
4. Kasriel, Stephanie, "5 Things I'm Telling my Kids to Prepare Them for the Future," 2018.
5. Marcus, Jon, "Colleges face pressure to answer a basic question: What are students learning?" 2018.
6. Association of American Colleges & Universities, **The LEAP Challenge,** 2018.
7. Association of American Colleges & Universities, Value, 2018.
8. Adelman et al., **The Degree Qualifications Profile,** 2014.
9. Ma, Alice, "You Don't Need to Know How to Code to Make it in Silicon Valley," 2015.

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