



THE NEW LANDSCAPE FOR WORKPLACE LEARNING: EMPLOYERS AND WORKERS MANAGING THE DIGITAL TRANSITION

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Northeastern University
Center for the Future of Higher
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BACKGROUND

Over the past decade, changes in the economy have increasingly demanded that individuals pursue lifelong learning over the course of their careers. In Northeastern University's past national survey research, [95% of Americans agreed](#) that it is important to learn and be trained frequently over the course of a career instead of learning ending with a one-time credential. Employers as well have also increasingly acknowledged the need for continuous learning and more education, as indicated by a strong majority of respondents in Northeastern's past [surveys of corporate HR leaders](#).

In 2020 and 2021, this existing trend was amplified by the job market dislocations and transformations of the COVID-19 pandemic. Many workers found themselves out of work - while still others were suddenly working from home, completing online training, or attending school online. Individuals' [interest in short-term and virtual skills training](#) options surged, and employers' [hiring processes were forced to shift online](#).

Even prior to the pandemic, the crucial role of employers in lifelong learning was understudied. Although various professional associations provide useful high-level annual data on general investment levels in workforce training and educational assistance, the U.S. Department of Labor last produced surveys on [employer-provided training](#) in the 1990s. Compared to other activities in the economy, current data and trend analysis related to workplace learning can be hard to come by. In the context of employed workers, the fairly transactional term "training" has itself recently given way to the language of "workforce development" and "talent." And, if understanding workplace learning was already a challenge, the disruptions of the COVID-19 pandemic and the shift to digital working and learning created an even more urgent need to explore this territory.

As a result, this analysis is framed as a contemporary exploration of employers' attitudes toward and investments in employee learning and how they are evolving. The goal is to provide a picture of the current trends in workplace learning, so that employers themselves, policymakers, training providers, colleges and universities, and other interested stakeholders can adapt their strategies based on the actions and voice of employers.

METHODOLOGY

Building on Northeastern University's past and existing research on the intersection of learning and work, this study was driven by qualitative interviews with 37 human resources (HR) and learning leaders at employer organizations around the United States during the summer of 2021. Typical respondents - many of whom are quoted in the discussion that follows - included Chief Learning Officers, Learning and Development Directors, Chief People Officers, VPs of HR, HR business partners, and a small number of other HR professionals and executives.

Participating organizations were recruited via snowball sampling strategies through industry associations, networks such as LinkedIn, referrals, and Northeastern's employer network, with careful attention to balanced representation by geography, size, and industry - ultimately yielding a wide range of employer types in this qualitative study. To focus the research, the effort was limited to the *technology, manufacturing, and healthcare industries*, chosen as representative key sectors of the economy that would illuminate various issues and themes.

This core primary research was also complemented by the curation of data points and insights related to the study's themes from education and training platform companies that serve the corporate audience and have a window into the behavior of thousands of employer customers.⁴


In this way, this study aims to identify patterns and themes related to how employers are approaching and supporting lifelong learning for their employees, including employers' motivations, attitudes, and investment priorities. In addition, the timing of this research sheds light on the impact of the pandemic and the new trends that are emerging in the working and learning ecosystem.

⁴ Here we are grateful for the contributions of colleagues at Bright Horizons, Credly, Degreed, Guild Education, LinkedIn, Pearson, Wiley, and Workday, whose insights and data helped contextualize and interpret the trends identified in the primary interviews.



KEY FINDINGS

- COVID-19 has accelerated the digital transformation of working and learning, and amplified the war for talent. Talent development and talent acquisition are top priorities as organizations respond to growth demands.
- Like work itself, a significant share of workplace learning has shifted online, accelerating a trend that was decades in the making. Experiments with digital learning are revealing an opportunity to broaden workforce learning participation, and for greater cost efficiency.
- As a result of the competitive talent market and the urgent need for up-skilling, investments in employee learning appear to be growing - reversing the trend from prior to the pandemic. In many cases the pendulum has swung back toward emphasizing “building” as much as buying talent. Learning investments are now seen as a key competitive differentiator and vehicle for employee engagement and retention.
- Employers increasingly view employee development as a “co-investment” with employees - and believe they have a responsibility to provide learning opportunities and pathways.
- Leadership development/soft skills and digital capabilities are very often the top learning investment and content priorities across all levels of organizations.
- The application of data and analytics to learning and workforce planning is still an emerging horizon for most organizations - but is seen as a significant strategic priority, increasingly enabled by commercial software systems.
- The more digital world of workplace learning increasingly includes microlearning, content curation, and “learning experience platforms” that unite learning resources from a broader variety of external and internal sources.
- How employers relate to workplace learning providers is evolving rapidly and presents a variety of opportunities and risks as content providers are disintermediated and preferred partnerships are prioritized.



COVID-19 has accelerated the digital transformation of working and learning, and amplified the war for talent. Talent development and talent acquisition are top priorities as organizations respond to growth demands.

References to the “war for talent” were virtually universal in our interviews with human resources and learning leaders, who are today competing in a more borderless marketplace for talent and attempting to keep pace with rapid economic growth. In the years prior to the pandemic, talent strategy had risen to the top of many organizations’ board-level priorities - but the deep yet ultimately short recession of early 2020 called this into question as many firms initially had to lay off workers. However, today’s strong economic rebound and tight job market with a [record number of job openings](#) (more than 10 million at this writing) have brought talent acquisition and retention back to the fore. The tremendous level of competition to attract and retain people has made organizations’ development of their existing employees even more of a strategic priority. Our interviews overwhelmingly suggested that talent-related issues are at the top of employers’ strategic agendas - a theme consistent with the quantitative insights emerging from sources such as Deloitte’s recent [2021 CEO priorities](#) survey.

Employers today are challenged to develop and acquire talent at a rate that matches growth opportunities and in ways that keep pace with changing skills demands. Not surprisingly, this is especially the case for the countless occupations and industries touched by the need for digital skills, the demand for which has only surged given the transitions forced by the pandemic.

As a result, many organizations are also recognizing that while these functions have historically often been siloed, talent *development* (learning) and talent *acquisition* (hiring) must be more closely integrated – as two sides of the same coin. As Shelly Holt, chief people officer of PayScale, describes, “We built HR in silos, we said you’re talent acquisition, you’re learning, you’re people operations. It starts with your talent strategy: what are the critical skills, do we have the people... If not, is it faster to go to the open market? They’re not there – we have to re-skill. You’re going to have to hire and build more experiences internally. Learning only fits one leg of that stool. So it’s absolutely coupled together.”

Increasingly, employers are describing how talent acquisition, talent development, and workforce planning are becoming more integrated and skills-based. Those who are approaching talent development from a systems perspective are moving toward the utilization of skills categories that are consistent across talent acquisition, talent development, succession planning, and related functions. By breaking roles down into skillsets required, organizations are better able to move individuals throughout the organization, provide opportunities for career progression, and intentionally develop their people with the necessary skillsets they desire as well as those required for moves to other roles.

Some global companies are increasingly focused on deconstructing jobs and utilizing technology to integrate talent acquisition and talent development initiatives. As Nuno Gonçalves, Global Head of Strategic Capability at Mars, Inc. shares, “The world is no longer linear and predictable. We can no longer see our job and our skills as a linear progression: with the speed of technological and sociological evolution we’re experiencing, the world is becoming multi-linear.” Gonçalves continues, “(It’s) a world where we will need different combinations of skills... How do we deconstruct the jobs to really understand what’s inside? How can we reconstruct the jobs with a future in mind? How will these jobs be impacted by digital, automation, machine learning? We know most jobs will be different, others disappear, and others will be created – and we want to be ready and develop our associates to thrive in this multi-linear world.”



Like work itself, a significant share of workplace learning has shifted online, accelerating a trend that was decades in the making. Experiments with digital learning are revealing an opportunity to broaden workforce learning participation, and for greater cost efficiency.

Prior to the pandemic, about half of employee learning hours were being delivered online, according to Association for Talent Development [benchmarks](#) - but half of instruction was still in a traditional instructor-led classroom setting. With the onset of the pandemic and remote work, learning activities pivoted to online formats, with employers' spending patterns and outside providers adapting to serve a distributed workforce. Chris Harry, chief learning officer for TEKsystems, notes, "The pandemic changed our delivery and modalities - that had a very big impact on us and how we were doing work, how quickly we went from training 2,500 people a year in-person to 0 people in person."

In some cases, such as at a number of interviewed tech startups, firms were already virtual and well-prepared for a more online working environment. In most other cases, employers in traditional industries such as manufacturing were exposed to the fact that more work and learning could be done online, and quickly embraced this mode of delivery. While pivoting to online learning models was originally a necessity driven by the pandemic, the large majority of those interviewed indicated that they will maintain primarily online and hybrid learning experiences because of the opportunities it affords to both individuals and companies.

Many HR leaders interviewed for the study see the shift to a distributed and more virtual workforce as a massive opportunity to recruit and develop talent wherever workers may live. Several learning and development (L&D) managers for small technology companies noted that in order to recruit talent with the needed skills, they had to expand beyond their typical geographically local recruiting pool, leading to a shift in mindset from all employees being on-site. As one L&D manager for a mid-sized manufacturer describes, "Manufacturing had to break some big paradigms and face-time concepts of being in the office. If you're running a production line, you need to be there. If you're managing a production workforce, you have to be there at the location. But for all the other support functions around it - the pandemic taught us you don't need to be there. That opens up all sorts of possibilities for how we run our business. Employees could live anywhere. So that's an entirely new mindset."

Online training is often highly cost-efficient, eliminating the need for related travel - and broadens the potential audience of participants. Shawnice Meador, global head of talent management for semiconductor manufacturing company Wolfspeed, explains, "Before COVID hit, all learning and development was all face-to-face, flying people around the world. With COVID, our remote workers are now inevitably in a digital environment for all things learning. There is an absolute necessity to look at how you are investing in your people's online development, whether it is tech, behavioral, or skill-based." Several HR leaders suggested that this more digital world of online skill development could enhance and help demonstrate the ROI on learning due to cost efficiencies and given that skills outcomes can be more easily documented in digital systems.

Similarly, another executive emphasized, "The pandemic accelerated the trend that was in place - more and more going online. It allowed us to push ourselves to do something we should have been doing: it sped up the technology and our acceptance. It accelerated blended learning because it becomes less intrusive in people's work - we can be more inclusive and global. We can bring in a bigger audience... it presents a wonderful opportunity for our future because it has taken away barriers - the cost of bringing people in, the effort that's required to coordinate those events."

Further, some leaders highlight the benefits of the new peer-to-peer learning and networking models that go along with the shift to digital learning. “Learning can happen anywhere, and one does not have to be in-person to do this. We have designed programs to help managers learn across the businesses and geographies,” explains Nadine Frank, director of manager and employee development at Keysight Technologies. Frank continues, “Someone in the middle of the U.S. can learn from a colleague in India in the same session - and learn from the experience they each bring. They couldn’t do that as easily before when we had more localized delivery. With virtual delivery, we can take advantage of the global networking and learning: you can work with peers that never would have met before: it’s made the organization closer.” This dynamic is explored later as well concerning how learning has become more central to organizational culture.

The shift to more remote working and learning is not without specific new challenges - and raises broader questions about corporate knowledge management and workflow in a world where workers are collaborating in real-time via online workspace platforms such as Slack and Microsoft Teams. As Amber Kestner, L&D program manager for technology firm Numerated describes, “When you’re in a room of 40 people before the pandemic, people would document things and shout to each other to transfer information. We realized that Slack has many positive uses in terms of transferring knowledge across the organization - but it can get chaotic very quickly, and it’s not an effective way for people to learn. How can we leverage the tool a bit better?” This type of environment and constant “learning in the flow of work” creates a need and opportunity for more structure and guidance. What is clear is that the nature of work and the environment for on-the-job learning are still in the early stages of a very significant and ongoing digital transition.



As a result of the competitive talent market and the urgent need for up-skilling, investments in employee learning appear to be growing – reversing the trend from prior to the pandemic. In many cases the pendulum has swung back toward emphasizing “building” as much as buying talent. Learning investments are now seen as a key competitive differentiator and vehicle for employee engagement and retention.

Although reliable data on employer investments in both training and educational benefits is sparse, the surveys that do exist showed that training investments were relatively flat in the years before the pandemic, and the share of employers offering tuition assistance benefits to employees [had been steadily declining for many years](#). However, against the backdrop of strong economic growth and in a hyper-competitive market for talent, investment in employee skill development is getting new attention.

Shelly Holt, chief people officer at PayScale, describes this in these terms: “For a long time learning was this nice-to-have, no one took it seriously - and all of a sudden, there’s this case for change that you need to be re-skilling your workforce to meet the needs of the 4th industrial revolution.” The ongoing talent shortage and costs associated with new hires have resulted in the need for companies to work more actively to retain and re-skill employees. HR leaders and learning and development professionals are actively seeking to identify the skills and interests of individual employees and curate personal learning pathways that allow them for mobility within their organization. At the same time, a sole focus on up-skilling can only go so far: as one executive notes, “You can’t turn a customer service representative into an actuary through internal development - they need specialized training.”

Re-skilling - preparing existing employees for new jobs - is simultaneously in focus. This need is especially significant in manufacturing, which is undergoing a transformation led by accelerating [automation](#). Shawnice Meador, Wolfspeed’s global head of talent management explains, “A huge component is up-skilling our entry-level operations employees into trained process and equipment technicians. Our manufacturing processes continue to become more and more digital and tech-driven. Sophisticated technology products with high-quality standards demand skilled technical workers make them.” Meador continues, “In addition, the less manual, human interaction with our products, the lower the probability of human-caused product defects. By up-skilling our operators into technicians, they not only gain valuable technical skills but they also earn a higher paycheck.” Moreover, as a manager at a large, specialized technology company shared, “As the company’s product is a niche, it’s very difficult to buy talent with specific skills. We have to build it. The skills gaps we have do not exist in other industries.” Similarly, an L&D manager at an e-commerce company relayed, “Building is very important. There is an emphasis on growth internally. Employees seek career paths internally, and it is the job of the organization to help build the existing talent pool.”

Employee Learning as More Central to Culture, Engagement, and Retention

In today’s competitive talent market - and given the looser connections to the workplace in a world of remote work - learning investments are emerging as more central to employee engagement and retention strategy. As Amy Stacey-Daloia, HR business partner at technology firm Copyright Clearance Center notes, “We’ve had better participation with people being remote compared to when they were in-house: it allows us to offer more classes to people... it’s a tool to keep people engaged in 100% remote work when they’re not in an office.”

David Grimes, director of people and talent for Taulia, Inc., describes the relationship between learning investments and retention: “Our philosophy as an organization is certainly to provide the on-ramps for people to access the necessary resources to set them up for success and for their growth... Having someone join us and stay with us is really paramount. We want people to

join us and see how they can grow in - and benefit from - the organization from a skills attainment perspective.” Grimes adds, “When people come and grow their knowledge base their skill base, the organization only benefits from it, and the individual benefits from it too - not only in their ability to contribute, but also in their ability to move to another role or to make a bigger impact, and that’s really what we’re hoping to do.” Similarly, Fara Parlumbo, chief people officer for Blue Cross Blue Shield of North Carolina, comments, “We’ve always believed that as a company, it is our responsibility to invest in and develop our existing talent, so they feel a connection to the company and the team. We believe that leads to stronger retention of high performers.”

During the COVID-19 pandemic, retention and attrition have been especially significant issues for healthcare employers. Healthcare has seen a need to re-skill employees and allow for career mobility for nurses and others who are burned out by the intensity of their jobs. Chris Casement, managing consultant for learning innovation and technology at Sutter Health, shares the following perspective: “As a healthcare system, we know the first two years of nursing are critical. And for our nurses who survive the first two years and stay beyond, we really want to hang on to them. So we have developed five transition in practice programs which serve as massive re-skilling or up-skilling programs. For example, if you have a frontline nurse who says ‘I’m tired of being a labor and delivery nurse,’ or ‘I want to do something different than being a labor and delivery nurse for seven years - and I think I want to be an ICU nurse, we have structured cohort-based programs where we actually re-skill them.”

Prioritizing learning and development also responds to a generational shift in priorities and an emphasis on *career pathing*. As Jen Hecht, VP of people operations for RStudio explains, “More than ever in this talent market, I’m talking to candidates who feel empowered to make choices based on their own values. And one is, in addition to flexibility and working from home, I want to work for a company that’s willing to invest in my growth. It’s a wonderful opportunity right now to find people who weren’t in the market before - but we need to be prepared to meet those expectations... One of the values we can provide is we’re willing to make investments in people.” Similarly, PayScale’s chief people officer Shelly Holt notes, for the millennials and Gen Z, skill development and learning “have almost become an expectation for people. It’s become the new ping pong table. No one cares about the ping pong table anymore because they’re not in the office building. They want career development.”

It is here, in the context of learning and career development as a retention vehicle that the topic of education benefits (“tuition assistance” or “tuition reimbursement” programs) appears. Although our interviews sought to explore innovations here, very few interviewed HR or L&D leaders referenced these types of programs as a major priority for investment or attention. In many cases, participants acknowledged that they had such a benefit – but that it was capped at the tax-advantaged maximum (\$5,250 per year) and that participation trends had not changed in many years. This is consistent with Wiley’s recent “Reimagining the Workforce 2021” survey of 600 HR & L&D professionals, where most respondents reported that many employees don’t take advantage of tuition reimbursement, and that usage rates of the benefit are frequently in the 5-10% range. This survey also found that communication of these benefits is generally passive: at many companies only occurring at the one-time initial onboarding process.

Largely motivated by retention, many Fortune 500 companies have led the way in making strides to enhance their education benefit programs in recent years, and these programs can have a [positive impact](#) for workers. Companies that support employer education benefits programs such as Guild Education and Bright Horizons' EdAssist (alongside Wiley and others) have both reported significant growth in the use of tuition assistance benefits and signed significant corporate clients in recent years. However, employers and the HR function have historically siloed education benefits (to be consumed by those interested) from job-related training that relates to everyday operations and needed skills.

Notably – and as documented later in this analysis – the education benefits universe that has long focused on degree programs is increasingly growing to include short-form learning. Education benefits management company Guild Education reports a 149% increase in applications for certificate programs over the course of the pandemic – and that the number of active students in short-form offerings has grown ten-fold from the end of 2019 to the end of 2020. As one of our interview participants commented, “We’re rethinking the way we’re doing tuition reimbursement to include certification programs. We do that with some, but it can be a challenge. We’re looking at reimbursements not just from academic institutions... it can’t be static.” In the years to come – and consistent with trends detailed later – it seems increasingly likely that both employers’ and workers’ energy and investments may coalesce around microcredentials as a meeting place of both job-related skills needs and as a pathway to potential degrees.





Employers increasingly view employee development as a “co-investment” with employees - and believe they have a responsibility to provide learning opportunities and pathways.

Over the last half century, the [social contract](#) between employers and workers has evolved. Investments in employee training have arguably followed developments in retirement benefits, which shifted from the fixed pensions and expectations of a lifelong career with one firm in decades past, to the shared-risk model of 401(k) plans.

Recognizing the aforementioned pressures on attracting and retaining talent, employers overwhelmingly shared a view that *both* the organization and the employee have a responsibility to co-invest in learning time and resources. The extent of this obligation varied slightly, with some emphasizing learning as a “right” for every employee, and others simply stating that the organization had responsibility for providing opportunities and making resources available. One manufacturing leader stated, “Development is every employee’s right. It does not matter if you are on an assembly line or you are CEO; there should be something in place at every company to develop and progress. Whether they want to take advantage of it is another question - but companies need to make that available.”

While not always mentioning learning as an employee right, others did indicate that it should be a co-investment, and that they were responsible for providing opportunities. As illuminated by Jen Hecht, VP of people operations at RStudio, “It’s the responsibility of the employer to be listening and open to what the development goals are of the people that they have. I think there should be a commitment to ongoing learning... the organization needs to create the conditions where learning can happen. That’s providing time, and providing budget up to what we can afford, and then providing context on how learning translates - and allowing them to use what they learn. The individual is responsible for identifying what their desire is, what their passion is, where they want to lean in with their career.”

Employers also provide support for employee learning through dedicated time. The temporary global shutdown of the pandemic and eventually remote-work options provided the time for employees to engage more often in learning opportunities. Some companies began providing the opportunity for employees to up-skill/re-skill during work hours. Others prioritized learning during the pandemic and integrated it into their corporate goals, rewarding employees who tracked their learning time in their workforce systems. In addition, in a small number of intriguing cases, executives mentioned that they are beginning to consider stipends or compensation for learning.

While the vast majority of employers interviewed emphasized co-investment and the necessity of the organization providing learning opportunities, the extent to which feedback and support for designing employees’ learning journeys varied. A few leaders mentioned that they were placing an emphasis on the role that the managers play through the process of annual evaluations and ongoing feedback. One technology professional emphasized the importance of managers supporting learning journeys: “Many of our employees are creating their path. We are working with managers to ensure that these types of conversations are occurring. We must support growth.”

Technology is also playing a growing role in the ability of organizations to support ongoing employee learning, although the extent to which technology is being utilized varies greatly. Christopher Lind, VP and chief learning officer at ChenMed emphasized the growing role of technology in supporting employees, stating: “Organizations should help to identify skills and provide feedback and resources so that individuals can design their own learning paths. This is probably one of the big gaps which isn’t just here, it’s been in every organization that I’ve (been associated with) - and this to me is probably one of the brightest futures that I see with where tech is going.”

Internal Talent Mobility and the Development of Personalized Pathways

Internal talent mobility and the intentional development of career pathways have become imperative for organizations competing for crucial talent that may not be available in the competitive job market. In addition, the trend toward the “democratization” of learning (a frequent theme) and promoting learner agency has encouraged organizations to curate content or create learning opportunities that employees can use to re-skill and up-skill in ways that are aligned with their interests and desired career progression. As Fara Palumbo, chief people officer for Blue Cross Blue Shield of North Carolina notes, “Our obligation as an employer is to offer learning paths and development opportunities for anyone interested. We create the platform for learning, including offering multiple content libraries as well as internally developed training. We expect leaders to encourage their team members, but what’s equally critical is that each person must take responsibility for their career.” Palumbo adds, “We’ve always believed that as a company, it is our responsibility to invest in and develop our existing talent, so they feel a connection to the company and the team. We believe that leads to stronger retention of high performers.”

Employees crafted their learning plans to form their current role better or create opportunities for future advancement with the organization’s assistance. This was particularly suggested in both healthcare and technology. According to ChenMed’s CLO Christopher Lind, “We’re trying to really truly diagnose people’s personal preferences, like what actually resonates with them on an individual level - and I think we’re seeing this in the whole remote work explosion right now - where companies are trying to go identify the one thing that we can do for everybody that’s going to make them feel good. There’s not an answer to that question, the question is actually helping people figure out what’s important to them and then giving them pathways to actually deliver.”

Despite the emphasis on personalized learning journeys and the growing strategic priority of providing learning opportunities, many interviewed stated that there were often barriers, mainly due to the culture and history of learning being provided primarily to “high potentials” or a select group invited to participate. As one health professional stated, “a barrier is around owning your learning and making choices and decisions, that real sense of agency around learning and development, which is something that culturally we have to overcome. A lot of what we’ve done for that particular barrier is to send really strong messages around the reality of today, so employees know skills are evolving... all of the stuff we know is coming out of the research in terms of how workforces are evolving, what automation is going to mean for the workforce.”





Leadership development/soft skills and digital capabilities are very often the top learning investment and content priorities across all levels of organizations.

Virtually all of the participants interviewed indicated that leadership development and digital skills were investment priorities at all levels and across all roles in the organization. While some emphasized applying core leadership skills to the remote environment, others stated that these skills were “timeless.” The transition to digital also took priority and applied to almost every role, although the specific needs related to digital transitions were typically unique to a position or industry.

Leadership and “people skills” - particularly those that would drive an organization’s culture, were mentioned by virtually all participants as their top priority. Many indicated that this represented a recent shift, primarily due to the pandemic and needing to support employees working in the remote environment and up-skilling leaders to for example identify and support wellbeing and mental health. One health professional emphasized that when organizations are not prioritizing soft skills, they are putting their organizations at risk. Many underscored that, particularly among managers, having the soft skills necessary to drive the organizational culture was critical, particularly in times of disruption and change. Across all levels of the workforce, “human” skills are being given priority given the growing pace of technology adoption and automation.

Participants also indicated that these were some of the most nuanced skills to intentionally develop. As Jen Hecht, VP of people operations at RStudio stated, “Tech skills can generally be acquired. You can send someone to a camp or class on Linux skills for example if that’s the gap - but getting someone to feel they’re comfortable leading and managing, that’s a more ambiguous target to hit.”

Among the specific leadership skills mentioned were influence, collaboration, problem-solving, and communication: this was very consistent with various recent quantitative measurements of the most in-demand [skills in the workforce](#), which tend to be perennial.

In terms of variation across the workforce and different levels and roles, while learning and development efforts have taken center stage and are prioritized for all employees, the development of first-time managers and sales positions was a priority for a large share of the organizations studied. Participants recognized that the growth of their organizations has resulted in the opportunity for more employees to move into management positions and the opportunity for employees to fill a critical need. For example, Gail Jacobs, senior director of people at Guardant Health emphasized, “COVID has been interesting because when it first happened, generally speaking, people were locked into their jobs: there was a settling of people. Then about 2-3 months in, senior leaders, in particular, started to look. However, since COVID started, our company almost doubled in size. We had such a growth spurt during COVID that we ran low on employees to promote.” This growth has allowed more employee movement and development within many companies, often from individual contributors to management roles that require a unique skillset and leadership talent - and this applies in blue-collar jobs as well. In order to move people up the career ladder and into critical roles in the organization, the development of first-line managers has become a top priority. A number of manufacturers, for example, highlighted that they can’t expand or open the next plant without the bench of leaders to run it.

The development of sales representatives also emerged as a theme across industries, and for a wide range of employers from large firms to start-ups with few employees. Many organizations were placing a high priority on developing learning experiences that helped sales representatives to understand their clients and those they serve, and therefore helping the business grow. For example, one organization in the healthcare industry highlighted introducing sales representatives to simulations to understand the experiences of those in need of their products. As one healthcare leader stated, “The salespeople are the ones that we have to really energize to learn deeply and understand the science and be motivated to do things for, and on behalf of the patients that they serve.”





```
mirror_mod.use_y = False
mirror_mod.use_z = False
elif _operation == "MIRROR_Y":
    mirror_mod.use_x = False
    mirror_mod.use_y = True
    mirror_mod.use_z = False
elif _operation == "MIRROR_Z":
    mirror_mod.use_x = False
    mirror_mod.use_y = False
    mirror_mod.use_z = True

#selection at the end - add back the deselected mirror modifier object
mirror_ob.select= 1
modifier_ob.select=1
bpy.context.scene.objects.active = modifier_ob
print("Selected" + str(modifier_ob)) # modifier ob is the active ob
mirror_ob.select = 0
#one = bpy.context.selected_objects[0]
#bpy.data.objects[one.name].select = 1
except:
    print("please select exactly two objects, else one gets the modifier unless its not available")

--- MIRROR CLASSES ---

mirrorX(bpy.types.Operator):
    """This adds an X mirror to the selected object"""
    idname = "object.mirror_mirror_x"
    label = "Mirror X"

classmethod
    call(cls, context):
        return context.active_object
```

The application of data and analytics to learning and workforce planning is still an emerging horizon for most organizations - but is seen as a significant strategic priority, increasingly enabled by commercial software systems.

Given trends in the learning marketplace and in HR technology, one key area this research sought to explore was the extent to which organizations are applying data and analytics to their workforce planning, and if and how they are leveraging learning-related data. Perhaps not surprisingly, the adoption of analytics, and the extent of data-driven learning and development efforts was hugely variable. This very often hinged on company size and the related ability to bring resources (such as people, time and technology systems) to bear. Regardless of resources, there is no question that more and better analytics is a top priority for most employers: in the words of one executive, “Data is everything as far as I’m concerned: I think you have to be able to measure what you’re doing.”

In particular, many thoughtful leaders at small and medium-sized companies reported that workforce analytics and data-driven approaches to employee development were a strategic priority and aspect of their vision (“on our roadmap”) - but an area where they may have had little activity or few resources to dedicate today. As one director of HR at a mid-sized manufacturer relayed, “There’s very little data analysis on the actual skills gaps - for us I don’t even know what that would look like. We do have some competency assessments we do for our quality standards, so we need to measure competencies once a year but we don’t have much other bandwidth.”

Another leader in the manufacturing industry remarked, “We’re not doing much yet. We just had an HR strategy session and that’s a focus as a team: #1 is we need to digitize, we’re way behind in that regard as a company. Whether it’s just the employee experience (self-service HR), to how I can access learning, to tracking data. This executive continued, “Today data is collected and there’s a quarterly HR metrics report and that has standard HR metrics: turnover, diversity, etc. - and that’s all maintained in a Sharepoint site and updated on a quarterly basis. There’s lots of data mining that could be done - but we don’t have a talent management system.”

One HR executive commented on the disconnect between talent acquisition systems and HR ERP systems as a barrier to skills identification: “I can’t tell you who speaks what languages, I don’t know who has what degrees - even when you come in as an employee, your resume is attached - but the details aren’t being pulled out. That’s on us, we didn’t set it up properly. And now we have years of history in there (the ERP system), but it’s a major undertaking to revamp.”

Many organizations were focused on putting basic systems and architecture in place to make better, data-driven learning decisions in the future. Some of the larger companies - especially those with a global footprint - reported developing skills taxonomies and deploying learning analytics across their workforce in ways that supported integrated talent management. Examples of the deployment of analytics were more common in talent acquisition than in talent development.

However, despite the availability of new tools and an emphasis on data, some executives - while fans of the potential analytics - also caution about the hype in the marketplace. Jen Hecht, VP of People Operations at RStudio and an experienced leader in this area notes, “There’s a lot of opportunity, but there’s a lot of snake oil out there too. I’ve seen many HR digital platform vendors who promise to be able to assess human capability in ways that I don’t quite buy. They give you a nice platform with clean reporting and visuals, but it’s like performance ratings: I don’t know if it tells you what you think it tells you... there’s a problem of wanting to move quickly and have lots

of data, vs. the difficulty of actually measuring with authenticity what the potential of talent is.” Hecht continues, “Without a real commitment to direct conversation and feedback and input, the software and the processes can take over and make you feel good - but you need to do the hard work.” This thought captures that the effective application of analytics to learning and workforce planning is less about automated dashboards and more driven by strategic conversation.

Notably however, adopting platforms that track and curate employee learning from various sources came up often as a promising new vehicle for enabling skill identification and tracking learning (learning experience platforms or “LXPs” are discussed later). The development of commercial technology solutions appears to be an essential vehicle for enabling the broader adoption of workforce analytics.





The more digital world of workplace learning increasingly includes microlearning, content curation, and “learning experience platforms” that unite learning resources from a broader variety of external and internal sources.

The digitization of workplace learning is accelerating the idea of “[learning in the flow of work](#),” a term popularized by HR expert Josh Bersin. Many interviewed employers commented that learning and development has shifted from a discrete classroom-bound activity to something more constant and often based on accessing content just-in-time. Many employers are building strategies around microlearning: short, job-relevant pieces of learning content. Subscriptions to platforms such as LinkedIn Learning were frequently referenced - and providing employees access to online content platforms was often described as an outcome of the shift to remote work for white-collar workers.

Shelly Holt, chief people officer at PayScale, describes, “The way people learn has fundamentally changed - people want access when they need it. They don’t want to go to a class - and you’ll likely never take that back and apply it. Where modern learning organizations have shifted to is: we need to create an environment where you learn, you practice, and you apply it. And it’s bite-sized, it’s not 7 hours of courses and then figure out how to do it. You break things down modularly... we don’t want people to go to the learning department to learn - we want them to be learning all the time.”

The shift is from formal, highly structured learning, to more informal, continuous learning. Power and how employers organize and invest in their training function has shifted from having of a centralized “training department,” or decades ago a “corporate university” - to the more distributed model of individual employees and external entities as key subject matter experts. This angle on the “democratization of learning” applies even on the manufacturing shop floor, as one executive describes: “We’re curating learning: putting infrastructure in place and making it accessible for people and then enabling people to curate and create their own learning. Courses, or content - especially video content - that they can share with others. We don’t have to be the center of excellence, the design center. I don’t need an instructional design team to be successful: our employees have a lot of talents and abilities, and an iPhone with a camera with video can be highly effective, they can get the content out on their own and not have to wait for me.”

Part of what is enabling this development is the rise of “learning experience platforms,” or LXPs. For many years, organizations have been using Learning Management Systems (LMSs). With the shift in approaches to lifelong learning for their employees, learning professionals and technology vendors began to develop a more robust learning environment promoting personalized learning. LXPs, or Learning Experience Platforms, were introduced as a method of helping the users discover new learning opportunities. At the organizational level, using LXPs provided an opportunity to enhance learner engagement with better interfaces and user experiences, capture informal learning activity, and collect data to inform strategic learning objectives. For organizations developing their own learning opportunities for their employees, this then required curating their own content. The challenge of doing so included sifting through large amounts of data, and developing content that was relevant to the learners’ interest, but also linked to organizational learning objectives. LXPs can provide a portal to and compelling user interface that unites external resources, formal courses, and internal training content.

The usage of LXPs such as Degreed - one of the leading platforms - has grown significantly since the pandemic, and access to this type of curated, just-in-time learning represents a mindset shift for employees as well as for HR and learning leaders. Nadine Frank of Keysight Technologies describes, “(In the) Degreed platform... we’ve shifted learning assignments into a pathway. We struggled trying to get people to use it before the pandemic. Then, we found people were thirsty

for learning opportunities.” She continues: “The pandemic forced people to stop and pause and see what Degreed was and how they could learn in minutes. Before, people thought, ‘I need to go to training. I need to go to this class,’ versus understanding learning can be informal, and can show up in many ways - it’s a change in mindset.”

Similarly, chief learning officer of TEKsystems, Chris Harry, explains how LXP platforms are shifting power and energy from the training department as the home of subject matter experts to individual employees: “When you think about training and development, any kind of material - 5 years ago, or surely 10 years ago. Your training group or whoever you were working with was somewhat the most important subject matter expert that you had. So my designers back in the day had to go out and understand what was going on with the job, do true analysis, and then build courseware. And we have made an incredible shift, with Degreed’s assistance, where our company is actually the expert, and we are the facilitators and advisors of how to create the appropriate experience.”

Digital Credentialing

Many interviewed HR and learning leaders appreciate that adopting online learning platforms and LXPs - often with built-in certification, badging, and credential offerings and pathways - can facilitate skill identification and allow individuals to earn valuable credentials. The idea of issuing credentials for skill attainment and learning completion is, of course, also often very independent of these systems.

In many cases, credentialing is an individual worker’s goal and motivation more than a corporate imperative. Keysight Technologies’ Nadine Frank sums this up in the following way: “I think it matters to some individuals. We don’t necessarily need credentials internally - but for some, it’s quite rewarding to them to have something that documents their completion. They can put it out in LinkedIn for instance - add their certificates and badges, and it shows that recognition of learning.”

Although developments related to credentials were a key area of inquiry, most interview participants had relatively little to report in terms of credentialing-related innovations. Questions about microcredentials and workforce badging were often met with either intrigue or measured skepticism. Some executives noted that badges and microcredentials might be effective ways to document learning/course *completion* (something that HR leaders point out is valued in compliance training), but that they may not reflect *competency* levels or capabilities. For most who were attentive to microcredentialing, badging and credentialing were seen as an important trend in recruiting and hiring versus a significant priority in employee learning activities. Still, data from digital credentialing platform company Credly, for example, shows a 400% increase in customers issuing digital credentials to their employees between 2019 and 2021, just one piece of evidence that this a developing trend to continue to monitor.

It was often noted that many organizations’ HR systems - or simply their HR processes - lack an emphasis on documenting and tracking the credentials and skills of employees. Credentials may or may not be captured when an individual is hired (e.g., in an applicant tracking system) – but this may not translate into an employee record, and even if so, this certainly is not updated frequently. Systems such as LXPs, of course, begin to enable this type of strategy. A few executives whose organizations had more advanced talent management approaches shared that badging can be helpful to demarcate career paths and can signal - via truly visual representation – skill attainment and talent development within the organization.

Healthcare, which is driven by compliance and demands constant credentialing, is a key exception where ongoing credentialing is mandated. L&D managers from healthcare organizations suggested that due to federal and state health regulations, continuous learning and development is required. This was especially true in the cases of pharmacists and nurses, for example: these two occupations are required to maintain professional licenses, and the wide availability of continuing education credits eased the burden of internal L&D managers having to curate content. As one L&D manager from a large healthcare system stated, “Our pharmacists and nurses often pick the types of courses that interest them in the current role or may allow them to transition to a new role. We have the license as a continuing education provider. In the past we would offer CEU credits externally, but now we only provide that option to our own employees.”

Interestingly, a handful of organizations discussed the power of employee credentialing for customer-facing professionals and the signaling value of this type of “certification” in the external market. PayScale’s Shelly Holt explains: “I think badging makes sense if it’s something that needs a badge. So let’s say we were going to certify people to implement PayScale products - a badge would make sense in that moment because it’s saying you’re credentialed by PayScale. A badge that says I took a course on LinkedIn - I could care less about that, that’s not going to change my opinion.”

Similarly, TEKsystems CLO Chris Harry provides the following example: “In the marketplace, digital credentials are becoming an outward representation of skill and a differentiator. When a customer can see that we have an account manager or business development executive sitting in front of them and they are internally certified and hold industry certifications at the highest level - and they can mouse over the digital credential and see what the criteria are to earn that, our customers can have immediate understanding that they are speaking with a prepared and knowledgeable person.”

In addition, a few firms referenced an interest in developing their own public-facing credentials as a branding and thought leadership strategy, something that past research has highlighted as an [emerging trend](#).





How employers relate to workplace learning providers is evolving rapidly and presents a variety of opportunities and risks as content providers are disintermediated and preferred partnerships are prioritized.

Shifts in learning and development priorities and employer strategies also influence the broad landscape of learning providers that they partner with and rely on: training companies, consultants, colleges, online education platforms, publishers, and so on.

As identified in the earlier discussion of content curation, microlearning, and LXPs, today's workplace learning market is trending toward the adoption of best-of-breed online content from a variety of sources. Through various subscriptions and platforms, employers and employees today can access world-class content and courses from top universities, publishers, and individual experts - a development that the pandemic has sped up. A tremendous range of modules, courses, credentials, and complete programs is now available, representing a far more robust library than any one training firm or university can compete on. The breadth and instantaneous access to excellent digital content are not dissimilar to the shifts in the recorded music industry over the last decade - which is also a model of the trend toward both a subscription format, and more micro- and mobile consumption.

Here our inquiry sought to explore examples of creative partnerships, especially with postsecondary institutions - and to surface recommendations and perspectives for potential partners from corporate talent executives.

Across our nearly 40 interviews (itself of course an exploratory subset of the broader market), the two providers that were referenced very frequently were subscription offering LinkedIn Learning, and LXP platform Degreed. From small companies to large, the pandemic's remote working and online learning acceleration the adoption of these types of platforms. Another example in the leadership development space was ExecOnline, an online learning provider that brings courses and content from top business schools to corporate clients - representing an example of an intermediary between universities and employers. Certainly, there were also countless niche providers and local partnerships that executives mentioned with whom employer organizations had recently partnered.

Perhaps not surprisingly, many of the key partnerships referenced by HR leaders were related to talent acquisition rather than employee development: creating a strategic pipeline of hires through local partnerships. Here, a number of executives highlighted the potential of apprenticeship programs, cooperative education, and other work-integrated learning models.

Many interview participants commented on the lack of speed or nimbleness in working with colleges and universities. Still, others were highly invested in local partnerships for both talent acquisition and employee development: as much as a large share of training has moved online, there is also a case to be made that many employers are pursuing more strategic, preferred partnerships, working with institutions that understand and are aligned with their business and can scale.

For example, North Carolina-based semiconductor manufacturer Wolfspeed has partnered with community college systems in the regions where its most extensive facilities are located. In addition to talent acquisition partnerships to develop a workforce pipeline for new job openings in multiple states, the firm has turned to community colleges to build a technical training curriculum to up-skill its operators into technicians (a need discussed earlier in this report).

Tilson Technology, a Maine-based digital infrastructure company, has partnered closely with Northeastern University's Portland-based Roux Institute. Adria Horn, Tilson's executive vice president of workforce, explains: "We were looking for an education partner instead of a tuition reimbursement program, because we wanted to be able to have conversations on a consistent basis about our employees and their needs... we highly value the ability to have an ongoing relationship and knowledge base with a partner who understands us, where we're going and what our needs are."

California-based Sutter Health has developed a strategic partnership with Samuel Merritt University in Oakland, CA, anchored in substantial tuition assistance and scholarship programs for its critical population of nurses to pursue advanced degrees (alongside a number of key partnerships to grow the talent pipeline for nursing and allied health roles). As Chris Casement, managing consultant for learning innovation and technology asserts, "Having deep, long-term relationships with key universities is an implicit recruiting and talent acquisition strategy for Sutter Health. And it's a way that we can 'influence' the type of candidates that may be considered in our recruiting pipelines."

Employers also underscore how the pandemic and the shift to remote working and learning are wake-up calls for colleges and universities. According to Wolfspeed's global head of talent management, Shawnice Meador, "I think COVID has impacted the higher education system in a positive way, and has reversed the viewpoint that physical classroom learning is the only effective learning method. It's now clear that everyone does not have to sit in a lecture hall and stare at a professor at a certain time in order to receive a truly quality education."

Similarly, Fara Palumbo, chief people officer at Blue Cross Blue Shield of North Carolina, comments on rising expectations for flexibility and return on postsecondary learning investment: "The cost of higher education is out of reach for many people today. In addition, while the prevalence of online degrees continues to increase, the tuition/fees do not seem to be offset by a reduction in delivery costs. It's a complex balance that must be addressed since the knowledge requirements in many organizations are increasing every day and many students expect flexibility to get their degree on their own terms."

Other executives offered recommendations for potential partnerships with employers. In addition to leadership support from the top, Geronimo Rodriguez, Texas chief advocacy officer for Ascension Seton (a healthcare employer) provided these thoughts from a workforce development perspective: "A radical focus on outcomes. We need to learn to fail fast, learn fast. Every organization I know of says they want to be measured by the number of classes and participants as part of their effort. That's great as a tactic or output: I want outcomes or goals. For example, what educational certificate or degree are they getting, and frankly what's the job they're getting hired into? Otherwise, we're failing the individual and our community's quality of life." Similarly, Blue Cross Blue Shield of North Carolina's chief people officer Fara Palumbo asserts, "You need to understand what you're trying to accomplish, what capabilities you have internally, and build or partner accordingly."

CONCLUSION

The COVID-19 pandemic accelerated the digital transformations that were already occurring in the workforce, and these changes are still continuing. In the years ahead, the economy and society face open questions about the permanence of remote and hybrid work; the continued march of technology and automation; the role and obligations of corporations; and the relevance of colleges and universities. It is our hope that the preceding analysis provides a useful roadmap for all stakeholders interested in how the landscape for workplace learning is evolving.

For employers, today's hyper-competitive market for talent highlights a need to focus not only on better recruiting, training, and employee retention - but also on the bigger picture of strategic workforce planning. As the technology solutions related to learning and skills development continue to mature, it is important for employers to monitor this landscape and evaluate how various innovations might be applied to their strategies and operations. While large global employers and other early adopters are leading the way here, the growing availability of affordable commercial software platforms seems likely to catalyze the wider adoption of talent analytics.

Today's workers are prioritizing career development and pathing, and continued investments in this area will serve workers, employers, and society well. Beyond direct investment, employers can also support workers by dedicating time to learning, and providing structure and guidance for a world that features more microlearning and "learning in the flow of work." It will also be critical for employers to consider how their interest in job-related training meshes with workers' desire for mobility and career advancement, and the potential value in microcredentials or other opportunities to translate workplace learning into degrees or academic credit. Additionally, as the world of work exits a period of change that saw unprecedented experiments with remote working and digital learning, employers can be expected to embrace more hybrid or blended delivery, a development that itself will require continued experimentation and more study.

Colleges and universities have a crucial role to play in the workplace learning landscape, although their institutional missions and employers' expectations of them are typically more oriented toward creating a hiring pipeline than meeting current employees' lifelong learning needs. Yet historically, workforce-related learning has been an important market for postsecondary institutions - anchoring programming and enrollment in executive education programs, continuing education and non-credit certificates, online degrees, and custom training. There are certainly opportunities for growth and creative employer partnerships here. However, the level of competition

in the workplace learning market is clearly escalating - and the environment appears to be favoring preferred partnerships that can scale, modular and skills-oriented content, and curating learning from multiple best-of-breed sources. Thus, it will be crucial for colleges and universities to recognize and work with the growing number of intermediaries, digital learning platforms and marketplaces, and LXPs that bridge the world of employers and academia. Success is no longer as simple as sending a faculty expert to deliver custom training in an on-site classroom or broadcasting an online MBA offering to a captured audience of professionals.

To meet employers' workplace learning needs, colleges will need to be much nimbler and more flexible, and achieve more rapid curriculum development and refreshing given the pace of change in skills. Institutions must also invest in their digital capabilities, and recognize the changing structure and modes of learning that are happening in the workplace, as over the long-term, these trends - learning that is online and blended, skills-oriented, shorter-form and modular - set the more global precedent. There may also be a larger role to play in the emerging world of reskilling and preparing incumbent workers for new jobs - and community colleges could have a particular opportunity here with their non-credit programming and workforce orientation. Many of these dynamics also apply to other learning providers such as training firms, professional publishers, and educational technology companies serving employers or professionals in the workforce. Here the ability to integrate assets into LXPs and other HR/talent systems and to align with standards appears especially important.

Finally, developing talent is not just a theme at the top of employers' agendas as they attempt to grow and compete. It is one of the key issues of our time. "The future of work" that universities, governments, and think tanks devoted so much pre-pandemic energy to forecasting has arrived. In Washington, D.C., there is debate about "[human infrastructure](#)" amid the economic recovery. In the capital markets worldwide, there is a growing focus on corporate social responsibility, with employers' [workforce](#) investments and related metrics receiving more attention. And outside of the United States, there is greater awareness of the United Nations' [Sustainable Development Goals](#) (SDGs) and within them the centrality of worker upskilling and reskilling to provide for decent work and to achieve inclusive economic growth.

In this new landscape, employers, workers, learning providers and policymakers each have an opportunity to work together to co-invest in advancing individuals' career development and the economic growth and wellbeing that talent development enables.



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