

Fast forward: Forces defining the future of postsecondary learning

November 2021

Dr. Michael K. Thomas
New England Board of Higher Education



About the NGDLI Project

This research brief is part of the Next-Gen Digital Learning Infrastructure (NGDLI) project, undertaken by the New England Board of Higher Education (NEBHE) with the support of the TIAA Institute.

The project's overall purpose is to build understanding of the digital future of the postsecondary learning enterprise and to strengthen strategic governance by institutional executives, governing boards and policy leaders.

Project goals

Other goals of the NGDLI project include:

- Create a shared language and frameworks for understanding of NGDLI for higher education institutions (HEIs)
- Leverage recent events (including the global pandemic) to elevate the topic among senior HEI leaders nationally and motivate strategic action
- Gather expert perspectives on best-in-class examples, emerging technologies, key trends and opportunities—to inspire experimentation and innovation by HEIs
- Strengthen strategic HEI governance and the proactive pursuit of improved digital learning infrastructure
- Facilitate HEI collaborations and strategic alliances to support equitable and efficient development of NGDLI

About the New England Board of Higher Education (NEBHE)

Founded in 1955 by six visionary New England governors, NEBHE brings together leaders of K–12 education, higher education, government, business and labor to forge partnerships and advance ideas that enhance the economy and quality of life in the six-state region and around the world. NEBHE works to expand education opportunities and advance collaboration among the region’s colleges and universities to expand access, success, affordability, equity and the impact of higher education.

About the TIAA Institute

The TIAA Institute helps advance the ways individuals and institutions plan for financial security and organizational effectiveness. The Institute conducts in-depth research, provides access to a network of thought leaders, and enables those it serves to anticipate trends, plan future strategies, and maximize opportunities for success. To learn more about its research and initiatives for higher education leaders, please visit www.tiaainstitute.org.

Acknowledgements

The author gratefully acknowledges those who assisted in the development of this report. Donald Allen Sarra, NEBHE Policy and Research Analyst, contributed notably to the research on trends and the review of the manuscript and sources. John O. Harney, Executive Editor of The New England Journal of Higher Education, ably assisted with review and editing of the report. We are also grateful to the TIAA Institute for its generous support of this paper and the Next Generation Digital Learning Project (NGDLI).

Executive summary

This brief highlights four transformative forces relevant to HEIs' program delivery models, digital learning infrastructure, and ability to meet the dynamic needs of students, employers and other stakeholders. It describes these forces' primary manifestations, their implications for higher education, and key questions for senior institutional leaders and trustees to consider.

The four transformative forces are:

- Digital transformation
- The evolution of work
- The education technology boom
- The changing currencies of learning

Digital transformation. The pandemic accelerated significant investments in digital transformation and organizations' ecommerce capabilities, improving customer experiences and reshaping their expectations. Postsecondary education lags behind many industries in the level and pace of its digital transformation, challenging HEIs to consider how, post pandemic, new systems and digital technologies can support further improvements to administrative and academic models, and respond to students' changed preferences and expectations—particularly given the high cost (and price) of postsecondary education.

Evolution of work. The growth of hybrid work has made individuals accustomed to digital interactions and remote collaboration and learning. It has also altered basic expectations for the quality of digital tools and support infrastructure, flexibility of time and place, and work-life balance. Employers' concerns about the persistent, global skill gaps and their acute need to “upskill” existing employees have accelerated demand for flexible and continuous learning. In postsecondary education, large numbers of students express an interest in continuing virtual learning opportunities after the pandemic. HEIs must expand their capacity to provide new forms of work-relevant lifelong learning (beyond traditional undergraduate study) to be relevant solutions to employers' pressing talent needs.

Education technology boom. The pandemic catalyzed further growth in education technology (edtech) investments, ventures, and innovation, expanding the marketplace for technologies and services designed to improve HEI academic and administrative functions and the learner experience. Such trends confirm perceptions that HEIs have inadequately responded to significant demand from individuals and employers for flexible, skills-based, career-connected credentials and learning models. HEIs must determine how edtech will enable the future postsecondary learning enterprise, developing digital capabilities to enable ongoing experimentation with new technologies. They must also determine how edtech can accelerate their response to non-institutional competitors and to new, less expensive “substitutes” for traditional postsecondary learning.

Changing currencies of learning. Non-degree, certificate and microcredential programs and non-HEI providers are growing in response to learners' increasing preference for alternatives to the “currency” of traditional degree programs. Similarly, employers have digitized hiring and talent management processes and increased their use of skills-based hiring. Thus, HEIs must efficiently “convert” and “denominate” students' postsecondary learning and credentials into skill-based terms used by employers. The notable growth in alternative credentials and providers creates a new ecosystem in which HEIs must create new partnerships. They must also be able to evaluate, convert and aggregate other credential “currencies” into pathways toward high-value postsecondary credentials.

Building upon HEIs' notable efforts to respond to changes and student needs during the pandemic, HEI leaders must urgently engage their institutions in proactive, agile and iterative efforts to respond to each of these critical forces. Further, HEIs must radically expand their ability to collaborate to build shared capacity, expertise and solutions to develop digital infrastructure and to support new postsecondary learning enterprises.

It is our hope that this brief will help catalyze sustained discussions among boards of trustees and senior leaders to support foresight and strategic governance toward these ends. Innovative and collaborative responses to these transformative forces will increase the likelihood of developing digital learning infrastructures that help ensure higher education's ongoing relevance to students, employers, the fast-changing digital economy and society.

Introduction

The experiences of the global pandemic opened the eyes of many postsecondary leaders to new realities and new possibilities. The pandemic revealed the responsiveness of people and institutions to meet a complex range of student needs. We were reminded of our reliance upon digital technologies, the impact of economic disruptions, and the interconnectedness of our learning, work, wellness and personal lives.

As the most dramatic impacts of the pandemic subside, postsecondary leaders must now assess their awareness of other critical forces impacting institutions and students—and how they might proactively leverage institutional capacity to innovate and transform.

This brief aims to answer the following questions:

- What trends or external forces are most relevant to the development of the postsecondary learning infrastructure of the future?
- How can such forces inform our vision for the future of postsecondary learning?
- What implications do the forces have for developing next-generation postsecondary learning enterprises and for leaders charged with that pursuit?

The brief is not intended as a comprehensive assessment of trends impacting higher education. Rather, it seeks to highlight several forces that are relevant to HEIs' program delivery models, digital learning infrastructure, and ability to meet the dynamic needs of students, employers and other stakeholders.

We considered forces that were accelerated by the global pandemic and affecting multiple industries or sectors, including postsecondary education. We focused on those driven by technological change and highlighting the need for investment in digital learning infrastructure. We also considered forces with implications for strategy and competitiveness that present opportunities to leverage HEIs' pandemic experiences for further change and innovation. Accordingly, these forces merit the active consideration of governing boards and senior postsecondary leaders.

These four interconnected forces are:

- Digital transformation
- The evolution of work
- The education technology boom
- The changing currencies of learning

Each of the following sections addresses a specific force, providing an overview of primary manifestations, a discussion of implications for higher education and questions for consideration by senior institutional leaders—including boards of trustees charged with ensuring the long-term relevance, success and sustainability of HEIs.

Digital transformation

Summary description

Digital transformation defined. Simply defined, digital transformation is using “the latest technologies to enhance existing processes and offer new and improved services and products to customers.” It seeks to improve how organizations operate and how they deliver value to employees, partners and customers.¹

While investments in digital transformation have grown consistently over recent years, the pandemic radically accelerated such investments and processes across most industries and sectors.² Experts estimate that about five years of digital business adoption occurred in about eight weeks during the pandemic. As one executive stated:³

We are witnessing what will surely be remembered as a historic deployment of remote work and digital access to services across every domain.

Recent research suggests that 84% of employers are set to rapidly digitalize working processes, including a significant expansion of remote work.⁴ (See “Evolution of work,” page 8.) Similarly, nearly half of CEOs surveyed plan increases of 10% or more in their long-term investment in digital transformation.⁵

The customer experience. Common frameworks for transformation focus on digitizing key elements such as operations, products and services.⁶ Increasingly, these elements combine to support core drivers of digital transformation in organizations: improving service levels and digitizing the customer experience.

The pandemic and digitalization combined to accelerate fundamental changes to customer experiences and expectations. Retailers and service providers have made massive investments in ecommerce capacity to increase customer safety, choice and convenience through online transactions, curbside service and rapid delivery. Over two-thirds of consumers tried new forms of online shopping during the pandemic, and growth in ecommerce in the first half of 2020 exceeded that of the previous 10 years.⁷ Experts predict that one-third of all healthcare visits will soon involve telehealth.⁸ Survey data reveal that individuals will expect more digital improvements, including self-service tools and more integrated interactions across multiple departments.⁹ In the words of one management expert, the pandemic has created “a more digitally savvy consumer that demands easy and effortless interactions.”¹⁰

The smart organization. An important manifestation of digitalization is the “smart,” data- and analytics-driven organization that utilizes data and insights generated by operations, customers, interactions and transactions. This is evident in the adoption of predictive analytics and artificial intelligence (AI) to inform decision making and the automation of varied processes.¹¹ Such tools can be used to support the quality of services and the customer experience.

In the words of one management expert, the pandemic has created “a more digitally savvy consumer that demands easy and effortless interactions.”

Relevance to higher education

Most HEIs have regularly invested time and resources in implementing digital systems (both academic and administrative) to support students, faculty and staff. Some experts, however, suggest that postsecondary education lags behind other industries in the level and pace of digital transformation.¹² A majority of HEI leaders acknowledge that their HEIs have low to moderate levels of digital maturity and must accelerate efforts to keep up with a continuously changing digital environment.¹³

The pandemic quickly forced HEIs to pivot to primarily virtual delivery of instruction, support services and other functions. This demonstrated the potential agility of HEIs, but the adequacy and sustainability of such changes are issues to consider. Were they temporary transitions and stop-gap solutions? As students return to campus and the pandemic abates, will changes endure, will systems and technology continue to improve, and will they support ongoing changes to administrative and academic models?

Our 2021 survey on the digital future of the postsecondary learning enterprise found that 78% of presidents believed that due to the pandemic, their institutions intend to increase hybrid learning and support services.¹⁴ Such intentions will require additional planning, investment and digital transformation—and must address student concerns voiced about the overall quality of their remote learning experiences during the pandemic.¹⁵

HEIs must grapple with the critical shifts evident in consumer preferences and expectations, particularly given the high cost (and price) of postsecondary education. Student expectations of higher education, including the digital aspects, must be better understood, and HEIs should consider a strategy from other industries and sectors: creating customer experience (CX) officers charged with understanding, monitoring and improving such experiences.

Resource adequacy—financial and otherwise—is key in the digital transformation that HEIs must undertake. They must find ways to collaborate with other HEIs at scale to share resources, staff and expertise rather than each trying to invent the wheel on its own. This collaboration will include careful consideration of vendors and service providers and leveraging aggregated purchasing power to HEIs' advantage.

Notably, accelerated digital transformation will further alter most jobs and professions—and the basic skills requirements of most employment opportunities. HEIs must continually revisit their digital skills and competencies strategies to maximize graduates' employability and ease their transitions to—and value in—the workplace.

Student expectations of higher education, including the its digital aspects, must be better understood, and institutions should consider a strategy from other sectors: creating a customer experience (CX) officer.

Key questions to consider

Specific questions that HEI governing boards and senior leaders might consider:

- How well do we understand the impact of the pandemic and digital transformation on the expectations of the various stakeholders we seek to serve, but particularly students?
- How did the pandemic influence our use of technology and other tools to better support students? To what extent were academic and administrative processes improved, and how do we know?
- What frameworks guide our consideration of further digital transformations of our learning enterprise?
- Do we know how and where to best use technology and people to meet students' needs? Where are digital or in-person touchpoints most effective for the students we serve?
- How “smart” is our HEI in harnessing data and analytics to inform design of processes, experiences and interactions? How can we draw on data to inform digital transformation?
- How do we ensure that digital transformation creates inclusivity and not exclusivity?

Views of how hybrid work will affect individuals, families and organizations abound. It certainly will make them more accustomed to digital interactions and remote collaboration and learning...It will also alter basic expectations for flexibility and the balance of work with other life activities.

Evolution of work

Summary description

Hybrid work, hybrid life. Prior to the pandemic, research regularly indicated that 80% of employees wanted to work from home at least some of the time.¹⁶ The pandemic quickly made that a reality for many workers. More than half (56%) of the U.S. workforce is estimated to hold a job that is at least partially compatible with remote work, and experts project that up to 30% of the workforce will be working from home multiple days a week by the end of 2021.^{17,18} One 2021 survey indicated that only 5% of companies expect a return to normal in-person work routines when the pandemic is over.¹⁹

A year into the pandemic, 68% of American workers indicated that having the ability to work both remotely and at the work site is the ideal workplace model. Approximately three-quarters of all workers said that employers should continue to offer or expand remote work options post pandemic—and 83% of those currently working remotely agree.²⁰ Further, 81% of employees indicate that they are satisfied with technology adequacy for long-term work from home, including remote meeting tools, access to files and networks, and collaboration tools.²¹

Views of how hybrid work will affect individuals, families and organizations abound. It certainly will make them more accustomed to digital interactions and remote collaboration and learning. It will influence expectations around the quality of digital tools and support infrastructure. It will also alter basic expectations for flexibility and the balance of work with other life activities.

Global talent gap crisis. The global challenge of persistent gaps between employers' demand for skilled workers and the supply will continue to be evident in two ways: the inability of organizations to hire adequate numbers of highly skilled individuals, and the need to “upskill” existing employees to keep pace with technological and other changes.

On the “macro” dimensions of this challenge, one observer starkly noted that the talent deficit will continue to accelerate automation—but that associated productivity leaps due to automation will be inadequate to close significant talent gaps. Further:

A major crisis is looming over organizations and economies throughout the world. By 2030, demand for skilled workers will outstrip supply, resulting in a global talent shortage of more than 85.2 million people. ...Left unchecked, the financial impact of this talent shortage could reach \$8.452 trillion in unrealized annual revenue by 2030, equivalent to the combined GDP of Germany and Japan. The United States alone could miss out on \$1.748 trillion in revenue due to labor shortages, or roughly 6% of its entire economy.”²²

Employer opinions repeatedly validate these concerns: 69% of employers report having difficulties in filling vacancies.²³ More than half (58%) of head recruiters report difficulties finding adequate talent to maintain current business activities, and 64% are unable to acquire talent to drive strategic changes. More than three-quarters (77%) of CEOs reported that they view the lack of key skills in the organization as “a threat to growth.”²⁴ Consequently, companies increasingly view talent as “scarcer than capital” and are rapidly developing their own training programs and seeking alternative partners to HEIs as primary sources of talent and skills.²⁵

Fastest learner wins.²⁶ New technologies are being adopted, the mix of work by human and machines is shifting, and some jobs and skills will decline while others emerge. Given such dynamics, the precise future of work is uncertain, but the one constant will be the importance of learning.

Research suggests that one-third of the skills in a typical job posting will not be needed only four years later.²⁷ In recent surveys, one-third of executives reported that their organizations are unprepared to address anticipated skill gaps, and 60% expect that up to half of their organization's workforce will need retraining—or replacing—within five years.²⁸

Thus, reskilling and continuous learning are critical imperatives for employers globally. Companies estimate that 40% of workers will need reskilling of six months or less, according to the World Economic Forum. Further, 94% of business leaders report that they expect employees to acquire new skills on the job, a notable increase from 65% in 2018. To keep pace, 42% of businesses plan to accelerate the digitalization of their upskilling programs and their provision of technology-based learning.²⁹

Research shows that high-performing organizations promote a mindset of continuous learning that supports people who adapt and reinvent themselves to meet shifting needs.³⁰ As one corporate human resource officer stated: “We believe that the ‘fastest learner wins’ because we see in uncertain and changing markets that experimentation, rapid-cycle feedback, and the ability to adapt are competitive imperatives—and all require learning.”³¹

Relevance to higher education

The implications of the changing world of work for postsecondary education are many and deserve further research and serious consideration by HEI leaders. Gainful and meaningful work is the primary benefit that individuals seek through their investment in postsecondary education.

Individuals who are part of Gen Z (born between 1997 and 2007) are the first generation born entirely in the internet age. They have expectations of a “hybrid life” and are strongly influenced by the pandemic. They view hybrid virtual learning as an enabler of creativity, flexibility and diversity. Three quarters of Gen Z respondents to a 2021 survey indicated that they wish to continue virtual education in some form after the pandemic.³²

HEIs will need to consider varied ways to respond to hybrid preferences and the role of technology—all while addressing the already complicated equation of student success. This includes envisioning new “earn and learn” models that support the integration of work and learning across all student segments.

Employers still rely upon HEIs to educate their current and future workforce. But the pressures of the rapidly changing world of work are testing that relationship. Employers recognize that opportunities for learning and development are a primary driver of employee satisfaction, loyalty and positive brand perception.³³ HEIs need to seriously consider their commitment and capacity to provide such learning across a continuum and beyond traditional undergraduate study. If HEIs do not address employers’ most pressing talent needs, employers will accelerate their pursuit of more responsive, cost-effective, innovative and technologically advanced partners.

The units (courses, credits, credentials) and pace (14-week semesters) of learning in many HEIs are misaligned with the need for accelerated, flexible and on-demand learning. If the “fastest learner wins,” such learners are unlikely to turn to the slowest and lengthiest alternatives. While HEIs acknowledge the critical importance of “lifelong learning,” very few position themselves as legitimate partners for alumni’s continuous learning needs.

It is imperative for HEIs to rapidly align with the world of work.

Key questions to consider

In considering the implications of the complex evolution of work, HEI governing boards and senior leaders should consider:

- How will widespread experience with hybrid work, learning and collaboration impact expectations of specific learner segments?
- How will we create flexible learning alternatives that align with the hybrid and integrated nature of work and life?
- To what extent can our HEI innovatively address the challenges and opportunities related to persistent talent gaps?
- Is our HEI becoming more—or less—relevant to the needs of employers? To the needs of workers?
- Does our HEI have a vision for responding to needs for timely, accelerated and continuous learning?
- How would our HEI need to change to become a relevant provider of continuous learning, including to alumni?

Education technology boom

Summary description

COVID as edtech catalyst. The array of education technologies (“edtech”) and technology-supported services offered across the education continuum (pre-K to beyond) is growing at a rapid pace. Postsecondary and workforce education are specific segments in which the number of edtech companies, tools, products and services, and investment levels continue to increase. Edtech and postsecondary industry analysts note that the expanding marketplace for technology and related services seeks to improve the full range of HEI functions, academic and administrative, and the whole of the learner experience.³⁴

Gen Z has expectations of a “hybrid life,” strongly influenced by the pandemic. They view hybrid virtual learning as an enabler of creativity, flexibility and diversity. Three quarters indicated that they wish to continue virtual education in some form after the pandemic.

The steady growth of edtech prior to the pandemic was a transformative force that increasingly impacted all sectors of the education industry. While K-12 education led the way in pandemic-related edtech adoption, there was also notable growth in the postsecondary sector.³⁵ As one observer noted, COVID-19 may end up being the “great catalyst” of all. “Just as the financial crisis of 2008 gave birth to Fintech companies,” the observer predicted, “the [pandemic] lockdown experience will be the bedrock of a greater than ever take-off of edtech companies.”³⁶

The \$2 billion-plus invested in 2020 in the U.S. edtech industry, a 30% increase over 2019, was driven by perceptions of inadequate responses of education systems at all levels to the realities of the pandemic.

Funding flows. Amid the pandemic, 2020 global edtech venture funding reached a record \$16.1 billion, nearly twice the level of 2018’s previous high. \$2.4 billion of investment occurred in the United States, followed by \$2.3 billion in India—both far surpassed by the \$10 billion of venture funding in China.³⁷ The \$2 billion-plus invested in 2020 in the U.S. edtech industry, a 30% increase over 2019, was driven by perceptions of inadequate responses of education systems at all levels to the realities of the pandemic, in analysts’ views.³⁸

Further, in the first half of 2020, U.S. edtech companies raised over \$803 million, and investors noted a 30% rise in investment pitches coming from companies focused on the education and workforce development sectors. One venture investor surmised, “COVID has been an accelerant to all of the trends—increase in digitization, skills-based training—that were already there. ...It makes investors who were not previously interested in the market come in.”³⁹

Career connected. While traditional higher education remains an important investment for individuals, one prominent investor argued that it is increasingly viewed as “insufficient for career advancement” and necessitates “alternative pathways that allow people to choose what paths work for them.”⁴⁰ U.S. edtech investment has been buoyed in part by investments focused on improving education’s connection to the workforce and employers’ consistent need to attract and retain talent.⁴¹ Growing numbers of education entrepreneurs and investors are looking to support employers’ expansion of education benefits as a competitive advantage to attract, engage and retain the best talent.⁴²

Relevance to higher education

Vision vs. vendor. The edtech boom presents both opportunities and challenges for HEIs, highlighting that much of technological innovation in postsecondary education originates externally and is vendor driven. Most HEIs will need to develop greater capacity to navigate the large and fast-changing edtech landscape. With possibilities for edtech and technology services to support people and processes across all institutional functions, HEIs must become more informed, discriminating and driven by a clearer vision for the future of the postsecondary learning enterprise. Edtech is a means to key ends: meaningfully enhancing the quality of learning and the learner experience.⁴³

Assessing HEI digital capabilities. A key starting point is that HEIs must carefully assess the “digital capabilities” they possess across the “learner lifecycle.”⁴⁴ Using digital capability frameworks to map the specific domains in which edtech and technology-supported services are relevant to postsecondary learning is important and provides useful HEI self-assessment and planning tools. Most HEIs will quickly discover that the need for digital capabilities exceeds their existing levels and available skills—an example of their own critical talent gap.

Research and experimentation. The vast majority of HEIs are not in a position to build digital systems, edtech and technology tools themselves, but they should not be passive in searching for the best alternatives available that align with their vision for the learning enterprise.

Specifically, HEIs need to develop a research and development (R&D) function to support engagement of faculty, staff, students and other stakeholders in the experimentation and assessment of tools and solutions. Those who execute such activities must have adequate resources, flexibility and faculty involvement, and integrate that with budgeting and both academic and administrative decision-making processes.

Recognize the changed competitive landscape. The edtech boom is clear evidence of the increased digitalization of the whole postsecondary enterprise—but it is more than that. It signals entrepreneur and investor confidence in innovative and disruptive opportunities in the postsecondary education sector. This boom reveals a growing number of “substitutes” for what traditional institutions have been providing at increasingly unaffordable prices. These disruptive options include alternative programs and credentials, as well as learning offerings provided directly to or through employers.⁴⁵

Key questions to consider

Specific questions that HEI governing boards and senior leaders should consider:

- Given rapid growth in edtech and the profusion of postsecondary-focused solutions and services, how is our HEI thinking about the next-generation development of our learning enterprise?
- What vision of the future drives our HEI’s consideration of tools and technology for improved learning and learner success?
- What is our investment in the resources that make up our HEI’s digital learning infrastructure?
- Who in our HEI is charged with, and accountable for, specific activities and outcomes related to the digital learning infrastructure?

The vast majority of institutions are not in a position to build digital systems, edtech and technology tools themselves—but they should not be passive in searching for the best alternatives that align with their vision for the learning enterprise.

- Which individuals or groups within our HEI are accountable for, and capable of, regularly assessing tools and solutions to support transformation and achieve our learning vision?
- How do we see non-institutional providers with alternatives and substitutes for the credentials and services that our HEI has traditionally provided?

Changing currencies of learning

Summary description

Demand shift. As individuals and employers seek changing knowledge and skills, demand for new forms of learning continues to grow. Buoyed by a preference for flexible, short-term, skills-focused and technology-supported learning alternatives, non-degree, certificate and microcredential programs are in demand and increasingly provided by non-HEI providers. The pandemic has accelerated this trend. Research indicates that since the beginning of the public health crisis, Americans have expressed a consistent preference for non-degree and skills training options over degree programs.⁴⁶

The growth of these alternate forms, or “currencies,” of learning raises critical questions for HEIs and their focus on two- and four-year degree programs, their traditional form of currency. Just as currencies and financial systems are dramatically changing in a digital economy, so are the currencies of learning and the likely roles of HEIs. Will HEIs cede this demand to non-institutional providers or can they pivot? As one learning industry innovator observed, “Universities weren’t designed to change curricula and introduce new classes at the pace required by changing industry requirements.”⁴⁷

There are several dimensions to the changing currency of learning, each requiring new competencies and digital savvy. As with the previous three forces, the shift in currencies has multiple implications and poses questions for HEIs to consider in determining how to reposition themselves in an expanding learning marketplace, as described below.

Emerging credential ecosystem. HEIs, industry associations, global businesses (including Google, Amazon and IBM), bootcamps and myriad other entities offer a growing variety of credentials to learners globally.⁴⁸ The associated price, length, content, quality and value of these offerings are infinitely varied. Multiple intermediaries have emerged to market and deliver credentials to individuals and organizations. These include digital platforms that aggregate offerings from both HEI and non-institutional providers.

The growth of non-degree, workforce-connected credentials is clear evidence of the currency that most individuals and employers increasingly value: clearly defined skills.

In sum, HEIs are surrounded by a host of new providers creating and distributing new learning currencies and denominations that are different from the traditional degree. This raises urgent questions for HEI leaders:

- Does our HEI recognize the increasing relevance of—and demand for—the range of non-degree credential currencies?
- Will we alter or increase the types of credentials our HEI offers in the marketplace? If so, will such credentials be new, the modularization of existing ones or a combination?
- Will our HEI choose to compete or collaborate with other ecosystem participants?
- Will we partner with alternative providers in both credential development and delivery?
- Will we expand our valuation and conversion of other credential currencies to create stackable credential pathways and to aggregate learning from other providers toward high-value postsecondary credentials?

HEIs must recognize that the marketplace of learning has been radically transformed. Now they must determine how to position themselves by offering innovative credentials, increasing their ability to partner with diverse players. This includes recognizing alternative, non-degree credential providers and building HEI competencies in evaluating, converting and aggregating the learning currencies increasingly in circulation.

Skills are the critical currency. The growth of non-degree, workforce-connected credentials is clear evidence of the currency that most individuals and employers increasingly value: clearly defined skills. Despite the effort and cost related to traditional credential attainment, HEIs often do not adequately articulate the currencies of knowledge, skills and abilities that their credentials provide. Rather, HEIs still commonly denominate learning in degrees, grades, courses and credits, leaving employers to determine—and learners and graduates to attempt to represent for themselves—the skills that postsecondary learning has provided.

Further, the digitalization of talent management functions globally has increased the importance of skill-based denominations. Most recruitment, assessment and hiring processes are transacted via technology and include applicant tracking systems, large online job boards, professional networking sites and, increasingly, artificial intelligence-linked functions that drive the review of the backgrounds and skills of billions of job applicants. Many employers increasingly reference the importance of skills-based hiring, focused less on background characteristics, degrees or other traditional factors that some argue perpetuate employment discrimination and inequity.^{49,50}

With skills as the valued currency, HEIs must interpret greater elements of the depth and breadth of postsecondary learning outcomes into the skills, both “hard” and “soft,” that employers desperately seek. They must utilize the growing array of tools available to translate students’ postsecondary learning into the “skill-based terms that (employers) use in job postings and professional profiles, respectively,” better enabling learners and credential earners to represent the value of their learning to the employer.⁵¹

These factors raise challenging questions for HEI leaders:

- Does our HEI have a strategy for adopting tools and technologies to convert and denominate student learning outcomes into skill-based data that has currency with employers and hiring officers?
- How does our institution navigate internal resistance to skills-based descriptions of learning—and perceptions of their inadequate characterization of the breadth, depth and sustained value of postsecondary education?
- How do we develop and leverage expertise with skills-based and labor market data to inform development of new credentials?

The digital credential. Digital learning records have existed for some time, but the digital credential of tomorrow will be much more than an electronic transcript. Digital credentials are changing rapidly, driven by many factors and actors outside postsecondary education, and will be an important part of the emerging learning ecosystem.

Learning providers of all types (global corporations, professional associations, postsecondary and K-12 institutions, and many others) increasingly issue digital credentials, including “badges.” In addition to being digital in format, these credentials incorporate unique characteristics that can benefit HEIs, learners, employers and others. Specifically, digital credentials are designed to be:

- **Data rich:** Beyond simple course, credit hour, grade or completion information, digital credentials are highly “tagged” and searchable records that include granular “metadata” that detail specific skills, competencies, achievements and levels of mastery.
- **Secure:** Supported by blockchain and other technologies, credentials will have important security features to ensure that data is accurate and verified.
- **Portable:** Credentials are designed to give the bearer control over their distribution, for sharing via professional networking platforms or human resource systems, and to enable employer utilization of the rich data within.
- **Interoperable:** Credentials are designed to be used across multiple technology platforms and incorporated into a Learning and Employment Record (LER),

envisioned as a detailed, lifelong and data-rich record of education- and work-related skills, experiences and accomplishments.

In sum, the credential of the future will be more multidimensional, data rich and suited to a networked, digital world in which individuals, institutions and employers seek to identify and leverage skills to their greatest advantage. HEI leaders should consider:

- How does our HEI transform programs and credentials to align with increasingly digital and skill-based technology systems used by employers to identify talent?
- Do we have the expertise, technology and partnerships to support the development of digital credentials, in line with emerging standards?
- How agile and innovative are our HEI's credential development, approval and launch processes?

Conclusion

The four forces described above—digital transformation, the evolution of work, the education technology boom and changing currencies of learning—are pervasive and defining. Each has been accelerated by the global pandemic in ways that validate their consequential nature to the future of postsecondary learning.

HEI leaders have made notable efforts in recent months to respond to the considerable consequences of the pandemic. Now they are challenged to develop capacities for foresight and strategy development to guide their institutions in proactive, agile and iterative efforts to respond to these and other forces.

Given constraints on the resources needed to be successful, HEIs must radically expand their ability to collaborate to formally build shared capacity, expertise and solutions.

Only through effective responses to these transformative forces will HEIs increase the likelihood of their ongoing relevance to students, employers, the fast-changing digital economy and society.

Does our institution have a strategy for adopting tools and technologies to convert and denominate student learning outcomes into skill-based data that has currency with employers and hiring officers?

Endnotes

- 1 Dilmegani, Cem. "Digital Transformation Frameworks from Top Consulting Firms." *AI Multiple*. December 5, 2019. Accessed August 25, 2021. <https://research.aimultiple.com/what-is-digital-transformation/>.
- 2 "24th Annual Global CEO Survey: A Leadership Agenda to Take on Tomorrow." n.d. PricewaterhouseCoopers. Accessed June 11, 2021. <https://www.pwc.com/gx/en/ceo-agenda/ceosurvey/2021.html>.
- 3 Baig, Aamer, Bryce Hall, Paul Jenkins, Eric Lamarre, and Brian McCarthy. 2020. "The COVID-19 Recovery Will Be Digital: A Plan for the First 90 Days." *McKinsey Digital*. May 14, 2020. <https://www.mckinsey.com/business-functions/mckinsey-digital/our-insights/the-covid-19-recovery-will-be-digital-a-plan-for-the-first-90-days?cid=other-eml-ttn-mip-mck&hdpid=3bc36f35-b948-461e-bc41-ebf978dfa007&hctky=12238856&hlkid=898cba1e3bbf4dc68a4df8a9146e955>.
- 4 "Building a Common Language for Skills at Work: A Global Taxonomy." 2021. World Economic Forum.
- 5 "24th Annual Global CEO Survey: A Leadership Agenda to Take on Tomorrow." n.d. PricewaterhouseCoopers. Accessed June 11, 2021. <https://www.pwc.com/gx/en/ceo-agenda/ceosurvey/2021.html>.
- 6 Corver, Quido, and Gerard Elkhuizen. 2014. "A Framework for Digital Business Transformation." *Cognizant*.
- 7 Sneader, Kevin, and Shubham Singhal. 2021. "The next Normal Arrives: Trends That Will Define 2021—and Beyond." *McKinsey & Company*. January 4, 2021. <https://www.mckinsey.com/featured-insights/leadership/the-next-normal-arrives-trends-that-will-define-2021-and-beyond?cid=other-eml-shl-mip-mck&hlkid=152974b7c9214efda3e710cc29586c1f&hctky=12238856&hdpid=da7a2e38-5de9-40c5-9f11-a6c96e779af3>.
- 8 Ibid.
- 9 Afshar, Vala. 2020. "Why Customer Engagement Will Never Be the Same." *The 360 Blog from Salesforce (blog)*. October 27, 2020. <https://www.salesforce.com/blog/customer-engagement-research/>.
- 10 Hernandez, Julio. 2020. "Customer Experience in the New Reality - KPMG Global." *KPMG*. July 15, 2020. <https://home.kpmg/xx/en/home/insights/2020/07/customer-experience-in-the-new-reality.html>.
- 11 "24th Annual Global CEO Survey: A Leadership Agenda to Take on Tomorrow." n.d. PricewaterhouseCoopers. Accessed June 11, 2021. <https://www.pwc.com/gx/en/ceo-agenda/ceosurvey/2021.html>.
- 12 "Sledge, Linsey, and Tiffany Dovey Fishman. 2014. "Reimagining Higher Education: How Colleges, Universities, Businesses, and Governments Can Prepare for a New Age of Lifelong Learning." 2014. <https://www2.deloitte.com/us/en/insights/industry/public-sector/reimagining-higher-education.html>.
- 13 "Initial Insights. Higher Education Digital Capability." 2020. *HolonIQ*.
- 14 Presidential Perspectives on Building Next-Generation Postsecondary Digital Learning Enterprises. Survey Report, November 2021. New England Board of Higher Education.
- 15 "College Students Report Quality Experience Amid COVID-19." 2020. *Gallup Inc.* Accessed June 15, 2021. <https://news.gallup.com/opinion/gallup/327713/college-students-report-quality-experience-amid-covid.aspx>
- 16 "Work-at-Home After Covid-19—Our Forecast." n.d. *Global Workplace Analytics*. Accessed June 11, 2021. <https://globalworkplaceanalytics.com/work-at-home-after-covid-19-our-forecast>.
- 17 Ibid.
- 18 Ibid.
- 19 Lieb, Matthew, and Kate Lister. 2020. "A Look at Future of Home Office Cost Sharing." *Global Workplace Analytics*.
- 20 "Is This Working? A Year In, Workers Adapting to Tomorrow's Workplace." 2021. *Prudential*.
- 21 "Work-at-Home After Covid-19—Our Forecast." n.d. *Global Workplace Analytics*. Accessed June 11, 2021. <https://globalworkplaceanalytics.com/work-at-home-after-covid-19-our-forecast>.
- 22 Franzino, Michael, Alan Guarino, Yannick Binvel, and Jean-Marc Laouchez. 2021. "The \$8.5 Trillion Talent Shortage." 2021. <https://www.kornferry.com/insights/this-week-in-leadership/talent-crunch-future-of-work>.
- 23 "ManpowerGroup Employment Outlook Survey: Global." 2021. *ManpowerGroup*.
- 24 "Who Is Winning the Talent War? 2020 Post-COVID-19 Edition." 2020. *Gartner TalentNeuron*. *Gartner*.
- 25 De Smet, Aaron, Chris Gagnon, and Elizabeth Mygatt. 2021. "Organizing for the Future: Nine Keys to Becoming a Future-Ready Company." January 11, 2021. <https://www.mckinsey.com/business-functions/organization/our-insights/organizing-for-the-future-nine-keys-to-becoming-a-future-ready-company>.
- 26 Bersin, Josh, and Marc Zao-Sanders. 2019. "Making Learning a Part of Everyday Work." *Harvard Business Review*, February 19, 2019. <https://hbr.org/2019/02/making-learning-a-part-of-everyday-work>.
- 27 "Top 5 Priorities for HR Leaders in 2021." 2021. *Gartner for HR*. *Gartner*.
- 28 McConnell, Megan, and Bill Schaninger. 2019. "Are We Long—or Short—on Talent?" *McKinsey Quarterly*, January, 7.
- 29 "The Future of Jobs Report 2020." 2020. *World Economic Forum*.
- 30 De Smet, Aaron, Chris Gagnon, and Elizabeth Mygatt. 2021. "Organizing for the Future: Nine Keys to Becoming a Future-Ready Company." January 11, 2021. <https://www.mckinsey.com/business-functions/organization/our-insights/organizing-for-the-future-nine-keys-to-becoming-a-future-ready-company>.
- 31 Bersin, Josh, and Marc Zao-Sanders. 2019. "Making Learning a Part of Everyday Work." *Harvard Business Review*, February 19, 2019. <https://hbr.org/2019/02/making-learning-a-part-of-everyday-work>.
- 32 Sawyer, Anne. 2021. "What Businesses and Gen Z Have to Offer Each Other." *World Economic Forum*. June 10, 2021. <https://www.weforum.org/agenda/2021/06/business-education-gen-z-global-challenges-future/>.

- 33 Sneader, Kevin, and Shubham Singhal. 2021. "The next Normal Arrives: Trends That Will Define 2021—and Beyond." McKinsey & Company. January 4, 2021. <https://www.mckinsey.com/featured-insights/leadership/the-next-normal-arrives-trends-that-will-define-2021-and-beyond?cid=other-eml-shl-mip-mck&hlkid=152974b7c9214efda3e710cc29586c1f&hctky=12238856&hdpid=da7a2e38-5de9-40c5-9f11-a6c96e779af3>.
- 34 "Initial Insights. Higher Education Digital Capability." 2020. HolonIQ.
- 35 "EdTech COVID-19 Sentiment Survey." 2020. Brighteye Ventures. April 9, 2020. <https://www.brighteyevc.com/post/edtech-covid-survey>.
- 36 Glaser, Alexandre. 2020. "Covid19: The New Mover and Shaker of the Edtech Market." Educapital (blog). October 8, 2020. <https://medium.com/e-d-volution/covid19-the-new-mover-and-shaker-of-the-edtech-market-a3d985e35303>.
- 37 EdSurge. 2021. "Edtech Investment Around the World in 2020 [Infographic]," March 11, 2021, EdTech Business edition. <https://www.edsurge.com/news/2021-03-11-edtech-investment-around-the-world-in-2020-infographic>.
- 38 Wan, Tony. 2021. "A Record Year Amid a Pandemic: US Edtech Raises \$2.2 Billion in 2020." EdSurge, January 13, 2021, Financing edition. <https://www.edsurge.com/news/2021-01-13-a-record-year-amid-a-pandemic-us-edtech-raises-2-2-billion-in-2020>.
- 39 Wan, Tony. 2020. "US Edtech Raises \$803M in First Half of 2020 As COVID-19 Forces Learning Online." EdSurge, July 29, 2020, Financing edition. <https://www.edsurge.com/news/2020-07-29-us-edtech-raises-803m-in-first-half-of-2020-as-covid-19-forces-learning-online>.
- 40 Wan, Tony. 2021. "A Record Year Amid a Pandemic: US Edtech Raises \$2.2 Billion in 2020." EdSurge, January 13, 2021, Financing edition. <https://www.edsurge.com/news/2021-01-13-a-record-year-amid-a-pandemic-us-edtech-raises-2-2-billion-in-2020>.
- 41 Millward, Wade Tyler, and Tony Wan. 2020. "US Edtech Closes Decade with Record \$1.7 Billion Raised in 2019." EdSurge, January 15, 2020, Financing edition. <https://www.edsurge.com/news/2020-01-15-us-edtech-closes-decade-with-record-1-7-billion-raised-in-2019>.
- 42 Rogers, John. 2020. "Education Is the New Healthcare, and Other Trends Shaping Edtech Investing." EdSurge, February 28, 2020, Opinion Investors edition. <https://www.edsurge.com/news/2020-02-28-education-is-the-new-healthcare-and-other-trends-shaping-edtech-investing>.
- 43 Kim, Joshua. 2021. "'Failure to Disrupt,' Learning at Scale and Higher Ed After COVID-19." Inside Higher Ed, February 23, 2021. <https://www.insidehighered.com/blogs/learning-innovation/%E2%80%98failure-disrupt%E2%80%99-learning-scale-and-higher-ed-after-covid-19>.
- 44 "Initial Insights. Higher Education Digital Capability." 2020. HolonIQ.
- 45 "Sledge, Linsey, and Tiffany Dovey Fishman. 2014. "Reimagining Higher Education: How Colleges, Universities, Businesses, and Governments Can Prepare for a New Age of Lifelong Learning." 2014. <https://www2.deloitte.com/us/en/insights/industry/public-sector/reimagining-higher-education.html>.
- 46 "Public Viewpoint: COVID-19 Work and Education Survey." 2020. Strada Center for Consumer Insights. <http://stradaeducation.org/wp-content/uploads/2020/06/pv-one-pager-062420.pdf>.
- 47 "Sledge, Linsey, and Tiffany Dovey Fishman. 2014. "Reimagining Higher Education: How Colleges, Universities, Businesses, and Governments Can Prepare for a New Age of Lifelong Learning." 2014. <https://www2.deloitte.com/us/en/insights/industry/public-sector/reimagining-higher-education.html>.
- 48 Gallagher, Sean, and Holly Zanville. 2021. "More Employers Are Awarding Credentials. Is A Parallel Higher Education System Emerging?" EdSurge, March 25, 2021. <https://www.edsurge.com/news/2021-03-25-more-employers-are-awarding-credentials-is-a-parallel-higher-education-system-emerging>.
- 49 "Building a Common Language for Skills at Work: A Global Taxonomy." 2021. World Economic Forum.
- 50 Skills Required: How Higher Ed Can Meet the Needs of Learners and Employers in a Skill-Based Economy. 2020. Emsi. <https://www.economicmodeling.com/skills-required/>.
- 51 Ibid.



TIAA Institute is a division of Teachers Insurance and Annuity Association of America (TIAA), New York, NY.

©2021 Teachers Insurance and Annuity Association of America-College Retirement Equities Fund, 730 Third Avenue, New York, NY 10017