The Social and Economic Imperatives Driving the Need to Scale Access to Education and Training Across the Lifespan

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Abstract

This chapter "sets the stage" for the substantive chapters in this book. It describes the meta forces shaping the who, what and how higher education institutions can continue to be relevant and responsive in a rapidly changing world. Demographic shifts, accelerating technological change and the forces of globalization are creating significant pressures on higher education institutions to provide accessible and inclusive education across the lifespan. The essays in this volume provide clues to how institutions of higher learning can engage these new imperatives.

Keywords: Lifelong learning, technology, globalization, demographic change, re-engineering education, alternative credentialing, regionalism

Introduction

The spring and summer of 2020 will long be remembered as a moment in time when the floodgates of change were opened and millions of citizens began to recognize that the world is affected by multiple forces beyond our control: pandemics, hurricanes, floods, forest fires, and equally important simmering social unrest and massive responses to social injustice which can completely derail everyday routines and common practices. In such a world, much of what has always been taken for granted is challenged. People are looking for new knowledge, new facts, and new perspectives on how to understand what is happening. People are also being challenged in terms of their core identities, the work they do, where they work, how they work and, as importantly, how major events like pandemics and natural disasters might reshape what they do and how they do it moving forward. In such a context, colleges and universities across America are being called upon to respond in multiple ways; helping to renew the economy, navigating health issues, facilitating people getting back to work, and properly educating not just children and young adults but adults across the lifespan, all of whom are affected by these precipitous changes.

If ever a discussion about new modalities and forms of education were needed, it is at this moment in time. Individuals, institutions and communities are struggling to assess what will be “the new normal” and how can we be ready for it. University researchers, scholars and

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professors have much to contribute to understanding these forces. But, they also need to take action now to help American citizens and industries not only adapt to, but embrace this change. This collection of essays could not come at a more propitious time. From a variety of perspectives and experiences, it addresses innovations in the content, organization, and delivery of education and certifications. Each represent viable paths moving forward in this moment when education and re-education, competency development and certification across the population are essential to all forms of work.

The goal of this chapter is to establish the context, clarify the raison d'être, the need for new models of teaching and learning, of thinking and doing in order to address the uncertainties, the fact of continuous change and the promise of new opportunities across society. With that comes the equally urgent need for rapid change in how colleges and universities build their capacity to educate and credential growing numbers of people across the lifespan. The Lumina Foundation (2020) forecasts that by 2025, barely four years from now, 60% of working age Americans will need to possess some kind of post-secondary credential in order to be employed while today that is 52%. A recent study by the Brookings Institution and ITIF (2019) reports that over the last ten-year period five cities (San Jose, San Francisco, Boston, Seattle and San Diego) have been responsible for 80% of the new tech jobs created in all the United States. And, Osterman and Weaver (2016) in their study of employers' perceptions and satisfaction with community colleges (the putative workforce development system for American industry) revealed that barely 25% used or are satisfied with the results. Clearly, we as a nation need to seed and nurture innovation more widely *and* we need better, faster ways to upskill our workforce especially in technical fields. America can only meet these challenges by identifying competency clusters in high demand industries and designing education and training that can be organized and delivered through accessible and scalable delivery modes.

In other words, a challenge of this magnitude cannot be addressed without including a wider range of education providers, especially universities. The issue we need to address is how these knowledge-rich institutions can innovatively deliver education as well as scale these innovations. How to scale what is already in the curriculum in a manner which is qualitatively equivalent, affordable, and accessible is one issue. The work of Georgia Tech's online Master's degrees in this space is exemplary. How to assure access to competency development and upskilling across the lifespan in a wide range of diverse technical and professional occupations is another issue. Extension programs across the University of California system serve 400,000 enrollees annually in on-line and hybrid certificate programs for post-baccalaureate adults. This

is another superb example of scaling. And, assuring advanced management and leadership skills across industries is another part of the equation. MIT is offering mini-Master's degrees through a network of universities around the globe which represents yet another scalable model.

What the reader will learn is that colleges and universities across the globe are already responding to the need for change in how content is developed, organized, and presented, utilizing multiple formats and technologies to assure that those in need of new knowledge and competencies can easily access it. The chapters which follow describe a variety of innovative credentialing programs that provide examples of what is possible. For more than a decade, a national discussion has been evolving about the need to refocus university education, not in a manner that abandons the enormous benefits of residential, liberal arts colleges and research universities but in a manner that amplifies their capabilities and reach. The need for amplification is driven by three critical imperatives: 1) globalization, 2) rapid changes in technology, and 3) significant social and demographic shifts. Each has profound implications for economic and community well-being, as well as who needs to be educated and trained and what kinds of education and training will be needed across increasingly diverse enterprises and geographies.

Key Drivers of the Need For Scaling

Globalization

Let's begin with globalization. Increases in globalization are a consequence of extraordinary advances in communications, transportation, and productive capacity which were fueled by the significant advances in technology in the post-World War II decades when R&D investments, both public and private, grew exponentially. These gave rise to new products and processes which transformed the world profoundly, particularly in the production, marketing, distribution, and servicing of products. In a mere 50 years, the economic foundations of America have evolved from a primarily industrial, within country economy, into the information age with the rapid expansion of global production and trade. The recent growth of the digital economy has connected us in ways never imagined, thanks to the internet and software advancements. And, today many economists use the concept of "the platform economy" as a way to characterize the enormous reach and ubiquitous uses of Microsoft, Google, and Amazon websites for the conduct of more and more business nationally and globally. Each shift has given rise to increasingly global networks. Each has organized innovation, production, marketing, distribution, and business services in different ways. Each shift has given rise to new industrial clusters and relationships requiring new knowledge and competencies in the

workforce. The pace of change, especially the accelerated rise and decline of key industries has brought with it new workplace expectations and skill requirements which in turn require continuous education and reskilling for large numbers of people and a need for scale. What we have today is a globally distributed system of invention, production and distribution and the rapid decline of monolithic, vertically integrated companies across all sectors. These globally distributed enterprises have profound implications for the American workforce and the challenges in the global competition for talent. US citizens previously competed for jobs within their town, neighboring counties, or neighboring states. But today, talent pools in Taiwan, Sweden, and Brazil are also competitors. A company may have its headquarters in St. Louis or Stockholm or Sao Paulo, but it still could have 60% to 80% of its activities and workforce located in dispersed regions around the globe.

The implications for education and training shaped by the competitive issues facing the US talent pool are radically different today than in previous eras. High demand competencies and expertise required across multiple industries can now be sourced not just locally or nationally but globally. Nonetheless, our K-12 and higher education systems, so suited to earlier economic regimes, are lagging in their capacity to produce the quality of citizens and workers this great nation now requires.

Technology

Rapid changes in technology which affect not only the content and character of the products being produced but the ways in which they are being produced compounds the education and training challenges needed to be addressed by higher education. In a mere 25 years, such things as the development of the internet, cell phones, high speed computing, and AI have transformed financial markets, fueled the growth of telemedicine and created on-line retail platforms squeezing out not just small business but “big box” stores. The economies of the world are increasingly built on digital platforms transforming everything from retail, news media, manufacturing, healthcare and education. All have changed the way people work and what they need to know in profound ways. And in addition, the rapidity with which the digital technologies are put to work in the economy means that the workforce must be ever conscious of new requirements that are being driven by ever increasing shifts in the tools and processes used to get things done.

Examples of how technological innovations can replace hundreds of thousands of existing jobs, simultaneous with creating hundreds of thousands of new jobs requiring new skills and competencies abound. Calculators and typewriters, core tools of the 1960s and 1970s are replaced by laptops in the 80s and 90s and cell phones today. Bank tellers, real estate brokers,

car dealers, retail malls and movie theaters are all in decline as online banking, shopping and entertainment gain market share. And, healthcare is being transformed, not just by telemedicine, but by the myriad online health sites consumers can refer to resulting in a move to personalized medicine which the well-known, Eric Topol, MD, elucidates in his book, “The Patient Will See You Now.”

Demographics

The final piece in this contextual puzzle is the way in which demographics/population characteristics are reshaping talent pools and the workforce challenges and opportunities in the 21st-century economy. Advances in communications and transportation have created a population mix in vivid contrast to the post-World War II era when the United States in particular, benefited from waves of talented immigrants from a hollowed out Europe coming to the United States to study at our universities and participate in the booming growth of the US economy. Today, not only Europe but Asia have rebuilt their social and economic foundations. And, in many ways, they have outpaced the creativity and productivity of the United States. Talent now is attracted to multiple centers of creativity and growth across the globe. As a consequence, the population mix of the United States has changed dramatically posing new opportunities and challenges given 21st-century economic realities. The age distribution and percentages of ethnic and racial groups in the United States are far more mixed than ever in our history. Large waves of new immigrants from Asia and Latin America, multigenerational pockets of poverty and our daunting history of racism underscore the urgency with which education and training institutions need to respond to population diversity in ways that assure rapid access to higher learning and critical competencies for employment.

The paradox is that while the organizational forms and dynamics of work and production have changed radically, the organizational dynamics and cultural values prevailing in higher education are still based on an industrial model of learning framed by an intrinsically exclusionary, Eurocentric idea of education as a full-time, residential experience for young adults primarily focused on liberal learning. Embedded in this vision is a blindness to the extent to which secure family roots and unacknowledged forms of social capital have significantly advantaged some groups over others. These, as importantly, also play a role in enabling select groups of young college graduates to find meaningful work and build productive lives in spite of an absence of attention to workplace readiness during their college years.

A society and an economy dependent on a much larger talent pool drawn from many diverse social and ethnic communities benefitting from different forms of social capital requires higher education institutions to broaden their definitions of a) what it means to be an “educated

person," b) how to pace educational careers, as well as c) what kinds of education, training and experiential learning most effectively prepare people for life in a complex, increasingly integrated global society. This means not just doing things in the *same way* for larger and larger numbers of students but finding ways to scale access to higher education and workforce credentialing in multiple ways which effectively can educate diverse learners.

Conclusion

The Lumina Foundation, referenced in the introduction to this chapter, has embarked on a major effort under the rubric of A Stronger Nation. They are tracking America's progress towards a more robust, inclusive talent pool by 2025. Based on growing research findings they project that by 2025, 60% of Americans will need to hold a credential beyond high school, a quality credential that prepares them for informed citizenship and economic success. Today only about 52% of the American population has some form of credentialing beyond high school. Thus, there is a large gap to be filled in a very short time. It is also important to note that states vary on measures of current competency with some states having only 42% of the population and others 58% of the population currently credentialed. The Lumina Foundation is calling for a comprehensive system for learning beyond high school; one that is built on the expectation that every American will earn a credential. They also recognize that single credentials are likely to be insufficient over time because there will be a continuous demand for upskilling, reskilling, and cross training over the lifespan due to the rapid changes previously discussed. Gary Matkin, Dean of the University of California at Irvine (UCI) Continuing Education, recently published a piece on this topic (Matkin, 2019). He points out that there are imperatives that require universities to consider how over time they relate to the specialized education that will be required over the multiple decades of a person's work life. UCI, like all campuses of the University of California, provides hundreds of certificate programs primarily for postbaccalaureate adults working in engineering, teaching, nursing, medicine, law, project management, R&D, etc. Lumina is also documenting how more and more degree programs are offering curricula and experiences that enhance work readiness among college grads. At UCI they have identified degree courses which articulate with their professional certificates as well as have currency in the world of work. An undergraduate course in mammalian laboratory techniques prepares students in 17 measurable competencies that are relevant to working in research laboratories or life science companies. UCI awards students a "badge" of competency that they can carry with them into the world of work along with their bachelor's degree. In another UCI course, a professor teaches students how to create something of use/value with 3-D manufacturing so they understand how to move from the "virtual" world to the world of

"reality." A successfully executed 3-D printed object merits a UCI "badge" which these engineering students can carry with them. Matkin's point is that alternative credentials such as these can be embedded in the traditional curriculum but also can be made available in self-contained certificates and credentials. They certify competency to employers and many are potentially scalable. Universities need to embrace these additional forms of credentialing both within the existing curriculum and across the lifespan through easily accessible certificates and advanced degrees to assure the talent pool required for both citizenship and work. The case studies at MIT and Georgia Tech included in this volume are excellent documentation of how this can be done.

In sum, the demand for talent is indisputable. That demand involves ever increasing levels of competency among larger and larger groups of people in the fundamentals as well as in the knowledge and competencies needed for employment, reskilling, upskilling, and cross training over the lifespans of professional and technical workers. Thus, the stakeholders in the university enterprise are diversifying and growing by leaps and bounds. In order to meet their needs, universities need first to embrace the idea that different forms of educational certification are necessary and appropriate across the various ages and stages of a person's life. They then need to acknowledge that in the 21st century they have a vital role to play in assuring educational access and credentialing across the lifespan because of the growing significance of advanced and technical knowledge in all fields of practice. Clearly foundational knowledge is essential to all forms of learning. However, the ability to operationalize concepts and ideas into solutions, programs and products which directly benefit the society and the economy require different types of knowledge and different ways of organizing and delivering that knowledge so that it can be absorbed quickly and put to work immediately.

These forces combined have given rise to a number of interesting and significant initiatives in universities across the globe which, until recently, existed on the margins of mainstream universities and colleges, and in particular, research universities. A number of innovative initiatives suggesting how change is beginning to happen in higher education are included in this volume. The book is organized around four major themes. The first is vertical at scale with articles on how MOOC programs at the University of Illinois at Urbana-Champaign and emerging remote classes at Georgia Institute of Technology have worked. Section II on strategy and change management shares the experience of Georgetown University in scaling teaching infrastructure rooted in Jesuit values addressing quality online learning at scale at the University of California Davis and institutionalizing scalable learning provisions at Louisiana Tech University. Section III addresses the importance of fostering a culture of innovation with

very useful insight from the University of Maryland System, Georgia Tech and a useful example from the Delft University of Technology in the Netherlands. Section IV addresses issues of scaling new online capabilities with excellent insight from the University of Washington, from Trinity College of Engineering in India and from the experience of edX. Our book concludes with a thoughtful epilogue from Yakut Gazi, Nelson Baker, and Karen Sibley addressing, not only scalability, but affordability in a post COVID-19 world.

The order of magnitude these new educational imperatives represent means that colleges and universities across the spectrum, but most especially research universities because of the ways they contribute to innovation and the growth of new industries, *must* find ways to 1) enhance access, 2) assure affordability, and 3) scale their reach. The very interesting case studies in this volume provide important clues and even models as to how that can be achieved. It is time to take action across America's higher education system. The demonstrated successes included in this collection suggest that America's higher education system is more ready than most believe to meet the challenge of providing accessible, high-quality, scalable education for ALL.

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