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# Charting the Skills for the Future: Perspectives from Employers and Higher Education Institutions

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## Abstract

Automation is rapidly changing our workforce and the skills requirements of 21st-century workers. As more job tasks are going to be performed by machines, it is the ones that involve human judgment and interaction that are less likely to be replaced. It is critical for higher education institutions to align with employers in developing, signaling, and documenting skills needed for the modern workforce. This article provides a review on the current skills trend in the workforce, presents findings collected from in-depth interviews of representatives from 41 higher education institutions and 28 employers, and discusses the implications for academic to career transitions.

## Keywords

Automation;  
Upskilling;  
Signaling;  
Training;  
Development

## 1 Introduction

Automation is rapidly changing our work and lives, and with this change we are now seeing new trends emerge in workforce preparation and skills training, development, and demonstration. By 2030, between 75 and 375 million workers will need to switch their occupational categories worldwide, or no less than 3-14% of the global workforce (Manyika et al., 2017). Jobs that are repetitive, physical or labor-intensive, and with low cognitive demands are likely to be replaced with automated processes requiring little or no human involvement. On the other hand, jobs that require higher-order thinking, complex social and emotional skills, human interaction, and judgment are less likely to be replaced. Some professions are going to see a mix of automation and traditional workers. For example, in future medical settings machines might be able to provide a diagnosis and health professionals will provide the emotional support and place a diagnosis into context (Kosslyn, 2019). The outbreak of COVID-19 further complicates future job prospects in that remote working has become a new norm for many job categories, the insurgence in e-commerce which creates new opportunities in transportation, online shopping management, and local warehousing, and rapid deployment of AI and automation by corporations, not only for the vast majority of prospective college graduates who will soon be

on the job market, but also for the skyrocketing number of unemployed workers, as well as millions of incumbent workers who feel the pressure to upskill and reskill in order to stay ahead of the current of automation (Lund et al., 2021).

Some industrial changes might be temporary as a result of the pandemic, while others might be more permanent (e.g., remote working, positions outsourcing to other countries). The evolving industrial needs would require new systems that enable education and business to effectively collaborate and jointly promote skills needed for today's workforce. These changes give rise to a critical need for students, educational institutions, and employers to have a clear understanding of the skills required by the workforce and an effective path to help prepare such skills. Currently, due to the skills gap millions of open positions go unfilled while at the same time tens of millions of workers have been sidelined by the pandemic and are out of jobs. Addressing the gaps would help bring about significant financial and societal benefits (Song, 2021).

This article discusses the skills to be promoted for the 21st-century workforce, opportunities to align training offered by educational providers with the expectations of employers, and what students can do to develop the necessary skills. To offer additional insights about these critical skills and their development, we conducted in-depth

interviews with representatives from both high-growth industries and higher education institutions of varied types and selectivity.

In the following sections, we start by reviewing the literature regarding the current understandings of skills required from the perspectives of employers and higher education institutions in the literature. We then discuss the additional insights gained from interviews with 75 representatives from 28 companies in 7 industries and 131 representatives from 41 higher education institutions, including two- and four-year, and public and private institutions. In our interviews, we set out to address the following key questions:

1. What are the critical skills valued by higher education institutions, and what are the pain points associated with the development and demonstration of these skills?
2. What are the critical skills valued by employers, and what are the pain points associated with recruiting and onboarding new employees with these skills, as well as developing these skills for current employees?

### 1.1 Skills Trends: Perspectives from Employers and Higher Education Institutions

Employers have long recognized the importance of skills and there has been an increasing trend to focus on non-technical and transferable skills. In IBM's *The Enterprise Guide to Closing the Skills Gap* (LaPrade et al., 2019), a comparison between the survey results of employers in 2016 and 2018 revealed a significant shift in focus from technical skills (e.g., math, engineering, science) to behavioral skills (e.g., teamwork, communication). Among the top five answers to the question of which skills matter most, four are behavioral based: willingness to be flexible, agile, and adaptable to change, time management skills and ability to prioritize, ability to work effectively in team environment, and ability to communicate effectively in a business context.

Employers' focus on skills, rather than traditional degrees, is echoed by an Executive Order in June 2020 for federal agencies to practice skills- and competency-based hiring with government employees (Executive Office of the President, 2020). The Executive Order specifies that as the modern workforce evolves, the traditional degree-based hiring no longer aligns with the workforce requirement and excludes qualified candidates who possess the necessary

skills but do not have a college degree. The purpose is to break down the barriers between job opportunities and qualified candidates, particularly for those from low-income and underserved backgrounds. Around the same time, Google has also launched what they call Career Certificates for positions such as UX designers, data analysts, and project managers that cost only \$49/month and take an average of six months to obtain. Kent Walker, a Senior Vice President at Google, commented that college degrees are out of reach for many individuals and Google's plan is to help America recover and rebuild by training workers in an efficient and affordable way. He also mentioned that in Google's own hiring, these career certificates will be treated as the equivalent of a four-year degree for relevant positions (Google, 2020).

Still, higher education faculty and administrators may not have a good sense of what skills employers require or how those skills should be signaled. Curricula and programs also need to be redesigned and realigned to reflect the new requirements introduced by the modern workforce. Part of the core mission of post-secondary institutions is to help students enter the workplace, yet a recent survey showed that administrators and faculty members need to have a better understanding of the skills expected by employers. In an Association of Public Land-Grant Universities' survey about the non-technical employability skills of 2,743 employers and 1,371 faculty members, employers ranked "understand role in the workplace and have realistic career expectations" as the skill that has the largest "importance-preparedness gap", while the same skill was ranked ninth in importance by Faculty participants (Crawford & Fink, 2020).

Employers have also noted persistent gaps between skills needed for effective performance in the workforce and college graduates' preparedness. The National Association of Colleges and Employers (2018) surveyed 172 employers and identified substantial gaps in need vs proficiency on career readiness competencies. For example, 100% of the respondents believe that critical thinking and problem-solving skills are needed, but only 56.8% of them believe college graduates are adequately proficient in these skills. Similarly, 94.5% respondents believe that professionalism and work ethic are important but only 44.2% of them believe students are equipped with these skills.

Given the fast-changing workforce requirements, there is a need for additional insights on what employers and institutions value in terms of skills, particularly in

high-growth areas. For individual learners, even before the pandemic, 27% of adults in America reported having a non-degree credential, such as a license or certificate. The most popular fields from which credentials are obtained are in health care and business management and operations (Cronen et al., 2018). During the pandemic, laid off workers have sought quick ways to upskill and reskill and get back to the workforce. In a survey by Strada Education Network, 39% of the respondents said that they would prefer skills training, 24% prefer non-degree credential, 15% prefer graduate degree, 12% prefer associate degree, and 11% prefer bachelor's degree (June, 2021). Shorter, quicker, and less expensive non-degree programs and credentials are clearly preferred over longer and more expensive degree programs.

## 2 Method

### 2.1 Instrument

To elicit answers to our research questions, we constructed an interview protocol with a combination of semi-structured and open-ended questions. The questions were centered around skills identification, signaling, and development at four different stages: college admissions, in-college teaching and learning, hiring process, and training of job incumbents. Respondents were asked which skills they valued most at each of the four stages, approaches that are currently adopted for assessment, and training of such skills, and what works well so far as well as pain points. Note that in this context "pain points" are the challenges that employers experience in their hiring and upskilling efforts and it is a term that is commonly used in the workforce.

### 2.2 Sample

A total of 206 people were interviewed from 23 states of the U.S., including 75 from 28 employers covering five major industries (financial services, healthcare, retail, technology, and non-profit organizations), and 131 representatives from 41 institutions covering a mixture of colleges and universities in terms of the control type (public or private) and Carnegie institution types (Table 1). All of the interviewees came from a convenience sample, mostly through organizational and professional connections. However, this sample appears to cover a good range of types of institutions and employers.

The employers interviewed came from five industries. The size of these companies varies, from several hundred

employees to tens of thousands. The interview participants hold titles such as recruiting consultants, head of human resources, director of talent acquisition, and director for strategic development.

The institutional interviews included representatives from 29 four-year and 12 two-year institutions. The participants from institutions include presidents, vice presidents of academic affairs, admissions, and enrollment, deans of faculty or academic affairs, and deans of particular schools or department chairs.

### 2.3 Procedures

The interviews were conducted between May 2019 and February 2020. All interviewees were voluntary without any monetary compensation. Most of the sessions had only one interviewee, with a small proportion of sessions with 2-3 interviewees. Among all the interviews, 15 were conducted via audio or video conferencing, and all the others were conducted face-to-face at the institution or office of the employer.

At the beginning of each interview, verbal and written consent were obtained after a brief explanation of the purpose, format, and content of the interview session. The interview was then followed by an ice-breaking session allowing the interviewee to introduce their role at the organization, past experience, and general perspectives around students or employees. After that, the interviewee was asked to pick one or more areas of the four topics that they had an adequate level of experience in and felt knowledgeable about, followed by the set of questions within the area(s) that was(were) picked up by the particular interviewee. As a result, interviewees from institutions typically answered questions in topics 1 and 2, and those from employers answered questions in topics 3 and 4.

All the interviews were recorded, transcribed, coded, and summarized in an excel file, before being extracted and summarized in this report. The coding was conducted by a group of researchers, including the coauthors. The purpose of coding was to synthesize answers around the questions across topics and interviews, and to align the skills and pain points with each other for reporting purposes. Specific training sessions were provided to researchers who helped with the coding. The initial agreement of coding among the raters were above 75% before they started the actual coding. We did a few random checks of the actual coding of all interview answers but did not see any abnormal coding. Further interrater agreement was not calculated.

Table 1  
*List of Institutions, Employers, and Individual Interviewees by State*

State	Higher-ed institutions		Employers	
	<i>n</i>	No. of interviewees	<i>n</i>	No. of interviewees
Alabama	3	7	2	6
Arizona	4	12		
Arkansas	1	1		
California	1	7	5	7
Colorado			2	2
Delaware			2	2
Florida	3	3		
Georgia	3	16	1	1
Indiana	2	11	4	13
Kentucky	2	7		
Maryland	1	5		
Minnesota	1	1		
Missouri	1	4		
Montana	1	1		
Nebraska	1	1		
New Jersey	4	15	1	15
New Mexico	1	1		
New York	3	3		
Pennsylvania	2	9	5	9
Tennessee	3	21	6	21
Texas	2	4		
Vermont	1	1		
Washington State	1	1		
Total	41	131	28	75

### 3 Results

#### 3.1 Skills Valued by Employers

Employers reported a variety of types of skills valued in their specific working contexts. The types of skills that were more frequently mentioned include communication skills (including both written and oral communication), teamwork skills, critical thinking skills, personality and emotional skills, digital literacy, interpersonal skills, among other, less frequently referenced skills (Figure 1).

#### 3.2 What are Employers' Pain Points Around Assessing Skills of Employees?

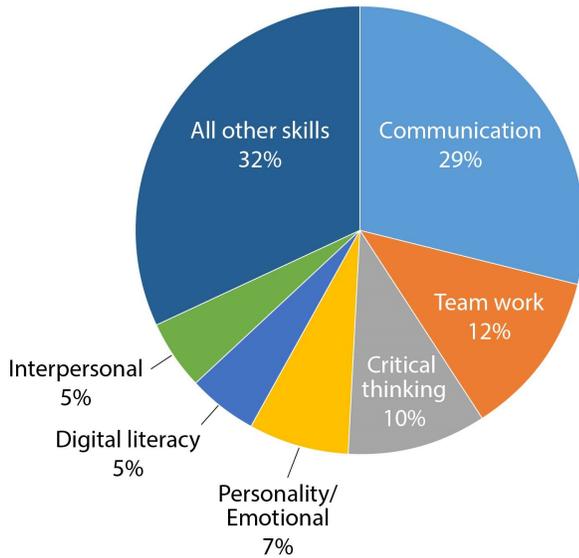
Employers most frequently reported that assessment of skills and retention of current employees as the pain points they would like to find solutions. Other challenges reported by employers are recruiting employees with an adequate level of higher order cognitive skills (e.g., critical thinking,

problem solving), procedures and tools that could facilitate a more efficient recruitment process in both time and cost, motivating employees to acquire new skills, and ensuring employees are equipped with an adequate level of technical skills. The following are excerpts from interview recordings with employer representatives.

“I think the things that we struggle with is how do you (an employee) relate to patients, how do you use those customer service skills and soft skills. Those are some of the things that I think we have more of a challenge with developing.”

“I think ultimately, it's understanding the customer service is part of healthcare. I think that's the biggest point because a lot of times what you hear from healthcare providers that [the facility] is a hospital and isn't a hotel. You know, it's not somewhere where people should want to

Figure 1  
*Skills Most Valued by Employers*



Note. The percentages reported here represent the percent of interviewees out of the interviewed sample of employers.

come or like to come, it somewhere where I'm keeping you alive. But in reality, we're operating a business...we want to be competitive in the market. We want to offer a service that people enjoy and value and once they leave, they want to recommend that to their friends. And so, I think that's the biggest piece that really gets missed is that's a piece of healthcare and more today. It's not just ... you can show up and make sure your patient doesn't die and they're going ..."

— HR executive from a large regional hospital network in a Midwest state

"... the biggest challenge—for us, there is a ton of internal tools that one can use to develop leaderships skills and such, right? But they [job incumbent] need to be self-motivated to go search them throughout the internet. Because we don't have a lot of freedom to pull them from their role once they're in it and throw them into classroom settings to further build that."

"... when I was a supervisor years ago, I had opportunities where there were certain classes I got to go to, right? And we still do those certain classes, but it was very strenuous to get freed up

to go to those classes, those training seminars if you will."

— HR manager of a large auto manufacture company in a Midwest state

"The communication skills, critical thinking, problem solving, and leadership, in my opinion, are probably right up there in the top four (for our company)."

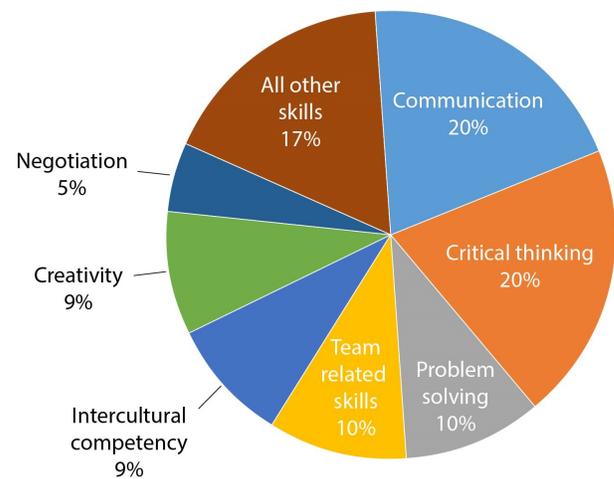
— HR manager of a large auto manufacture company in a Midwest state

Related to the above-referenced pain points, more employers would like to tackle the issues through enhanced assessment of performance and skills, allocating resources to identify upskilling and reskilling needs, attending to team fit in their organizations, and actively retaining current employees.

### 3.3 Skills Valued by Institutions

The skills that are most valued by higher education institutions are communication, critical thinking, problem solving, teamwork, intercultural competency, creativity, negotiation, and others (Figure 2).

Figure 2  
*Skills Most Valued by Institutions as Part of the College Educational Outcomes*



Given that student retention is one of the most salient issues reported by representatives from institutions, we also asked about the perceived skills associated with student retention. These skills include critical thinking, written

communication and decision-making, problem solving, team-related skills, and intercultural competency.

In connection with workforce readiness, critical thinking, oral communication, problem solving, teamwork, and written communication were more frequently reported as the skills that are associated with job readiness (See Table 2).

Table 2  
*Skills Perceived to Associate with Job Readiness by Institutions*

Skill	Percentage
Critical Thinking	23
Communication	31
Problem-Solving	15
Teamwork	13
All other skills	17
Total	100

*Note.* The percentage is computed by using the number of interviewees who reported the particular skills divided by the total number of interviewees.

### 3.4 What are Institutions' Pain Points in Developing Skills?

Interviewees were asked about what “pain points” they experienced when helping students to improve on critical competencies. More than half of the institution representatives mentioned the challenges associated with assessment, including the choice of skills and competencies to assess and train, what are the good timepoints for such assessment, how to motivate students and faculty members to implement the assessment plan, the accuracy and utility of assessment, and integration of the assessment with current course and evaluation system, as well as connections of assessment results with workforce. About a fourth of representatives also pointed out the challenges associated with lack of necessary data or comprehensive platform that could capture students' skills and competencies in a systematic and efficient way. Finally, a small proportion of representatives also raised the issues such as resources, staff wise and financially that could constraint the work around assessment and training of critical competencies and skills for colleges; several representatives also cautioned that building up an institutional culture that could open to the assessment and training of critical competencies may also be a challenge.

“Well, I think, the challenge we are facing is that there's a reluctance to change on campus. If you talk about skills, it's going to be more than just student skills. It's, it's, uh... I'd say institutional cultures and reluctance ... reluctance to change, uh ... things that they've done in the past. And that's probably going to impact how you're teaching skills ...”

— Vice President of Student Affairs of an HBCU in the South

“... here's one pain point I've been thinking a lot about, which is, the transition from higher ed into career. There could be some more flexibility on what I'll say is sort of late program education. What does the soft hand off look like from higher ed into industry? And I wonder if there's a way where companies and higher eds can sort of meet in that ground, right? Where we think of these apprenticeship sort of experiences which are definitely more kind of career focused, a little less academic.”

— Dean of Faculty from a small liberal arts college

“Right. I would say, yeah, assess and train students on their noncognitive skills, such as communication and interpersonal skills, would be a challenge, and I think it's because... you know, it's an interesting question because we do backflips to teach those things. We got to build in our freshman seminar. It is built into our new student orientation, but we have not been very good at testing them or assessing them to see whether they are developing them or how well or how soon or how quickly or how effectively they're developing all of those.”

— Chancellor of a Midwest public university

Many of the common pain points shared by institutional representatives concern the difficulty in changing campus culture in encouraging faculty members to focus on skills rather than just content knowledge, charting a clear path for doing that, and also identifying a mechanism for documenting the effectiveness of any existing approaches.

Regarding the development of these critical competencies, more institutions reported using an external

platform or assessment tools, besides partnering with employers or other organizations.

In summary, both institutions and employers expressed clear needs in terms of core competencies around communication skills (both oral and written communications), critical thinking skills, and teamwork among the other less frequently reported skills (Figure 3). There also exist differences between the skills reported by institutions and employers. For example, interpersonal skills, personality and emotional skills, and digital/data literacy were among the more frequently emphasized skills by employer representatives than institutions; on the other hand, intercultural competency, creativity, and negotiation were among the more frequently valued skills by institution representatives.

If we compare the list of skills valued by employers with those perceived by institution representatives — with regard to job readiness — problem-solving skills seem more frequently emphasized by institution representatives than by employer representatives.

#### 4 Implications

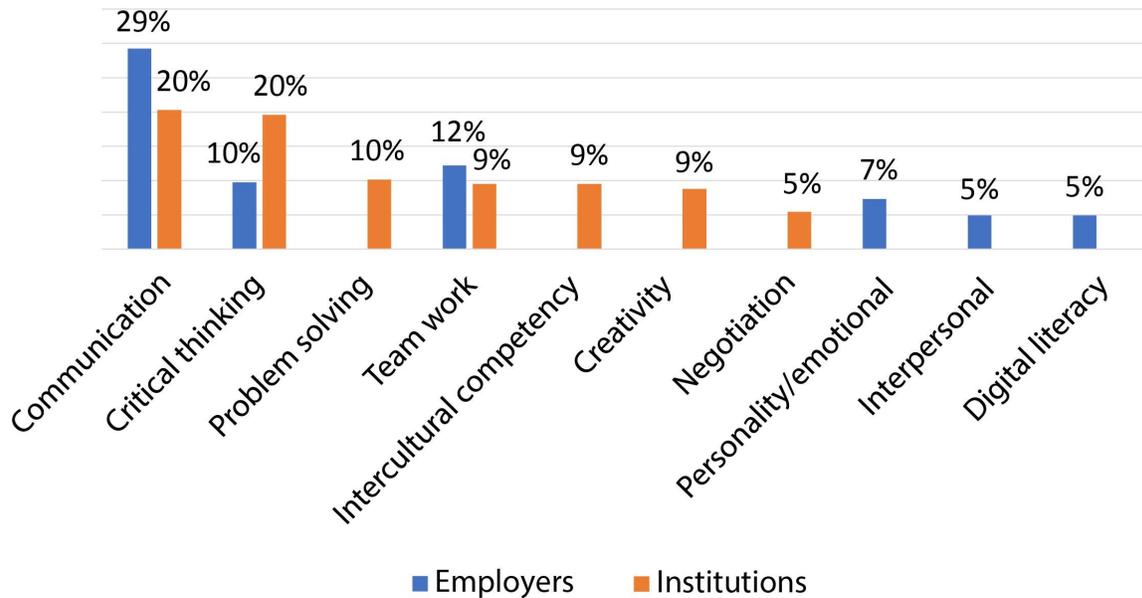
Our findings add to the existing literature on how employers and institutions approach skills and help to identify gaps that should be addressed in order to facilitate smooth education to workforce transitions. In general, our interviews confirmed earlier research and survey results by other organizations in that (a) a set of critical competencies are highly valued by both employers and higher ed institutions; (b) there are ongoing efforts at both types of organizations to ensure students and employees are equipped with these competencies at an adequate level, mostly through utilizing traditional approaches, such as screening services and interviews, with some adoption of third-party hiring and training services; and (c) it appears that most of such effort was not satisfactory from the interviews, and there remain multiple challenges. The results point to a more coordinated effort between education providers and employers. From our analysis of the interviews, we also identified a need for employers to better articulate the skills needed and provide contextualized explanation on what it means for a job candidate to possess a particular skill. For example, when employers told us problem solving skills are important and were asked to explain what problem solving skills meant to them, there was a lot of variation in how problem solving was interpreted.

To avoid possible confusion in how college students or

job applicants understand the skills required, employers will need to provide clearer guidance on how the skills are defined and applied in their work setting. Education providers will need to help learners prepare the right skills. Individuals also need assistance in documenting the skills they accomplished, particularly as they transfer from an institution to another or transfer from an academic to a workforce setting. For example, there appears to lack a common language or terms where the multiple stakeholders can easily communicate with each other in order to better understand the challenges and to figure out a set of solutions around the critical competencies. The common language would also require different stakeholders would have a common ground of how each of the critical competencies is defined and operationalized in their own contexts so that these terms around competencies can be referred to interchangeably regardless of who (employers or institutions) is talking about it. The T3 initiative is one of the existing efforts to help disentangle skills and facilitate a lifelong learning record. Founded by the U.S. Chamber of Commerce Foundation, the T3 Network aims to define and standardize a learner's record to capture all types of learning (e.g., formal education, certificates, volunteering, military experience, internships), and advance to technology to facilitate the sharing of data as individuals transition between education and career pathways (U.S. Chamber of Commerce Foundation, 2020).

On a related note, we would like to mention that many organizations have been created to help facilitate the coordination between education providers and employers, and they are playing an increasingly important role in helping individual learners navigate the upskilling and reskilling territory. For example, Guild Education is a rapidly growing educational technology startup that helps employers identify education partners as part of companies' employee education benefits (e.g., tuition reimbursement program). Guild Education addresses common barriers in the effectiveness of tuition reimbursement programs (e.g., inadequate information on academic programs available, employees having to pay out of pocket first) and aims to optimize the learning experience and outcomes for employees in need (Guild Education, 2021). Traditional pathways to learning have also been expanded through learning platforms such as Coursera. For example, during the pandemic, Coursera launched the Employee Resilience Initiative to give their enterprise customers and all their employees free access to a set of curated courses that are designed to help employees acquire digital skills and better

Figure 3  
*Perceived Skills Needed for Job Readiness by Employers and Institutions*



transition to remote working (Belsky, 2020).

Our interviews revealed common pain points for employees to obtain sufficient training for upskilling and reskilling. One such pain point is the availability of time for staff members to attend training at a designated time. This situation calls for flexible online modules that employees can access at a place and time of their choice. Another pain point was despite the widely available online resources both within and outside of an organization, employees may not know what to look for when it comes to their professional development. Reversing this situation would require intentional help from management in that the manager should work closely with the employee to discuss areas of need for additional training and help point to available resources for such training. As Weise (2020) envisioned in her new book *Long-Life Learning: Preparing for Jobs that Don't Even Exist Yet* that a substantiable workforce depends on the recognition that higher education may be the start, not the end of learning, and ongoing wraparound support in both funding and intentional connection between education experience and workforce needs. Learning should not be made separate from earning but be an integral part of it.

## References

- Belsky, L. (2020). *Helping companies respond to employee well-being and digital readiness during COVID-19*. Coursera Blog. <https://blog.coursera.org/helping-companies-respond-to-employee-well-being-and-digital-readiness-during-covid-19/>.
- Crawford, P., & Fink, W. (2020). *From academia to the workforce: Executive summary*. The Association of Public and Land-grant Universities. <https://www.aplu.org/library/from-academia-to-the-workforce-executive-summary/file>.
- Cronen, S., McQuiggan, M., & Isenberg, E. (2018). *Adult training and education: Results from the national household education surveys program of 2016*. The National Center for Education Statistics. <https://nces.ed.gov/pubs2017/2017103rev.pdf>.
- Executive Office of the President. (2020). *Executive Order 13932, 85 fr 39457*. Federal Register. <https://www.federalregister.gov/documents/2020/07/01/2020-14337/modernizing-and-reforming-the-assessment-and-hiring-of-federal-job-candidates>.
- Google. (2020). *Google career certificates*. Grow with Google. <https://grow.google/certificates/>.
- Guild Education. (2021). *Gearing up: How competencies enable the agile work-learn model*.

- <https://resource.guildeducation.com/competency-as-currency/>.
- June, A. W. (2021). *Displaced workers haven't turned to college for a fresh start. here's what might bring them back.* The Chronicle of Higher Education. <https://www.chronicle.com/article/displaced-workers-havent-turned-to-college-for-a-fresh-start-heres-what-might-bring-them-back>.
- Kosslyn, S. M. (2019). *Are you developing skills that won't be automated?* Harvard Business. <https://hbr.org/2019/09/are-you-developing-skills-that-wont-be-automated?>
- LaPrade, A., Mertens, J., Moore, T., & Wright, A. (2019). *The enterprise guide to closing the skills gap: Strategies for building and maintaining a skilled workforce.* IBM Institute for Business Value. <https://www.ibm.com/downloads/cas/EPYMNBJA>.
- Lund, S., Madgavkar, A., Manyika, J., Smit, S., Ellingrud, K., Meaney, M., & Robinson, O. (2021). *The future of work after COVID-19.* McKinsey & Company. <https://www.mckinsey.com/featured-insights/future-of-work/the-future-of-work-after-covid-19>.
- Manyika, J., Lund, S., Chui, M., Bughin, J., Woetzel, J., Batra, P., ... Sanghvi, S. (2017). *Jobs lost, jobs gained: Workforce transitions in a time of automation.* McKinsey Global Institute. <https://www.voced.edu.au/content/ngv:78297>.
- Song, V. (2021). *COVID-19 has widened the skills gap. but it also presents an opportunity to close it.* EdSurge. <https://www.edsurge.com/news/2021-02-01-covid-19-has-widened-the-skills-gap-but-it-also-presents-an-opportunity-to-close-it>.
- The National Association of Colleges and Employers. (2018). *Job outlook 2019.* <https://www.odu.edu/content/dam/odu/offices/cmc/docs/nace/2019-nace-job-outlook-survey.pdf>.
- U.S. Chamber of Commerce Foundation. (2020). *T3 network of networks work group final report: accelerating the digital transformation of the talent marketplace.* Federal Register. [https://www.uschamberfoundation.org/sites/default/files/T3{\%}20N2\\_FinalReport\\_Dec2020\\_Final.pdf](https://www.uschamberfoundation.org/sites/default/files/T3{\%}20N2_FinalReport_Dec2020_Final.pdf).
- Weise, M. R. (2020). *Long life learning: Preparing for jobs that don't even exist yet.* John Wiley & Sons, Inc.