6

This chapter summarizes trends, themes, and lessons from this volume and key credentialing initiatives supported by Lumina Foundation.

Reflections on Education in a New Era of Work and Learning

Holly Zanville

Printed by [Wiley Online Library - 050.090.141.195 - /doi/epdf/10.1002/cc.20399] at [31/08/2020].

This chapter looks across the trends, themes, and lessons described in this volume and those culled from the experiences of community colleges that have been part of several Lumina Foundation-supported initiatives focused on credential innovation since 2013. My position as Strategy Director for the Future of Learning and Work at Lumina Foundation has afforded me a unique platform to follow closely the emerging environment for community colleges.

Taken together, the five chapters paint a dynamic picture of the tremendous opportunities and challenges facing credentialing in community colleges, now and in the future. This climate of disruption is occurring on many fronts—and shows no sign of letting up. Many stakeholders will be affected: students, workers, employers, educational institutions, policymakers, learning support-service providers, and technology developers. Most importantly, the credential market will need to accommodate considerable variety and change. The work ahead is for community colleges to architect a flexible system able to respond to shifts in the demand for skills training that will accompany both tight and loose labor markets and variable macroeconomic conditions.

In this complex environment, Chapter 1 reminds us that community colleges will need to build credentials that respond to five important imperatives for change:

- Unbundle learning. Credentials that are competency-based, employer-aligned, and innovatively delivered will require unbundling degrees into modularized learning units to enable the delivery of a variety of credentials. Many will be short and be "rebundled"—stacking shorter

credentials into larger ones.

New Directions for Community Colleges, no. 189, Spring 2020 © 2020 Wiley Periodicals, Inc.
Published online in Wiley Online Library (wileyonlinelibrary.com) • DOI: 10.1002/cc.20399

- Integrate academic and workplace learning. The new era of work and learning will require foundational knowledge and skills that are frequently built through the liberal arts academic disciplines, as well as specialized knowledge and skills built through technical programs and the workplace. Integrating academic and workplace learning will provide learners with both educational and career pathways.
- Focus learning for learners and lifelong learning. Learners will need to pursue further education and learning throughout their lives and maintain the currency of their skills to improve their ability to advance in their careers. A requirement for lifelong learning will be the case in virtually all industry sectors and affect all workers. Workplace changes will drive this need, as changing technologies and labor market needs will require workers to adapt their skills. The "60-year curriculum" in which individuals begin their learning careers in their teens, continue learning throughout their work years, and continue their education during retirement, is an apt terminology to describe learning in the new era of work.
- Offer competency-based credentials. Competency-based credentials allow learners to progress based on demonstrated mastery of content, regardless of time, place, or the pace of learning. Competency-based strategies provide flexibility in the way that credit toward credentials can be earned or awarded, and provide learners with personalized learning opportunities such as online and blended learning. Framing credentials around clear competencies will better align the credentials offered by community colleges with the growth of competency-based hiring processes among employers.
- Recognize the emergence of a new quality assurance model. To support the credentialing marketplace, a variety of quality checkpoints will be needed. These include accreditation of credential providers and programs by third-party agencies, more accurate tools to assess learning, and verification of learning acquired from multiple sources such as educational institutions, work, military learning, and self-study.

As discussed in Chapter 2, there already is a push for college programs to provide shorter credentials that can be stacked—or built upon each other to create a larger credential—and embedded into degree programs so that they lead to structured career pathways. A variety of credentials can comprise these pathways, including digital badges, certificates, certifications, and college degrees. Community colleges will find more opportunities to design and reconceive programs in the future, and a set of well-packaged credentials will create a tapestry of milestones that depict the knowledge, skills, and abilities a worker-learner will have. Increasingly, these credentials will be verified by more accurate assessment tools—and portfolios of an individuals' learning achievements will be more easily apparent through portable learner records that compile and verify learning acquired from

Printed by [Wiley Online Library - 050.090.141.195 - /doi/epdf/10.1002/cc.20399] at [31/08/2020].

multiple sources.

As noted in Chapter 3, convergence of postsecondary and industry credentials will be both possible and imperative through the increasing prevalence of partnerships with employers, including the articulation of industry-based learning and credentials into academic degrees. Employers such as IBM—who are both consumers and providers of credentials—will continue to align their education and training interests (entry-level and upskilling their workforce) even more with community colleges.

To this end, employers will be asked to articulate the skills they are looking for and communicate them clearly to educational institutions and learners through job descriptions, skills-based hiring, employee advancement practices, and partnership programs like work and learn pathways. Using a common language of competencies and skills will increasingly be a requirement to enable close articulation between credential providers and employers.

As skills-based hiring takes off and new education models become available, learners will be presented with an ever-growing number of options. They will face steeper navigational challenges to determine the best pathways for themselves, sorting through which programs will serve them best, which credentials they should earn, and how their credentials will connect with one another. The future marketplace will require new "GPS" systems to help learner/workers navigate the new credentialing market, and these systems must be trustworthy and accessible to all learners.

As Chapter 4 describes, colleges will build certifications into their programs and align degree curricula to job market needs and competencies through digital badging. These closer partnerships with employers—and with industry sectors such as advanced manufacturing, information technology, health care, retail, and hospitality—will significantly alter college governance and the work of faculty. This will require that faculty align curricula with market needs, which can be accomplished by working with business and industry associations, in the envisioned learn-and-work marketplace. These changes will not be limited to faculty in occupationally oriented programs; faculty in the liberal arts must also focus on developing marketable competencies and twenty-first century skills for their students. Indeed, all education programs will benefit learners by aligning to workforce in this new era of work and learning.

To this end, Chapter 5 reminds us that colleges must assume a greater role in ensuring quality in their programs by incorporating standards and perspectives of employers and other quality assurance organizations (for example, regional and specialized accreditors). Given the proliferation of nondegree credentials, many colleges and intermediary organizations that assist colleges in quality assurance will help create and implement nondegree credentialing designed for the new credentialing market.

Community colleges will need to focus on both evaluating and assessing learning and new quality assurance approaches since various third-party

Printed by [Wiley Online Library - 050.090.141.195 - /doi/epdf/10.1002/cc.20399] at [31/08/2020].

organizations are likely to exert influence on colleges' quality assurance

accreditation activities, in addition to traditional accreditors. Within this dynamic context, colleges should expect to think differently about degrees and nondegree credentials, with the nondegree credentials morphing into the mainstream as we better understand the learning that stands behind the array of credentials that are valued in the marketplace.

What the Future May Hold

What is the central message for community colleges in an increasingly complex, demand-driven credentialing system? While colleges will be only one of many credential providers, they will be an important provider, at the front line in this competitive credentialing marketplace.

Colleges will be called on especially to pilot and implement many new types of credential programs—often with limited resources and on tight timelines. Many of these programs will likely be short, learning-as-needed programs as employers will be looking at outcomes from credentialing programs such as students' pass rates on certification exams and on-the-job success measures.

All told, colleges must prepare for a more complex, dynamic marketplace. A marketplace in which community colleges act as a key provider of credentials responding to employers as hirers of those holding credentials workers is a change—and the change requires transparency in all credentials and hiring practices. This means community colleges must make their many different types of credentials understandable to both employers and learners, and employers must signal clearly what credentials they are seeking—not only degrees, but also certificates, certifications, licenses, and digital badges. Colleges and employers in this marketplace will benefit by playing an active role in some of the efforts to establish standards, track credentials, and create strong frameworks (blueprints) for learning.

Innovators in the credentialing marketplace are already prompting action by calling for a "common language" for all credentials (see Chapter 8). For example, the Credential Transparency Description Language (CTDL) can serve learners, workers, employers, educational institutions, the military, and policymakers by helping colleges meet the need for transparency in credentialing. The aim will be to create a dynamic, real-time, web-based credentialing system similar to those used in the travel industry. In that industry, airlines, hotels, and car-rental firms have adopted standard language specifications that enable applications such as Kayak and Travelocity to constantly pull real-time data that makes travel information readily accessible to users. If the credentialing industry adopts a similar approach, developers can build applications (apps) that will help learners and employers to find their way through the maze of our work-and-learn marketplace.

In the more dynamic marketplace of the future, we may eventually see

Printed by [Wiley Online Library - 050.090.141.195 - /doi/epdf/10.1002/cc.20399] at [31/08/2020].

long-used terms disappear from the education lexicon. For instance:

New Directions for Community Colleges • DOI: 10.1002/cc

- Adult learners. Since so many learners will be adults, it may not be necessary to distinguish them from those we've long called "traditional-age" learners.
- Online courses/programs. Technological delivery systems may become pervasive in all courses and programs.
- Nondegree credentials. Since an array of credentials will be recognized as valuable, there may be no need to distinguish "nondegree" from "degree."
- Student. So much learning will occur outside of schools that this term may give way to a more telling descriptor, "learner" or "learner/worker."

Many new products and services will be developed through advances in technology. The work of a growing body of third-party educational service organizations such as Credly, Parchment, IMS Global Learning Consortium, and Burning Glass Technologies will help advance these developments and affect colleges at all levels. Areas of operation likely to benefit from vendor services will include:

- Curriculum in areas such as teaching, pedagogy, and the delivery of courses and programs to include the growing use of virtual reality learning tools.
- Student services in areas such as financial assistance for students, advising, work and learn navigation tools, and managing and verifying learner records.
- Planning and research in areas such as predictive analytics, student learning outcomes, and program evaluation.
- Partnerships with employers, especially to assist in engaging employers—small, mid-size, and large—in operating a growing array of apprenticeships, internships, and work and learn pathways in many occupational sectors.

Useful Lessons Learned from Lumina Work

Lumina Foundation has a unique opportunity to cull lessons from several credential innovation efforts we have undertaken with various partners for nearly a decade. The following five examples offer useful lessons for community colleges as they prepare for the new era of work and learning.

Credential Engine (https://credentialengine.org/). This nonprofit organization created in 2016 has a mission to bring transparency and credential literacy to all credentials. Its main products and services include 1) CTDL, an open-platform software to describe all credentials in competencies; 2) research on the credentialing marketplace, including periodic reports on the number of unique credentials in the United States (more than 500,000); 3) a registry of credential information collected from credential providers at the open-platform, Credential Funder, and 4) development of applications

Printed by [Wiley Online Library - 050.090.141.195 - /doi/epdf/10.1002/cc.20399] at [31/08/2020].

(apps) based on the database of credentials for different user groups.

Connecting Credentials (http://connectingcredentials.org/). Managed by the Corporation for a Skilled Workforce, its main products and services supported a national campaign conducted between 2015 and 2018 to improve connectivity, transparency, and equity in credentialing. Services included a website offering background papers and reports on credentialing, a searchable inventory of more than 200 efforts, news about work in this arena, and tools to assist credential providers and others to better connect credentials such as the beta Credential Framework (http://connectingcredentials.org/framework/).

The Credential Framework was prototyped in a pilot project by more than 20 community colleges in the Right Signals Initiative (https://www.aacc.nche.edu/programs/workforce-economic-development/right-signals-initiative-2/) managed by the American Association of Community Colleges. Colleges demonstrated a new credentialing model that would recognize multiple quality credentials to send "the right signals" to employers, students, and colleges about the meaning of these credentials. Colleges used the Framework in the development of new programs, to review competencies within current programs, and to align credentialed programs to employer needs and pathways to stackable university programs.

Connecting Credentials also sponsored several national and regional conventions on credentialing, and created stakeholder work groups to create the Connecting Credentials Action Plan (http://connectingcredentials.org/action-plan-4-pager/) (a seven-point plan that identified twenty-five actions to be undertaken, and more than 100 ways those actions could be accomplished). Connecting Credentials invited national organizations to join this work as an effort in collective action. In all, more than 120 organizations and 3,000 individuals contributed expertise to the initiative.

Military Competency Mapping for Pathways and Transitions. The Armed Services strive to make their education and training outcomes transparent to help receive the most credit possible for service members by external academic and credentialing entities. This approach has spawned numerous collaborations between the military and groups working to develop a common language of credentialing (or to translate among languages). Initiatives are aimed at both professionalizing the military workforce and ensuring the seamless transition of service members to the civilian workforce.

There has been significant growth in the Credentialing Opportunities On-Line (COOL)) programs for the services (https://www.cool.navy.mil/all_about_cool.htm). Each branch of the service has identified its occupations, provided descriptions, and mapped them to jobs and credentials in the civilian workforce. Each also will pay for service members to attain civilian occupational credentials. The various branches are collaborating, sharing data, and working to raise awareness of the comparabil-

Printed by [Wiley Online Library - 050.090.141.195 - /doi/epdf/10.1002/cc.20399] at [31/08/2020].

ity of military training and experience for credentialing bodies and other

stakeholders. Since both active-duty military and veterans seek educational pathways to civilian jobs, community colleges are an important partner in military competency mapping and pathways work between military and civilian programs. These are important opportunities to help fill gaps between military and civilian competencies.

An example is work underway in the Navy. In 2018, the Navy launched a major initiative called Sailor 2025 (https://www.navy.mil/navydata/people/cnp/Burke/Resource/Sailor%202025%20Glossy%20(06%20Dec%2017).pdf). Its goal is to improve and modernize Navy systems with two key goals, to: 1) ensure its training systems are well linked and managed, and 2) help sailors leaving the military transition to civilian jobs. Successful transitions require that competencies and credentials gained in the military be transparent to civilian employers and credential providers.

The Navy trains sailors to prepare for work on ships, submarines, bases, and supply sites using many tools it has developed: job task analyses, competencies, curricula, assessments, credentials, and ratings that qualify sailors for specific tasks. These tools in turn are linked to an array of technical manuals, engineering drawings, parts lists, and maintenance plans designed to help sailors perform their tasks. This system of tools and manuals is inherently cumbersome. It is difficult to manage, dated, and lacks interoperability.

The Navy is partnering with Credential Engine and hopes to use the CTDL as a typology to update its internal systems and publish its credentials to the Credential Registry. The partnership is 1) completing a gap analysis between the CTDL and Navy Task Classification Taxonomy; 2) mapping the CTDL to Navy specs that support data linked to some of its training artifacts; 3) linking the CTDL with all Navy foundational tasks and competencies in its linked data classification and curricula (for example, "courses"); and 4) connecting the CTDL to competencies extracted from the Navy's Maintenance Task Plans.

This work is guided by a Cooperative Research and Development Agreement (CRADA) signed by the Department of Defense's Navy Manpower, Personnel, Training, and Education Unit. If this work succeeds in aligning two competency and credentialing systems, Credential Engine can incorporate Navy credentials into the Credential Registry; the Navy can update its internal systems using a common credentialing language; civilian organizations can better understand Navy credentials; and veterans leaving the service can transition more easily into civilian jobs.

Verification of Learning. The American Association of Collegiate Registrars and Admissions Offices (https://www.aacrao.org/) and the Association of Student Affairs Professionals (https://www.naspa.org/) partnered on a national pilot project between 2015 and 2017 to develop models for a more comprehensive student record. After the successful pilot, the associations moved to the second stage of this work to develop and adopt sin-

Printed by [Wiley Online Library - 050.090.141.195 - /doi/epdf/10.1002/cc.20399] at [31/08/2020].

gle digital learner records across a broad number of American colleges and

universities. The Comprehensive Learner Record (CLR) seeks to capture, record, and communicate learning whenever and wherever it happens in a student's college experience (https://www.aacrao.org/signature-initiatives/comprehensive-learner-record). This includes learning outcomes from courses, programs, and degrees, as well as experience outside the classroom. There are several emerging technologies that have demonstrated their ability to show the institution's learning framework, and some of these also provide a deeper exploration of the information and evidence of what that learning means, or how it was attained and validated.

IMS Global consortium members, for example, have been a leader in the development of a CRL designed to support traditional academic programs as well as co-curricular, competency-based education, and mastery-based learning to capture and communicate a learner's achievements in verifiable, digital form (https://www.imsglobal.org/). The outcome is a modern, web-friendly learner record, structured yet flexible enough to meet the needs of learners, registrars, and employers. The vision for the learner record is transformative in its potential, going far beyond providing relevant student competencies and skills. Based on the IMS Global's work in digital credentials, informed and guided by the American Association of Collegiate Registrars and Admissions Officers, and building on the Open Badges standard (http://www.badgealliance.org/open-badges-standard/) and those of the World Wide Web Consortium (http://www.w3.org/), the vision is a secure, student-centered digital record for the twenty-first century. The Comprehensive Learner Record standard, formerly known as the Extended Transcript, is the most visible outcome for a new generation of secure verifiable digital records for learners. It contains all types of learning experiences and achievements, including courses, competencies, skills, co-curricular achievements, prior learning, internships, and experiential learning.

Quality Assurance for Postsecondary Programs. The Quality Assurance Commons for Higher & Postsecondary Education is a nonprofit organization established in 2016 to create a new voluntary approach to assure that higher and postsecondary programs of all types and across all disciplines graduate students who are well prepared for employability in the twenty-first century (https://theqacommons.org/). Based on a successful pilot project designed in partnership with twenty-seven academic programs from fourteen institutions across the country, the Essential Employability Qualities Certification (EEQ CERT) certifies bachelor, associate, and certificate programs. These programs prepare graduates with the essential employability qualities (EEQs) and meet other criteria such as verifiable student records that display EEQ competencies, effective career services, employer engagement in program design and quality, student and alumni feedback and engagement, and publicly available program information and student outcomes (https://theqacommons.org/eeqcert/). The new initiative

Printed by [Wiley Online Library - 050.090.141.195 - /doi/epdf/10.1002/cc.20399] at [31/08/2020].

is scaling up to more than 100 programs by 2020.

The EEQs include "people skills" such as collaboration, teamwork, and cultural competence; problem-solving abilities such as inquiry, critical thinking, and creativity; and professional strengths such as communication, work ethic, and technological agility. The EEQs represent the knowledge, skills, abilities, and experiences that prepare graduates not only for their first job, but for a lifetime of engaging employment and participation in the rapidly changing workforce of the twenty-first century. The EEQs represent current and future employer expectations as reflected in numerous studies, such as those completed by LinkedIn, ACT, the Foresight Alliance, Jobs for the Future, Career Tech, the Business Roundtable, O*NET, Third Way, the National Network of Business and Industry Associations, and the Institute for the Future.

Key Lessons. Many important lessons have been culled from these five examples to inform the new era of work and learning. Five main lessons follow below.

Transparency. The work of Credential Engine reminds us that employers seek transparency in the varied credentials job applicants are presenting—and stakeholders such as educational institutions, employers, policymakers, and technology providers should agree on a common descriptor language for all credentials. A common language is the first step to bringing the vision of transparency to all types of credentials to fruition and allows credential providers to publish all types of credentials to a common, open database.

Collective action. The work of Connecting Credentials underscores that a collective action strategy can increase awareness of the problems of credentialing and build the capacity of diverse stakeholders to develop solutions for compelling problems. In addition, technology can distribute resources widely through webinars, online research reports, and planning group meetings. Finally, the Credential Framework prototyped between 2015 and 2018 (and updated through a series of new trials in 2019) can be used by community colleges for multiple functions, including planning new programs, reviewing programs following approval by state coordinating boards required by many colleges, determining how to connect pathways that include different types of credentials, and calibrating what level and mix of competencies are associated with a given credential, job description, or educational program.

Military examples. The work done to date by various branches of the military can show us how to use competencies to identify and assess learning for large numbers of diverse learners, and that educational institutions can learn from the learning-as-needed approach commonly used in the military.

Verification of learning. Reforms to digitize student records and recognize learning that occurs outside the classroom can help populate the

Printed by [Wiley Online Library - 050.090.141.195 - /doi/epdf/10.1002/cc.20399] at [31/08/2020].

record with better data and evidence of learning, and create guidelines to

promote standards that will benefit students, employers, and other admitting institutions.

Quality assurance. The Quality Assurance Commons (https://theqacommons.org/) effort informs us that a growing interest exists for academic third-party quality assurance evaluators to assure program quality related to employment outcomes, make effective programs visible, and better ensure employers that students have effective pathways to careers.

Future Credentialing Trends for Community Colleges to Watch

Based on Lumina's experiences, we can identify eleven emerging trends around the future of learning and work that community colleges should watch carefully.

1. Community colleges will be asked, frequently in partnership with employers, to design programs using a growing number of skills and industry frameworks. Many of these will be competency and skill frameworks established by national industry groups. Rather than a single framework guiding curricula at the colleges, there are likely to be many frameworks. That means educators must stay current on the standards guiding all professions, so they can determine which frameworks are most relevant to specific programs.
2. Certifications and skills will be increasingly embedded into college curricula, with skills training provided through apprenticeships, internships, and boot camps.
3. There will be questions about the importance of academic credit, especially among employers in various industry sectors. This in turn will prompt confusion among students as they try to decide which credentials to pursue—credit versus noncredit. We can expect more bridges—more attention to noncredit-to-credit transitions and stackable pathways—until it is clear whether credit credentials will diminish in importance.
4. There will be a continuing push to assess and verify learning from the workplace and other sources and to count that learning toward college-awarded credentials, whether credit or noncredit.
5. Making all community college credentials transparent through apps created from a national database like the open-platform Credential Engine will gain momentum.
6. Digital verification systems to capture learners' knowledge and skills will become commonplace, facilitated by tools from third-party vendors.
7. Employers' hiring practices will change through better signaling of needed competencies and skills, not necessarily degrees or the prestige of credential providers, and colleges will be expected to align

Printed by [Wiley Online Library - 050.090.141.195 - /doi/epdf/10.1002/cc.20399] at [31/08/2020].

their programs to workforce needs.

8. More community college baccalaureate pathways will develop to help associate degree holders advance in their careers.
9. There will be greater attention to program-level quality assurance that is focused on employment outcomes such as wages and employability, versus institutional level quality assurance.
10. Technological advances in artificial intelligence, automation, and virtual reality will affect credentialing, especially teaching and pedagogy, employer training, learning verification systems, and tools to help individuals navigate the credentialing marketplace.
11. There will be a growing focus on equity, requiring colleges to disaggregate data on who enrolls in college, completes programs, and earns the new credentials by gender, race, age, and family responsibilities. Colleges will be expected to act on the data by making active efforts to recruit more equitably, help all students complete programs, and work to make programs as affordable and accessible as possible.

All these trends—and others—will be fueled by the needs for a better-designed credentialing marketplace, and by research into the future of learning and work. Will we then have a better understanding of the building blocks of a connected learn-and-work credentialing marketplace? At Lumina, we think so. Lumina Foundation has identified nine key building blocks, and there is growing consensus around what success would look like in a redesigned system. The vision is one in which all the building blocks in the new credentialing market work together, individuals will be able to move more seamlessly through the labor market using a variety of credentials to communicate the knowledge and skills they acquired in multiple settings. Employers will have more detailed and externally validated information to aid their hiring and upskilling processes. Schools will be better able to count non-classroom learning toward a degree or other credential of value. And the public will be informed about the new credentialing market. Complementing the ten trends listed above, are the nine foundational areas for change in the sector.

1. Multiple pathways to credentials and career success.
2. A public/private partnership providing transparent information about the hundreds of thousands of credentials in the U.S. (Credential Engine).
3. Quality assurance approaches and tools to ensure there is quality learning behind all credentials.
4. Record-keeping and trustworthy systems to verify the skills and competencies including non-classroom learning; and building digital learner records to exchange learning in all credentials.
5. Employer initiatives, especially around hiring and training for twenty-

Printed by [Wiley Online Library - 050.090.141.195 - /doi/epdf/10.1002/cc.20399] at [31/08/2020].

first century competencies and skills.

6. Communications to help discrete audiences and the wider public understand the evolution of the new credential market.
7. Career planning which includes advising, mentoring, and coaching, to help individuals navigate the new credentialing market.
8. Data, planning, and research capacity-building to help us determine if we are making progress, especially in serving underserved populations.
9. Policy and incentives at the federal, state, and local levels to support the other eight building blocks.

As noted in the chapters in this volume, many powerful forces drive the credential market, especially rapid advances in technology, a dynamic unpredictable economy, and the need to close equity gaps for a stronger nation. Given the rapid speed of change expected in the next several years and the frontline role community colleges will play in strengthening the nation's workforce, leadership from community colleges will be key. And it will be imperative that community colleges participate in networks to share best practices, assist one another in research to inform planning, practice, and policy, and inform policymakers about incentives and regulations needed to help the colleges plan and deliver effective programs.

Relevant, sustainable community colleges will be those that 1) help learner/workers see the connection between learning and a better career, 2) enable robust partnerships between colleges and employers, 3) design flexible pathways that enable learner/workers to transfer their knowledge to a job or apply what they are learning elsewhere; and 4) achieve equitable outcomes and sustainable wages for their learner/workers.

College graduates will need to understand that degrees and other credentials of value are just the starting point. People will need to be learner/workers throughout their professional lives—through college programs, the workplace, self-study, third-party provider programs, and other avenues. And the colleges that help to prepare learner/workers will need to constantly improve their teaching practices and their assessment of competencies and skills. These will be the opportunities and challenges facing community colleges now and in new era of work and learning.

Printed by [Wiley Online Library - 050.090.141.195 - /doi/epdf/10.1002/cc.20399] at [31/08/2020].

HOLLY ZANVILLE, Ph.D., is Strategy Director for the Future of Learning and Work at Lumina Foundation. She focuses on the emerging new landscape of the learn and work marketplace, including cultivation of networks and partnerships, collective action initiatives, and research that increases awareness of and solutions related to credentialing, workforce-education alignment, and quality assurance

especially with regard to new credentials and learning pathways.