ILLUMINATE
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CHALLENGE
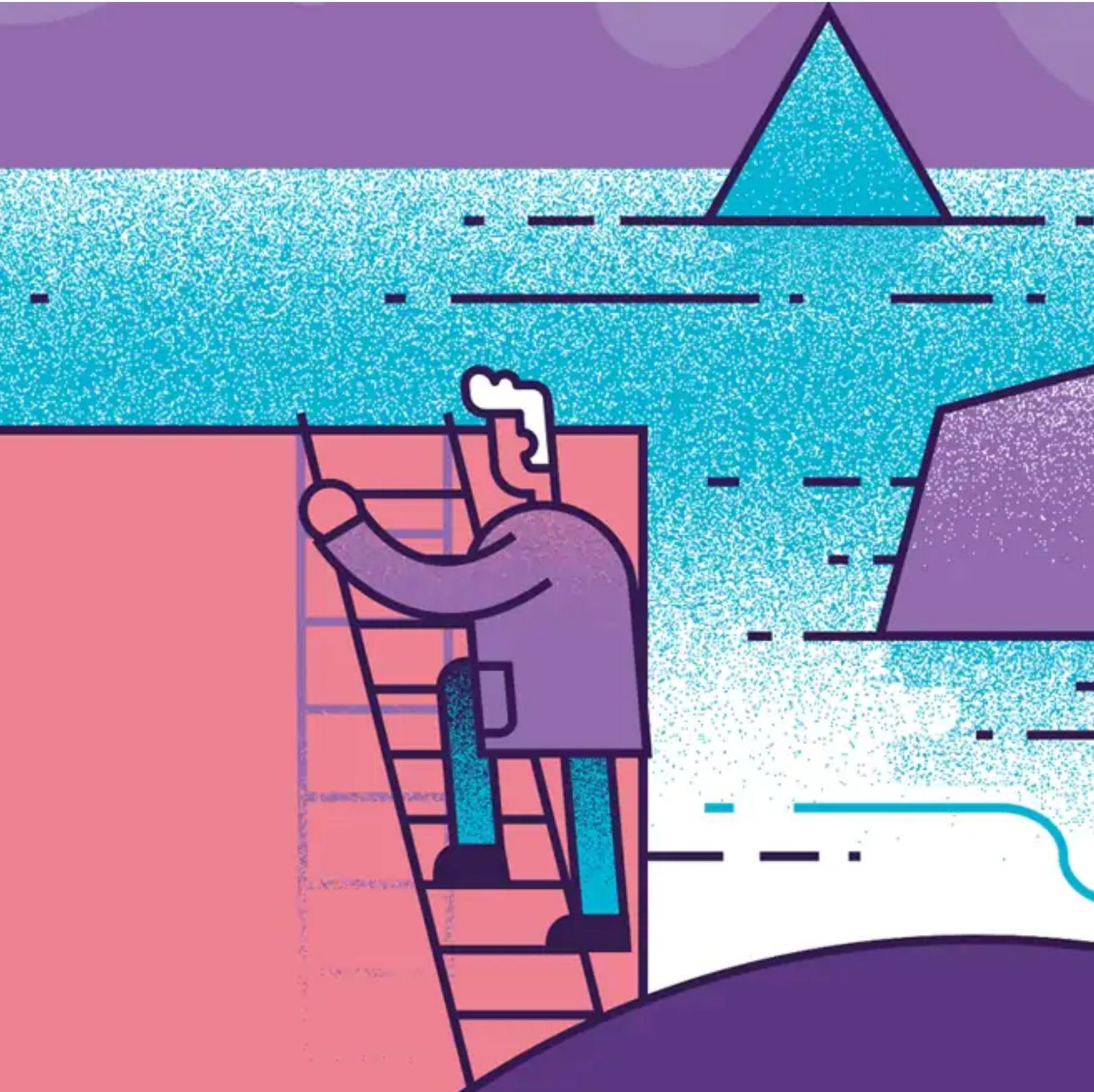
The following case study was co-written by Illuminate Universe and Deloitte Canada
for the National High School Business Conference: CEO For A Day, 2019.

INSTRUCTIONS

INSTRUCTIONS

1. In your teams, read the provided case information and use your best judgement to come up with a feasible solution.
    a. Respect the ideas and opinions of your teammates.
    b. Include all team members in the decision-making process.
2. An appropriate amount of research and factual justification is expected. You may use any **credible** source you wish but it must be cited in your presentation (e.g. bibliography, footnotes, etc.)
3. Prepare a slide deck of your solution. The **maximum number of slides is 10**. **Your appendix may include however many slides you would like.** You will be submitting this in a **.pdf** format for judging.
4. Your slide deck must be presented within a **10-minute timeframe**. There will be an additional 3 minutes at the end for questions.
5. Try to include **comments and/or slide notes per slide** in your exported pdf for preliminary judging. Be attentive with the length of these comments (they should be concise.)
6. Be creative and have fun!

SUBMISSIONS

*All submissions must be uploaded on a **Google Drive Folder created by the team captain.** The team captain will then submit it to the Google Form [linked below]. Deadline: **Thursday, October 24th @ 11:59PM**. Late submissions will not be accepted. ***Slide decks must be uploaded and submitted in **.pdf format.***

- The **team captain** will submit a Google Form at http://bit.ly/deloitte-challenge
- Each member is to **individually video-record a one-minute** response to **one** of the following prompts:
    1. Discuss a disrupting technology and how it would impact your generation and your personal life in the following five to ten years.
    2. Talk about a time you overcame a struggle/problem. What was the problem, what was the approach, and what was the result?
    - **Each team member must upload their response to the team captain's Google Drive Folder - video file must be titled with your full name.**

TOP 5 FINALISTS

After careful deliberation, the top five finalists will be selected to present their case at NHBC: CEO For A Day to a panel of judges. Winners will have the opportunity to attend an **informational interview** with Deloitte Canada and **lunch with a Deloitte Partner after** the event. The finalists will be released on **Friday, October 25th @ 8 PM**.

THE CHALLENGE

INTRODUCTION

With the development of technology and the adjustment in employment expectations, a new ecosystem of educational players is emerging. The learning needs and preferences of the individual consumer is rapidly changing as they begin to realize the shift in demand for skills in the workforce. According to a global survey conducted by Deloitte, the top-rated trend for 2019, by both region and industry, is the need to improve learning and development.[1] The lifespan of specific skill sets are becoming reduced, and the increasingly globalized and automated workforce needs to continuously learn and restrain. Individuals require both lifelong learning and accelerated, on-demand learning.

Industries are suffering due to the insufficient number of qualified individuals for unattended positions. The 2018 Deloitte millennial survey shows that 45% of surveyed employers worldwide are finding it difficult to fill open positions - the largest such percentage since 2006.[2] Moreover, among the companies with more than 250 employees, 67% say they are struggling to find qualified candidates.[3] The gap of unmet skills is increasing and yet, the resources to accommodate for such change is unparalleled.

REDEFINING EDUCATION

This emerging ecosystem heightens the pressure around education and implicates the traditional methods of teaching. Traditional institutions, especially traditional educational institutions, are failing to provide fluid knowledge - knowledge that is gained from diversified experience and that fosters the acquisition and creation of new knowledge. Rather, the fixed curriculum, which was defined by the 20th century, transfers fixed, unchanging, inadequate knowledge stocks, that have minimal value in the real-world workplace.

In response to the traditional institutions' inability to address the unsatisfied pool of lifelong learners, individuals are turning to new institutions. The internet is now a place that provides both formal and informal educational content for the growing population of individuals seeking applicable, real-world knowledge. These platforms include Youtube, Khan Academy; as well as Massive Open Online Courses (MOOCs), such as San Francisco-based Udemy, a platform that specializes in helping individuals improve skills related to career and life.

[1] Deloitte, "2018 Deloitte millennial survey: Millennials disappointed in business, unprepared for Industry 4.0" 2018.

[2] Deloitte, "2018 Deloitte millennial survey: Millennials disappointed in business, unprepared for Industry 4.0" 2018.

[3] ManpowerGroup, Solving the talent shortage: Build, buy, borrow, and bridge, 2018

Lifelong learners seek coursework to not just learn, but to improve their performance. This learning stems from moving beyond the simplicity of hearing and reading, but to doing — alone and as a member of a group. As such, there are four emerging innovations which facilitate the needs of the lifelong learner: (1) accessibility to content (2) the prioritization of social and interactive learning (3) the provision of creation spaces (4) warranting educational programs.

YOUR TASK

You've been hired to perform a business and technology transformation at your school board in support of preparing students for lifelong learning. The objective of this engagement is to introduce the idea of experiential learning and the evolving new capabilities and skills in the way we teach and learn. Using the reference material provided as context and guidance around the concepts of lifelong learning, identify the pain areas, build the plan of attack, analyze the opportunities, and pitch your solutions. **Mandatory readings are included at the end of the Appendix. Links are also available below Figure 2.**

APPENDIX

FIGURE 1

Importance outstrips readiness for all 10 trends

■ Important or very important   ■ Ready or very ready

Learning
86%
46%

Human Experience
84%
43%

Leadership
80%
41%

Taker Mobility
76%
40%

HR Cloud
74%
41%

Talent access
70%
37%

Rewards
69%
33%

Alternative workforce
66%
39%

Teams
65%
33%

Superjobs
41%
33%
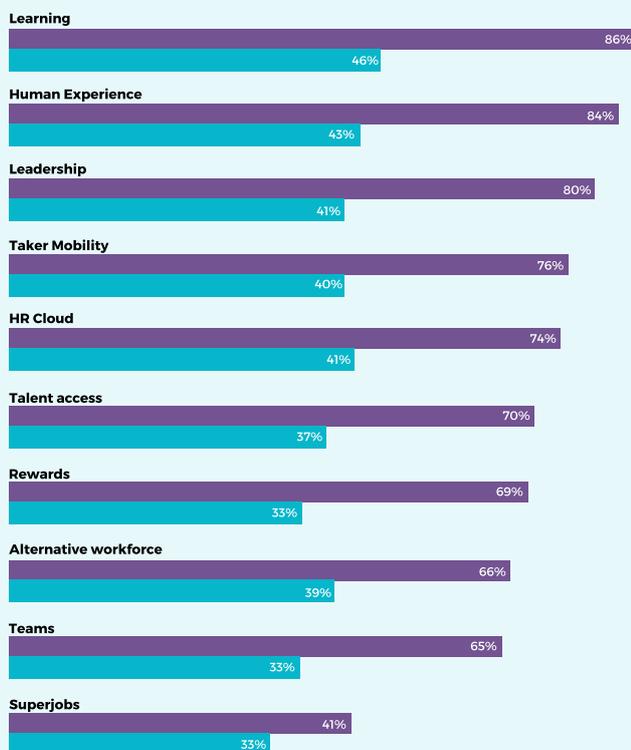
Source: Deloitte Global Human Capital Trends survey, 2019

FIGURE 2

NEEDS OF THE 21ST CENTURY LEARNER

1. Navigational guidance to select the best options
2. Continual challenges and learning
3. Affordability
4. Job placement
5. Relevant Skills and contextual application
6. Flexible and compressed timeframes
7. Intangible skills and tacit/experiential learning
8. Professional development (for independent workers, workers at small companies and workers at companies where training budgets have been cut)
9. Network and community of practitioners

Source: Deloitte, The lIfetime Learner, 2014

READINGS ON LIFELONG LEARNING

http://bit.ly/Deloitte-1
http://bit.ly/Deloitte-2

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Learning in the flow of life
2019 Global Human Capital Trends
-
8 minute read

Deloitte.
INSIGHTS

In a competitive external talent market, learning is vital to an organization's ability to obtain needed skills. But to achieve the goal of lifelong learning, it must be embedded into not only the flow of work but the flow of life.

OUR top-rated trend for 2019 is the need to improve learning and development (L&D). Eighty-six percent of respondents to our global survey rated this issue important or very important, with only 10 percent of respondents feeling "very ready" to address it. Why are we seeing such high levels of concern?

Evolving work demands and skills requirements are one big reason. Our conversations with business leaders reveal that they, as well as workers themselves, are worried about how technologies such as robotics and AI could change jobs and how people should prepare to do them. Their concern is warranted: While some jobs are disappearing due to technology—38 percent of our survey respondents expect to eliminate certain jobs due to automation over the next three years—many more are being transformed. In fact, the most significant workforce and talent issue for C-suite executives that our respondents identified this year was "transitioning to the future of work" (28 percent), followed by the need to redesign work (25 percent) and reskill the workforce (24 percent). Moreover, 90 percent of our survey respondents told us their organizations are redesigning jobs, and 32 percent are doing it substantially. Given that many jobs are changing, it may come as no surprise that, according to a recent World Economic Forum report, more than half (54 percent) of all employees will require significant reskilling and upskilling in just three years.

Reskilling has become a growth imperative for organizations, many of which have seen positions go unfilled for months or years for lack of the right talent to fill them. It's become increasingly apparent that organizations in today's tight talent market cannot depend solely on recruitment to find people for those roles. Low unemployment rates and tight labor markets for skilled workers in many countries have made it difficult to hire "ready-made" workers in a timely manner (it takes an average of 42 days to fill an open job today).

Our survey respondents appear well aware of the major role learning must play in obtaining badly needed skills. When we asked them how they will deal with issues of job redesign, more leaned toward training than toward hiring as a way to obtain the talent they need (figure 1). Eighty-four percent also said that they were increasing their investment in reskilling programs, with 53 percent saying that they would increase this budget by 6 percent or more. And 77 percent of organizations are increasing their learning team's head count, elevating learning to the second-fastest-growing role in HR.

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But despite the efforts and investments being made, our survey results suggest that L&D teams are not moving the needle far enough. Yes, many L&D groups are taking positive steps such as adopting agile and self-directed learning models, acquiring new libraries of content, and moving L&D closer to the business. But while 50 percent of our respondents reported that their L&D departments were evolving quickly, 14 percent said that this evolution was not happening fast enough. And with regard to learning culture, only 11 percent of our respondents —one in nine—said that it was "excellent," with a further 43 percent rating it as good. The call to action is clear: Organizations must work to instill an end-to-end cultural focus on learning, from the top of the organization to its bottom, if they want to meet the talent challenges that lie ahead.

Learning and work: The new organizational ecosystem
Rapid and ongoing changes in the nature of work itself are changing the relationship between learning and work, making them more integrated and connected than ever before. This creates a challenge and an opportunity to build robust work-centered learning programs, helping people consume information and upgrade their skills in the natural course of their day-to-day jobs.

To help accomplish this, we believe a new model may emerge which takes inspiration from the evolution in information technology development we have seen in recent years. As the pace of technological change has increased, IT teams have evolved from sequential, "waterfall" design-develop-test-operate models to new agile models, sometimes known as "DevOps," that integrate system design, development, security, testing, and operations into a team-based, connected process. In similar fashion, we anticipate new approaches to integrating learning and work to arise, perhaps combining development and work into "devwork"—building on the realization that learning and work are two constantly connected sides of every job.

To help enable the creation of this "devwork" environment, we anticipate that business and HR leaders will need to:
- Seek out opportunities to integrate real-time learning and knowledge management into the workflow. With cloud-connected mobile and wearable devices becoming almost omnipresent, and the introduction of augmented reality devices, organizations will be able to explore new approaches to virtual learning in which learning occurs in small doses, almost invisibly, throughout the workday.
- Make learning more personal so that it is targeted to the individual and delivered at convenient times and modes so that people can learn on their own time. Here, technology can play an important role. With growing numbers of learning providers now offering video, text, and program-based curricula in smaller, more digestible formats, organizations have an opportunity to craft approaches that allow their workers to learn as and when they see fit.
- Integrate learning with the work of teams as well as individuals. As teams become more important in the delivery of more types of work, organizations will offer learning opportunities that support individuals as members of teams, providing content and experiences specific to the context of a worker's team.

Joint ownership, joint accountability

Just as "DevOps" combined software development and IT operations, "devwork" must also look to shared ownership to enable success. There is a growing view, reflected in our survey, that the responsibility for learning and development should be coowned: between workers and their organizations, between HR and the business, and among organizations, educational institutions, and governments. In our survey, 38 percent of respondents said they felt that L&D and the business should share responsibility for learning; of those who said that learning at their organization was not currently positioned for success, 48 percent said that it should move to being a shared responsibility between L&D and the business.

This shared responsibility does more than create joint ownership; it enables joint accountability for success—an area that our survey suggests remains a significant gap in most organizations. Despite often major investments in learning, many organizations are not linking performance incentives to their learning programs, increasing the risk that their learning investments may go unused and unappreciated. It is sobering in this regard that 55 percent of this year's survey respondents said that incentives were "not linked at all" to the acquisition of new skills (figure 2), suggesting that ample opportunity exists to create and strengthen this connection. Organizations that put incentives in place to help make sure that managers support learning, and that employees find learning opportunities practical to pursue, are likely to reap benefits both in terms of new skills learned and in terms of encouraging a learning culture.

Recoding learning into the flow of life

Integrating learning and work may not be the last challenge that organizations—and individuals—face. Consider that one in four workers in the United States will be 55 or older by 2024. (To put this in context, in 1994, workers over age 55 accounted for only about one in 10 workers.) Business and talent leaders, not to mention workers themselves, now need—for the first time—to plan for careers that can span 50–60 years out of a potential 100-year life. Longer life expectancies, combined with frequent job changes and the accelerating rate of skills obsolescence, call for significantly new approaches to creating diverse portfolios of learning and work experiences to support people who may work in many different fields and disciplines during their working lives. The challenge may be nothing less than to integrate ongoing learning into the flow of life.

If that is the challenge, then the solution must not only be embedded into the ways in which we work, but the ways in which we live. Enter the emergence of learning experience platforms (LXPs), the latest and possibly most pervasive trend in the area of learning technology. LXPs represent a much-needed evolution from today's traditional learning management systems (LMSs). Where LMSs have historically been focused on business rules, compliance, and catalog management, LXPs are true content delivery systems whose functionality mirrors common technologies people use in their day-to-day lives such as streaming video and social media. With LXPs, content can be integrated into any system to offer on-demand learning; material can be organized into channels or playlists based on specific topics, skills, or learning objectives; and users can share and rate content, leave comments, and receive recommendations using dynamic social settings. In this way, the LXP becomes not just a tool for how people learn at work, but a solution for how people learn in life.

In a world where technology is changing jobs and people are living longer lives with more diverse careers, organizations have not only an opportunity, but a responsibility, to reinvent learning so that it integrates into the flow of work—and life. In the age of the social enterprise, organizations will realize that creating and maintaining a culture of lifelong learning is not just part of their mission and purpose, but is what gives their workers meaning both in and out of the workplace. And nothing is more personal than that.

Next up: The lifetime learner. An article from Deloitte Insights.

The lifelong Learner
A journey through the future of post-secondary education.

Deloitte.
INSIGHTS

The increasingly disparate needs and expectations of individual learners are fueling the growth of a rich ecosystem of semi-structured, unorthodox learning providers at the "edges" of the traditional higher educational system.

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Executive summary

A NEW business landscape is emerging wherein a multitude of small entities will bring products and services to market using the infrastructure and platforms of large, concentrated players. The forces driving this are putting new and mounting pressures on organizations and individuals while also opening up new opportunities. But traditional postsecondary educational institutions are not supporting individuals in successfully navigating this not-too-distant future, nor are the educational institutions immune to these forces. Perhaps more than any other sector, postsecondary education is being affected by changing demand as the learning needs and preferences of the individual consumer rapidly evolve. Increasingly, individuals need both lifelong learning and accelerated, on-demand learning, largely as a response to the pressures of the broader evolving economic landscape.

Rarely seen amid gross national statistics on the skills gap, employability, completion rates, and tuition hikes is a serious discussion of the unmet, and increasingly disparate, needs and expectations of individual learners. The costs to the individual are increasing, and the payoff is less certain. Students of all ages are more comfortable with technology and are less tied to traditional notions of the academy as fewer American adults between the ages of 18 and 22 achieve a four-year, full-time, campus-based degree. At the same time, technological advances reduce the lifespan of specific skills, and an increasingly globalized and automated workforce needs to continuously learn and retrain.

As a result of a growing set of unmet needs and lower barriers to entry and commercialization, a new ecosystem of educational players is emerging, largely independent of the traditional educational landscape. This rich ecosystem of semi-structured, unorthodox learning providers is emerging at the edges of the current postsecondary world, with innovations that challenge the structure and even existence of traditional education institutions. These challengers are extending the education space beyond grades, degrees, and certificates to provide lifelong learning in a variety of formats and levels of effectiveness.

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What does this mean for traditional players and the educational landscape? Similar to what is occurring more broadly, the emerging landscape will consist of a few large, concentrated players that will provide infrastructure, platforms, and services to support a wide array of fragmented niche providers of content, formats, environments, and experiences. Existing institutions—educational institutions, educational publishers, and corporate training departments—would do well to understand the diversity of the emerging landscape and the needs and preferences they reflect in order to help define sustainable roles in this new landscape. Existing institutions will likely have to choose what roles they can play sustainably and where they should be integrating emerging players and tools to support the learning needs of the future.

Meet Christine.

After earning an undergraduate English literature degree, she taught English to adults in Portugal for two-and-a-half years before returning to school to earn a master's degree in journalism in an immersive two-year program. She worked as a reporter at the Seattle Times and then became managing editor at a city-based weekly. She spent the next two years working as an editor at an Internet health site, and then freelancing as an editor and writer for online publications. Dissatisfied with the online writing world and with print newspapers struggling, she returned to school for a law degree. After a year in a big firm, she opened her own practice focused on representing youth removed from their parents for neglect or abuse. To balance against the high stress and emotion of the work, Christine took an 18-month-long series of weekend and evening classes to become a certified yoga instructor. Christine's love of literature never left her, so in her spare time she enrolled in a six-week evening class in novel writing at the Grotto, a community of working writers. From this class, she formed a writing group that continued to meet biweekly for several years—since then, three members have completed their novels. Several years later, with state budget cuts threatening the financial viability of her juvenile practice, she began taking online courses and attending conferences and seminars to earn certification in elder law, and in 2011 opened an elder law practice. She just completed a 20-hour conflict coaching course and hopes to use those skills both in an informal way in her law practice and as a separate discipline. She also is enrolled in a 40-hour mediation training and intends to add mediation services to her repertoire. Christine is 47.

Meet Sarah.

After graduating from high school, Sarah enrolled in a vocational-technical program to earn certification as a beautician. Working at a series of salons, Sarah saved money and enrolled in a state school while continuing to work part-time. Two years into her studies, she married a soldier and spent the next several years moving from place to place and starting a family. Sarah returned to salon work to supplement the family income, learning the latest techniques from her coworkers and industry publications. As her children got older, she resumed college courses through a distance-learning program with her original school, earned her teaching certification, and began teaching kindergarten in a large, challenging public school. Now, with her children a few years from leaving home, Sarah can start to think about what comes next. Sarah is 43.

The shifting foundations of the educational landscape
In the book A More Beautiful Question, Warren Berger suggests that the true focus of education should be on encouraging students to question and explore rather than on delivering a canon of knowledge to students. This stands in stark contrast to the current pressure on traditional educational institutions to provide job-driven curricula to better meet the needs of the economy. With skyrocketing costs, a growing student-debt crisis, and the perception of a widening gap between institutional curricula and employer needs, more attention is being focused on the value provided by different types of traditional educational institutions, specifically four-year universities, two-year community colleges, and trade or vocational schools. Yet, as undersecretary of education Ted Mitchell explains, the value of education can be thought of in several ways: "There is economic value for the individual, economic value for society, but there is also civic value for society and having good, engaged citizens."

Unfortunately, the conversations revolving around skill-based training, financing reform, and improved access in many ways ignore the broader shift occurring in the global business environment. As detailed in The hero's journey to the business landscape of the future, rapid advances in technology and a trend toward public policies that allow labor, resources, and capital to flow more easily across borders are shaping a future economic landscape in which a relatively few large, concentrated players will provide infrastructure, platforms, and services that support many fragmented, niche players. Individuals and institutions alike will have to chart a path through this future (**view figure 1 on bit.ly/Deloitte-1**).

This emerging landscape, and the underlying forces driving it, can have direct implications for education, learning, and other aspects of society. First, exponential advances in the core digital technologies that permeate all industries are leading to exponential, cumulative innovations that are blurring boundaries between once-separate domains and industries, disrupting business and the workforce in ways that are difficult to imagine or predict. In such an environment, greater collaboration between industry and academia alone cannot ensure a well-trained, well-targeted workforce. Second, in this global and networked environment, fixed knowledge stocks have decreasing value, while more fluid knowledge, specifically participation in diverse information flows that lead to the creation of new knowledge, becomes more important. As such, education as a one-way transfer of a canon of knowledge is inadequate, and the characteristics that defined education in the 20th century—bound by time and place, with a fixed curriculum—cannot keep up with the rapid rate of change or the new demands on knowledge and learning.

Most traditional institutions—educational institutions, educational publishers, and corporate training departments—have not yet made the shift from knowledge stocks to knowledge flows. As a result, the traditional learning pathways for acquiring skills and credentials and securing employment are in flux. The institutions that have defined those pathways (see figure 2) are being challenged by a growing array of unorthodox learning providers who are experimenting not only with delivering educational content faster, cheaper, and on demand but also with entirely new learning experiences.

The underlying forces putting pressure on institutions and opening the door for new opportunities and entrants are unlikely to subside. This will drive changes in the post-secondary educational landscape as in most other industries, and it will also continue to increase demand for a richer, more diverse learning ecosystem to help individuals navigate the future landscape.

The needs of the individual learner in the 21st century

Individuals increasingly face the prospect of not just multiple jobs but multiple careers over a lifetime, and of constantly changing technology and environments within a job. As Robin Chase, former CEO and founder of ZipCar, puts it, "Our parents had one job, I will have seven jobs, and our children will do seven jobs at one time." As the expectations for employment and fulfillment change, continuous and lifelong learning becomes increasingly important. Individuals are looking for not just learning but guidance in navigating the changing world to find the best learning and career opportunities. The growth in life coaching and self-help books, now $2 billion and $11 billion industries respectively, is an early signal of this need.

Individuals are also challenged by an accelerating cycle of skill obsolescence in a period of unprecedented transition from skill set to skill set. The rapidly changing business landscape demands constant learning of new skills and domains, retraining, and applying existing capabilities in new contexts. It also demands a greater fluency in digital tools and comfort in virtual environments. It rewards those with greater capacity to seek and access resources and to build social capital through personal networks and participation in communities. While globalization has opened opportunities for new jobs and careers internationally, it has also in some cases narrowed opportunities as certain types of employment migrate to nations with lower labor costs. In manufacturing and IT, for example, 53 percent and 43 percent of US companies, respectively, engage in offshore outsourcing, displacing as many as 2.6 million jobs. What happens, then, to the individuals who must re-calibrate their careers for options that their education may not have equipped them for?

Predicting which skills and jobs are vulnerable to obsolescence is no longer straightforward, either. Beyond globalization, the 21st-century work environment is what Michael Gove, former UK secretary of state for education, termed a "new machine age," where breakthroughs in automation, robotics, and even artificial intelligence have begun replacing jobs once thought to be the domain of human workers. Fujitsu, Canon, and Amazon are but a few examples of organizations that have automated significant portions of the assembly and fulfillment processes.

Changing preferences for autonomy, and the ability to find meaningful work that satisfies those preferences, are also starting to redefine traditional career paths. Many individuals have left large companies for smaller firms or become self-employed as the traditional promises of stability, income and career progression, health care, and training and development opportunities once tied to large companies have been broken.

In addition, retirement-age workers who do not retire, either because of financial needs or a desire to continue to make an impact, are also moving from large companies with retirement programs to smaller businesses or self-employment. While the average worker today switches jobs every 4.4 years, the independent workforce has grown from 16.1 million in 2011 to 17.7 million in 2013. The switch from large to small or independent often requires a new skill set even when the occupation builds off of experiences in a former job or role. Independent workers, as much as their employed peers, continue to need professional development and learning opportunities to maintain and refresh skills, but they have to seek it from external sources. Most small companies, if they offer training at all, also turn to outside sources for professional development, and even larger companies have reduced investment in internal training and development opportunities for employees.

The shelf life and relevance of skills are decreasing, while new occupations, roles, titles, and functions are being created at a rapidly accelerating pace. In an oDesk survey asking hiring employers to rank the criteria for their hiring decisions, a college degree ranked last. The No. 1 criterion was a person's previous performance on a similar or related task. Moreover, by 2020, it is estimated that the work-related knowledge a college student acquires will have an expected shelf life of less than five years. Fabio Rosati, the CEO of Elance (which recently merged with oDesk), states, "The technologies that were relevant even two to three years ago are different than the technologies that are going to be relevant in the next two to three years, [and that's moving] at increased speed." From an occupational perspective, according to career networking platform LinkedIn, the top 10 job titles used by employees today (including iOS developer, social media analyst, big data architect, cloud services specialist, and digital marketing specialist) did not even exist five years ago. What are the options for the approximately 16.4 million students who graduated from higher education institutions just 10 years ago and now want to pursue a career in one of these jobs that didn't exist then?

In addition to the pressure to continuously adapt to the forces that are reshaping the business landscape, the cost-benefit equation for individuals considering any form of traditional education has changed. Tuition costs have grown in absolute terms and are part of a long-term trend of state and federal governments shifting the cost burden to students and their families. In fact, 71 percent of students graduating from four-year universities have debt averaging $30,000, a 20 percent increase since the recession. Even 88 percent of Pell Grant recipients had student loan debt greater than the national average of $25,550 for public universities. While tuition costs have gone up, job placement rates from four-year institutions have decreased, with 40 percent of recent college graduates unemployed in the first year, and others underemployed. This changes the equation for individuals as they consider their options, and alternative learning pathways become more appealing.

Add to this equation a potential student, very much a consumer, who is comfortable with technology and accustomed to getting information from a variety of online sources. This description isn't limited to Millennials, who have undeniably grown up with a different expectation for the pace and engagement of their learning environments, are fluent in social media, and easily transition to new platforms.

Across virtually all generations, people turn more readily to the Internet as a resource for entertainment and information; education and learning aren't such a leap. Some of these learners are the same recent students who didn't complete degree programs, who graduated but failed to find employment, or who saw friends or family members sink under runaway student debt. In addition, with more visibility into options, as with other aspects of their lives, consumers are seeking out those that match their preferences for faster, more flexible, or more experiential formats.

Finding new ways to empower learners and support their unmet lifelong learning needs is an attractive opportunity for new entrants. But with a shifting student profile—currently the "modal student is 36 years old and doing school on the side"—traditional educational institutions, if they want to stay relevant and viable, must also find new ways to better address the unmet needs of a variety of learners. It is no surprise that new forms and institutions are emerging and gaining credibility, in part as a consequence of the slow response and inability of traditional institutions—not just educational but government and corporate as well—to keep up with these evolving needs.

An emerging ecosystem serving learners at the edges
Much has been written about "the higher education crisis" and the multilayered organizational inertia, policies, and practices that hinder innovation and change within traditional educational institutions. Those arguments are valid, but we would suggest that by focusing internally they miss the competition coming from the "edges," from unexpected places and sectors. These new entrants in education are unlikely to look like the incumbents; lowered barriers allow competitors to offer individual components of what traditional institutions (four- and two-year colleges, vocational schools, and corporate training) provide.

New entrants are innovating all along the learning spectrum. A rich ecosystem of unorthodox learning providers is emerging at the edges to experiment with technologies and approaches—in some cases to try to deliver a component of traditional education in new ways that reduce costs, improve effectiveness, or increase accessibility (faster, on demand); and in some cases to offer something entirely new with different goals that cannot necessarily be judged by traditional metrics of time-in-seat, completion, or assessment scores.

The eroding barriers to innovation in learning

In The hero's journey through the landscape of the future, we examine, across industries, how the barriers to entry, commercialization, and learning are being dramatically impacted by technological advances, ubiquitous connectivity, and more empowered and digitally savvy consumers. In particular, we study the way these forces have shifted consumer power and preferences, how they have lowered barriers to new entrants in education and opened the doors to innovation in learning, and the platforms that have come out of these forces.

One potent example is the availability of financing for education technology. What began as a trickle—$64 million of investment in 2009—has swollen into a flood, with $1.25 billion, an increase of 35 percent, invested in the education technology market in 2013. Much of the growth has been in informal, lifelong learning: MOOCs, professional development, and professional skills were the education categories most funded by venture capitalists in Q2 2014. San Francisco-based Udemy, a MOOC platform specializing in helping individuals improve skills related to career and life, raised $32 million in series C funding of new ventures.

The growth of venture funding in this space is allowing more entrants with potentially disruptive technologies in content creation, access, tools, and formats to directly impact lifelong learning. Platforms such as Udemy and Udacity have opened a content creation ecosystem that was originally restricted to academics, administrators, and publishers to include new entrants such as engineers, designers, data scientists, coaches, and others with a desire to share their expertise. While the offerings in education technology are still nascent, and many will fail to either become viable business models or provide long-term value to learning, the increased investment in the informal learning space signals consumer and market appetite for learning experiences that extend beyond an education bound by time or location.

While access to financing has become relatively less of a hurdle, other barriers remain, not impassable but not yet negligible. The desirability and superiority of a four-year college education is deeply embedded in American culture and policy, with the consequence that even the best alternative forms of education are viewed as inferior compromises. As a result, and with the notion of meritocracy, the higher education conversation tends to revolve around access and outcomes. Ted Mitchell, US undersecretary of education, summarizes the administration's agenda as "access, affordability, quality, and completion," with the goal of providing the highest level of education for which people qualify. The assumption is that the ranking of options remains unchanged. For new entrants to gain traction, they will have to overcome the barriers around brand, acceptance by employers, and comfort with non-authoritative sources of learning and warranting. While these barriers may be slower to fall, emerging players will likely gain momentum from the increasing desire for participation in learning, relative affordability (particularly if new entrants gain acceptance by federal/state funding sources), and flexibility (which reflects the increasing diversity of learners, for example, transitioning/reentering workers such as veterans and senior citizens).

Where are the edges?

Currently, new entrants primarily exist in parallel to traditional postsecondary education institutions, but they are beginning to compete with traditional paths. New entrants are emerging in five arenas, mostly centered around the individual:

1. The workforce: As workers recognize the importance of continuous learning, they are more actively seeking learning opportunities. In 2013, 23 percent of employees left their jobs citing the lack of opportunities for professional development and training.

Companies are starting to realize the need to provide more and different training opportunities that better suit each unique worker, allowing workers to develop relevant and marketable skills. Companies such as SAP have started to create their own MOOC-based platforms, like openSAP, to allow subject matter experts within the workforce to create relevant and timely content for others. Rather than fund expensive training departments, others are turning to outside providers such as Udemy for flexible, relevant content.

2. Independent agents: The growth in the independent workforce, together with the lack of formal training and development programs in small companies, leaves a large population of individuals who are accustomed to managing their own careers looking for external solutions so that they can continue to learn and retrain. This is where specialized programs such as coding-intensive boot camps (for example, Dev Bootcamp, Hack Reactor, and Codeacademy), Meetups, and MOOCs are emerging.

3. Passion arenas: Passionate workers, specifically those who embrace challenges as opportunities to learn and who connect with others to find solutions and make a meaningful impact on an area of interest, want to share that passion with others. As a result, the need to share and connect with other passionate individuals manifests itself as social communities and creation spaces where learning and connection can blossom around significant challenges.

4. Emerging countries: Access to education is a necessary element for economic prosperity, particularly in developing countries. The global demand for learning through more inexpensive, pull-based, flexible models is leading to experiments with new platforms and environments to make learning accessible to a rapidly changing world. Free MOOCs are one example, but so is the global network of institutions owned by Laureate Education, or New York University's global academic centers that have a mission to provide access within a country.

5. K-12: The learning habits and preferences of students move with them, and experiments that began in the K-12 space might translate into the postsecondary world. For example, AltSchool, a new network of K-8 schools in the Bay area, is experimenting with ways to make the experience of learning more flow-based and immersive. AltSchool focuses learning around microschools where the neighborhood playground serves as the gym and the science class on liquid nitrogen takes place at the local ice cream shop. Consider, also, the example of Khan Academy. In providing short, modular, on-demand, self-paced math instruction to the K-12 audience for the past seven years, Khan Academy has been refining the platform and techniques for engaging learners in personalized curricula focused on skills mastery. As its target audience moves beyond secondary school, the lessons learned by Khan Academy may prove extensible into higher-level material or into other subjects or curricula, whether that will be carried forward by Khan Academy or others. This format is already migrating into other K-12 flipped classroom ventures and will likely prove applicable to a variety of other learning needs.

The future learning landscape

With barriers to entry and commercialization diminishing and an array of new entrants challenging traditional forms and institutions with innovations to make learning more accessible, flexible, and personalized, what are the implications for existing institutions, from higher education to educational publishing to corporate training?

The education/learning landscape is simultaneously becoming both fragmented and concentrated. Figure 4 shows the emerging landscape of unorthodox providers at the edges. Concentration will exist in the functions that operate on scale and scope, particularly with aggregation platforms, whereas fragmentation will exist within the content creation space as warranting and accrediting content becomes easier.

Fragmentation in content creation:

The establishment of informal and more formal learning aggregation platforms (Udacity, EdX, Khan Academy, Udemy, and even YouTube) has led to an explosion of content creators. Online service tools (such as SchoolKeep, Fedora, and Skilljar) provide guidance to instructors on how to create their own online learning videos, lowering the costs of producing and distributing content to serve diverse and highly specific learning needs. Combined with more liberalized warranting, the pool of content creators will likely continue to increase beyond those with a professional degree and institutional affiliation.

For example, over half of Udacity's courses are created by people who aren't traditional professors but are experienced industry leaders. With 4,000-plus independent content creators, Udemy maintains an open platform, meaning that anyone regardless of credentials can log on and create a course available to all its users, including such courses as Java for Complete Beginners, created by software development trainer John Purcell with 209,000 enrolled students, or Become a Startup Founder, created by the Founder Institute with more than 600 enrolled students. According to Dan Chou, director of business development at Udemy, the courses offered on the platform are filtered for quality as determined by the learners themselves. The best-rated courses appear at the front of search queries, and others drop to the bottom.

Meanwhile, other emerging providers offer "white label" and hosted solutions rather than a marketplace model. Companies such as SchoolKeep, Fedora, and Skilljar make it easy for individuals to build and operate courses at their own Web domain, resulting in a blurring of the line between education and e-commerce. Online service tools enable individual instructors of all backgrounds to not just build great lectures but also develop a sales funnel for the product that is independently owned by the content creator.

As fragmentation continues in the content creation space, the individual has more opportunities to continue learning beyond a traditional school setting across an increased array of subjects with timely and updated content. Technology and the liberalization of warranting content allows business to move from traditional teacher-centered models to new models that shift the current focus on the transfer of expert-generated knowledge toward scalable learning.

Concentration in learning content aggregation

Investments in education technology have financed the creation of online learning platforms, which in turn have opened the doors for all types of individuals to create, distribute, and share learning content. YouTube can be thought of as an early-stage learning aggregation platform. Anyone can learn almost anything on YouTube because it has lowered the barriers of entry for anyone to easily upload, organize, and distribute content on the Internet for free. While YouTube may not have the same sophistication in warranting its content as MOOCs, its equivalent measure of relevancy can be seen through the number of likes, views, and real-time comments a video receives.

Rather than trying to provide all content to all people, learning aggregation platforms are beginning to carve out niches in the market, shedding unnecessary costs and better differentiating themselves from their peers. The learning content aggregation platforms that support fragmented content creators will become concentrated, as any given end user's participation on many platforms delivers little value and carries high convenience and attention costs, if not financial.

Already, the prominent names related to MOOCs each serve a particular genre and learning type (figure 5). Udacity provides STEM content and mostly targets computer programmers and engineers; NovoEd provides entrepreneurial content, mostly to individuals starting businesses; and Khan Academy mostly targets those who seek competency mastery through practicing problems.

The way some learning content aggregation platforms have gone about partnering with corporations is targeted and reflective of the genre in which they serve. In 2013, Udacity formed the Open Education Alliance by partnering with Google, AT&T, Nvidia, and Intuit to create courses that would help bridge the technology skills gap in today's workforce, moving away from direct partnerships with universities. While the actual effectiveness of these courses is still to be measured, by partnering with leading tech companies, Udacity is able to brand itself as the learning content aggregation platform for STEM topics.

Much as Napster was not the final word in the music industry, these learning aggregation platforms are not the end-all solution to innovation in learning. However, they can be the catalyst for change aligned with supporting lifelong learning. While MOOCs have reported low average completion rates of around 7 percent, completion may not be the definitive success metric of this new format, as learners may dip into courses for a specific purpose or content that may not require completion. Success for an aggregation platform might be better measured by a net promoter score (the likelihood of a learner recommending the course to someone else) or even a retention score (the likelihood of a learner returning for another course). While only 23 percent of academic leaders believe MOOCs to be a sustainable method of education, their value comes from opening the learning ecosystem to a broader set of creators, distributors, and learners in support of continuous learning.

Mobilizers and learning agents

Aggregation, of course, doesn't provide the support or social and experiential environment that accelerates learning. Aggregation is also not the same as skillfully sequencing courses within a collection, or across collections, to resemble a coherent curriculum. This is where mobilizers and agents come in.

Lifelong learners seek coursework not just to learn but to improve their performance, and that type of learning comes from moving beyond hearing and reading to doing—alone and as a member of a group. To get better and faster requires the support of a broad set of resources and platforms that enable people to come together to create and absorb knowledge. MOOCs and other early technology offerings generally aren't designed to facilitate individuals coming together with a goal of dramatically improving performance, something that traditional learning institutions are better able to provide within the existing physical infrastructure for collaboration.

But with the help of emerging mobilizers (players focused on orchestrating collaboration and learning within the ecosystem), first steps have been taken to foster the coming together. By partnering with Meetup, for example, online content aggregators can create an initial environment for the individual learner to connect with other students and engage with the content, share feedback, ask questions, and, hopefully, create sustained relationships.

Some traditional institutions for learning, such as Arizona State University (ASU), have realized the power of mobilizers such as TechShop as a means of facilitating collaboration among not just students, but a diverse array of community members and corporate partners. In 2013, ASU, the US public university with the highest enrollment, partnered with TechShop, a membership-based, do-it-yourself workshop and fabrication studio and coworking space, to provide all the 60,000-plus ASU students with free access to a wide range of machinery and tools. According to Mitzi Montaya, dean of ASU's College of Technology and Innovation, TechShop has enriched students' learning experience. TechShop allows students to apply knowledge they have learned in projects that are meaningful to them, regardless of major or coursework.

As fragmentation leads to a proliferation of information and content options through learning aggregation platforms, and lower barriers and unmet needs attract an ever-richer array of learning options, individuals will likely need help navigating not just MOOCs and digital resources, but the whole ecosystem of learning. The role of the agent, an entity that thoroughly understands the individual's learning and career goals, becomes increasingly important. Britney Van Valkenburg, passionate about programming, sought online courses to learn how to code, but she found it difficult to navigate a career path in programming because of all the content that existed. What courses should she take, and in what order? What communities should she engage with, and where could she learn fastest? Should she enroll in a degree program or join a hackerspace?

The role of the agent is to provide holistic career coaching that is personalized to the individual based on a deep understanding of his or her needs, skills, and goals. More and more, individuals are seeking out such agents; in fact, the life coaching industry grew to a $2 billion industry in 2013. A pure-play agent is brand-agnostic, anticipates individual needs with proactive recommendations, and is widely accessible, whether in person or virtually. A scalable, widely accessible, and affordable type of agent is still very much nascent, although companies such as Eddefy are trying to create a scalable solution for navigating a learning path, and LinkedIn also fulfills some of the goals of an agent.

Entrants from the edges gaining credibility

As the business environment becomes more globalized and automated, and individuals begin to recognize that a four-year degree is neither an automatic ticket to employment nor the last milestone in their learning careers, more individuals are traveling alternative learning pathways.

This expanding ecosystem of semi-structured learning fits the model of how learners—or at least a certain type of learner—want to proceed through their learning. The mobilizer serves as a spark or catalyst. This has so far been observed in the programming space but may prove relevant across other domains. Between Meetups, social learning spaces such as Hacker Dojo and TechShop, and on-demand resources such as Codeacademy and GitHub, individuals are exposed to some skills, ideas, and foundational concepts. This initial exposure sparks an interest, which leads the individual to look for opportunities to apply or experience skills in context, and to engage with a community of others pursuing similar interests. At this point, the desire to go deeper and achieve mastery often leads to a need for a more structured setting, a physical presence, guidance, and a coherent curriculum. This is where the emerging, short-term, immersive institutions come in, whether it is the nine-week Dev Bootcamp for coders or entrepreneurial schools such as the new Draper University.

Specialized, short-term, intensive programs such as Draper University, Hack Reactor, Codeacademy, and Dev Bootcamp, while still at the edges and currently confined to entrepreneurship and programming, have gained significant traction with individuals and companies. Coding boot camps alone are poised to reap $59 million in tuition in 2014. The number of graduates from these specialized intensive programs, or vocational schools, has also grown by 175 percent in the past year. In fact, across the existing coding boot camps, 75 percent of graduates report working full time in a job that requires the skills taught in the curriculum, compared with the 5 percent who were working as full-time programmers beforehand.

While these programs are not intended to replace the four-year institution or the community college for now, they are intended to close the gap between what academia teaches and what modern jobs require. The average computer science major may not graduate with enough coding- or workplace-specific skills to be a professional coder, resulting in an unemployment rate of around 9 percent in 2013 for recent college graduates with computer science degrees.

These boot camps aim to bridge that deficiency by providing an intensive project-based curriculum relevant to the work environment. Dev Bootcamp touts a 90 percent placement rate for its students at top-tier companies such as Facebook, Pinterest, and Google; Hack Reactor reports 100 percent job placement, saying all of its alumni are software engineers with salaries of over $100,000.54 Dave Hoover, cofounder of Dev Bootcamp, agrees that a nine-week intensive program cannot compete with a four-year immersive higher education institution, but it can serve as an alternative pathway in an à la carte model of learning. A student, no matter what age, could attend these intensive boot camps within different disciplines and find work opportunities to apply that knowledge.

Adopt a new mindset

- **Change your lens:** The pressures institutions are facing also hold the opportunity for making significant changes according to their individual contexts. Rather than focusing on the problem—budget constraints, unsupportive faculty, poor technological infrastructure—or replicating the shiny emerging tool that others are using (such as MOOCs), focus on identifying the learning mechanisms that work within the context of your institution and are meaningful to tomorrow's learner.
- **Move from static to fluid:** In a networked world that is rapidly changing, static knowledge stocks delivered at a fixed point in time will be less valuable than knowledge flows created as individuals continually refresh what they learn through experience beyond the four walls of a classroom. Learning institutions have the unique opportunity to enable a physical space and opportunity for tacit knowledge sharing—the knowledge that resides in our heads and cannot easily be codified—which taps into the rich and changing ecosystem around them.
- **Identify your competitive strengths:** The value of the university, community college, or vocational college is in its ability to function as a community of practice around knowledge. The higher education experience is unique in its ability to surround the learner with a network of individuals from different backgrounds—leverage that. As Pendleton-Jullian suggests, probe deeper into what value the university experience brings that cannot be replicated or virtualized, and identify the specific factors (people, programs, disciplines, and context) compared with other forms of learning that make your institution unique and relevant to the lifelong learner.
- **Scale the edges:** Antibodies to change and innovation will exist and may stem from misaligned faculty support, lack of a strong technological infrastructure, or lack of funding transparency. Innovation can exist at the edges of every organization, whether in a particular department, set of students, or physical location. Focus on these areas where change is blossoming rather than despair about the immovable core, and leverage external resources from the surrounding ecosystem of tools and organizations for support rather than seeking internal funding and approval. Identify initiatives that are both aligned with your strengths and with agents of change within the organization. Edges can become conduits of transformation, helping the institutions of today tap into the opportunities of tomorrow.

Identify a sustainable role

Today, learning institutions have the unique opportunity to transform the learning environment (physically, virtually, and socially) into a new ecosystem that supports the currently unmet need of lifelong learning. Traditional learning institutions—universities, community colleges, and vocational schools—will need to understand what roles they currently play, where they want to be, and what assets they can leverage to stay relevant in the context of moving from knowledge stocks to flows, identifying dynamic factors, and scaling the edges. With concentration around the scale and scope roles mapped in figure 4 (infrastructure provider, aggregation platform, and agent business), fragmentation with content creation, and mobilizers as the connective tissues between the fragmented and consolidated players, traditional postsecondary institutions have a choice:

- **Transform into an infrastructure business.** Focus on providing the facilities and locations for a variety of learning experiences. As an infrastructure provider, traditional institutions shed the roles that are not core to providing facilities and learning infrastructure. This helps transform the institution into a recognized space for learning where content can be brought in or accessed from external sources, but students look to the institution to connect with a broader pool of individuals for the purpose of collaborative and social learning. While in this context, the institution amplifies the value of its physical infrastructure. Back-end systems and delivery and warranting systems are also forms of infrastructure that will be valuable in the future. It is more likely that these types of infrastructure will be provided by new entrants, so existing institutions should be realistic about where they can compete sustainably and leverage other providers for the roles they don't play best.
- **Become a platform business and curator.** Aggregate resources for knowledge and connect them with appropriate learners rather than act as the vendor of knowledge. As a platform business, institutions become the entities that now pull knowledge from the broader ecosystem to share with learners, rather than holding tightly to the content that is their own. This helps enable the institution to access the most relevant and current knowledge content from an ecosystem of content creation that extends beyond the institution. In the process of becoming a platform business, institutions have the ability to also curate content. Top universities such as Harvard University, University of California, Berkeley, or Massachusetts Institute of Technology can use their current brands to curate quality content. In this case, the institution acts as a platform to identify relevant content in the networked ecosystem.
- **Become an agent business.** Channel your sector experience to provide lifetime guidance for the learner on his or her learning and career. As an agent business, an institution would help learners navigate a world of exponential change and abundance of information. As a talent agent for the student, the institution would commit to this role for the student throughout his or her career in the pursuit of lifelong learning.

Some traditional learning institutions are already thinking about the new roles they can play. In the Stanford 2025 project, one of the four proposed models of innovation was the Open Loop University. Through Open Loop, students can attend university through a six-year nonlinear timeline, allowing them to learn, work, and return to learn again. Axis Flip is another model that will rework the infrastructure of the university to center around learning hubs, a model most closely tied to the role of the institution as an infrastructure provider for collaborative learning.

Whatever role they play, institutions will also have to connect and collaborate with mobilizers in order to unlock the collective knowledge of the ecosystem and become part of the transformation. The learning landscape is changing, and traditional institutions and new entrants have the opportunity to participate in and define a rich learning ecosystem that is more personalized and fluid than education has been for at least a century. Institutions will need to decide where to compete and where to cede the floor, but those that succeed will find ways to remain relevant, embrace the forces shifting the broader global environment, and begin building their own futures now, before it gets harder to claim a meaningful space in this emerging landscape.

Institutions of higher education face ongoing challenges, including skyrocketing costs, intense competition, increased government regulation coupled with less public funding, and an unpredictable economy. Reengineered business processes that align personnel activities with institutional goals and strategies—supported by selected IT—can help organizations reduce costs while creating innovative services that help attract and retain quality students, faculty, and staff. Deloitte serves over 200 higher education clients, drawing upon a pool of multidisciplinary sources across consulting, financial advisory, tax, and audit. Learn more at www.deloitte.com/highereducation.

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