Rethinking Community College Systems for a Skills-Based Talent Ecosystem

A PLAYBOOK FOR LEARNING AND EMPLOYMENT RECORDS

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Executive Summary

The Scaling Digital Credentials with Community College Systems to Empower Underserved Adult Learners project explored the work needed to establish and grow a learning and employment record (LER) system to support skills-based learning, hiring, and advancement. Community colleges are uniquely positioned to drive change by leveraging their geography and public mission to impact local talent ecosystems. They offer affordable and accessible education, and they have the flexibility and charter to align training with regional workforce needs. Addressing skills gaps in the workforce is imperative for employers, and they are not waiting on higher education to solve the problem. In this, we heard both an opportunity and a threat for community colleges—employers who met with well-supported, responsive partners developed custom training and contributed to steady enrollments, whereas other employers who moved forward to develop their own recruitment, assessment, and training programs were leaving higher education out of the pipeline.

We worked with Ivy Tech Community College in Indiana, the College System of Tennessee, and community colleges within the Oregon Higher Education Coordinating Commission to learn about the needs of the systems, campuses, and employers. We charted the differences in community college systems, reflecting the context of their state, governance authorities, accreditation, and precedents that dictate who, how, and where the work can be located. We recognized that efforts to launch and scale LERs are not a one-time implementation—such as changing to a new student information system—but rather a series of new processes and new ways of working to support an evolving education and employment ecosystem. Engaging campuses and communities will depend on strategic communication to build awareness and motivate change, alignment of stakeholders of the ecosystem, and intentional organizational change to support new pathways.

This playbook for learning and employment records outlines a first step in unpacking the complexities of LERs identified by policymakers and employers into the day-to-day efforts of higher education. The LER Stages of Development: Skills-Based Education and Employment Ecosystem, an LER engagement and implementation tool that accompanies this playbook, provides a self-assessment framework for functional areas including academics, student services, workforce partnerships, data and technology, and the state or system landscape. The playbook focuses on the operational areas that make sense for higher education have authority over with targeted strategies that offer value to worker-learners now. Finally, this playbook identifies the fundamental context of reshaping the talent ecosystem—higher education must be a partner in the pursuit of establishing a fit between worker-learners and the workforce by helping to align educational program outcomes with employers' competency needs, thereby ensuring that worker-learners are mastering the skills they need to get and advance in well-paying, high-need jobs.

Learning and Employment Records

FIGURE 1. LEARNING AND EMPLOYMENT RECORDS

MAKE EVERY CREDIT COUNT
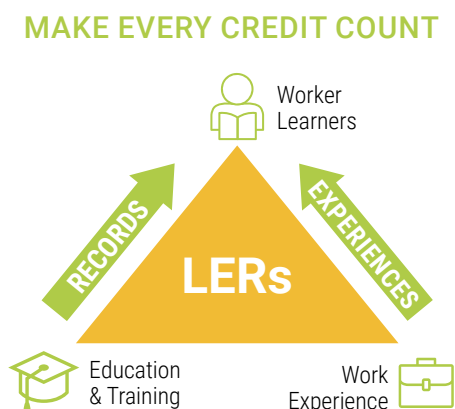
The scope and pace of change of knowledge and technology have made it difficult to align educational program outcomes with employers' competency needs to ensure that worker-learners are mastering the skills they need for good jobs. Throughout this playbook, "worker-learner" describes credential holders, and it intentionally recognizes the blurring of lines between students and employees; working and learning are rarely distinct events that occur in separate locations.

Learning and employment records (LERs) (see figure 1) are the most comprehensive iteration of digital credentials. They are tools—collections of digital records contained in a digital wallet to allow worker-learners to navigate the education and employment talent ecosystem based on skills. LERs require community colleges to both generate metadata for credentials (comprehensive learner records) and ingest learning metadata from outside of the institution to serve worker-learners more efficiently. LERs document and validate learning across postsecondary education, industry training, military service, and employment history. They expand digital transcripts to provide supporting metadata about the skills, competencies, and capabilities associated with each accomplishment and the institutions and entities that assessed them. LERs are digital records to facilitate the exchange of information in the education-employment ecosystem, which helps education providers, worker-learners, and employers to:

Education Providers

- Validate student learning outside the classroom
- Provide incremental value
- Simplify credit awarded for experiences
- Align project-based learning with high-demand, career-ready skills

Worker-Learners

- Showcase and differentiate skills in the job market
- Save time and money to validate competencies
- Own and control sharing of learning and employment information
- Show achievements over time and experiences

Employers

- Improve matching for hiring and advancement
- Verify training alignment
- Accelerate feedback loops and shorten training cycles

Developing a Skills-Based Talent Ecosystem

> "What needs to be true for a community college system to implement and scale digital credentials?"

We recognize that efforts to launch and scale LERs as the passports for a skills-based work-and-learn ecosystem are complex. LERs rely on new technologies, data alignments, understanding of skills, and partnership agreements. For community college systems and campuses, launching an LER is not a one-time implementation—such as changing to a new Student Information System—but rather a series of new processes and new ways of working to support an evolving education and employment ecosystem. After working with three community college systems, we note that all systems are different. Campuses have control over many of the organizational change elements: people, processes, structures, and cultures. As a result, the playbook can be used not just by community college systems but also on campuses and in other institutions of higher education.

Table 1 shows the higher education functions and benchmarks for campuses and systems to develop effective practices for a skills-based talent ecosystem. The framework provides a first step in translating the work of stakeholders—namely employers, policymakers, and nonprofit and philanthropic organizations—into the day-to-day efforts of higher education. The benchmarks were created to help leaders assess strengths and needs across workstreams and levels—departments, campuses, and systems. They are intended to establish baselines and introduce and grow strategic efforts for scale. As a playbook for community colleges, the outlined strategies support:

- The work that higher education should own
- The shared responsibilities and higher education professionals' roles as stakeholders
- The context of principles, standards, and resources of the ecosystem

TABLE 1. LER STAGES OF DEVELOPMENT: SKILLS-BASED EDUCATION AND EMPLOYMENT ECOSYSTEM

	EMERGING	DEVELOPING	EFFECTIVE
STATE/SYSTEM INFRASTRUCTURE, POLICIES, AND PROCESSES	State or system catalogs current initiatives to align resources, share learning, and mitigate risks. Ecosystem organizes strategic communications to increase awareness, knowledge, and motivation for change.	State or system engages questions of purpose. Stakeholders identify and prioritize policies, processes, structures, governance, and shared investments for scale.	Operation of new structures and utilization of data informs and refines alignment of workforce pipelines.
ACADEMIC ENGAGEMENT AND FACULTY DEVELOPMENT — LEARNING VALIDATION	Academic programs are mapped to outcomes and credit is awarded using competency-based assessments.	Policies and procedures to receive, review, and assess learning from other postsecondary providers including transfer and military.	Ability to demonstrate skill mastery and gaps using frameworks shared across the Education and Employment ecosystem: awarding skill-based credit, recognizing skill-based achievements, and identifying skill gaps.
ACADEMIC ENGAGEMENT AND FACULTY DEVELOPMENT — CURRICULUM FLEXIBILITY	Awareness and access to technology and training to adapt programs across modes of delivery and scheduling and training cycles.	Incentives and support to right-size learning as micro-credentials, badges, short-term certificates, and non-credit options. Including addressing policy and financial aid barriers to alternative credentials.	Ability to create and implement custom training across credit formats, time cycles, and modes of delivery based on identified skill gaps.
WORKFORCE PARTNERSHIPS	*Pulse* Program-aligned advisory boards are aware and interested in a skills-based talent ecosystem to better align training with workplace needs. Faculty and hiring managers explore and adopt skills and competency frameworks for cross walking between learning and work experience.	*Partnerships* Industry sector partnerships have a regular meeting cadence and work together to identify occupational demand, remove barriers to training (e.g., clinical placements in healthcare, equipment needs for training in manufacturing), and explore and invest in effective training models.	*Pipelines* Tight alignment between faculty, employers, and industry organizations supports direct hire pipelines, custom training options, and incumbent worker upskilling pathways. The community supports a developmental, human-centered approach to the employment ecosystem (K–12, social services, regional workforce agencies, and training providers).
STUDENT SUPPORT	Awareness of student mobility and lifelong learning patterns; early conceptions of incorporating and extending access and attainment initiatives for underrepresented minority (URM) and adult students to all learner and workers.	Efforts to rethink recruitment, enrollment, academic advising, academic support, student services, and career coaching enable seamless on- and off-ramps for worker and learners.	Student support structures and processes center skills to support custom credential to career pathways for workers and learners.

Rethinking Community College Systems for a Skills-Based Talent Ecosystem

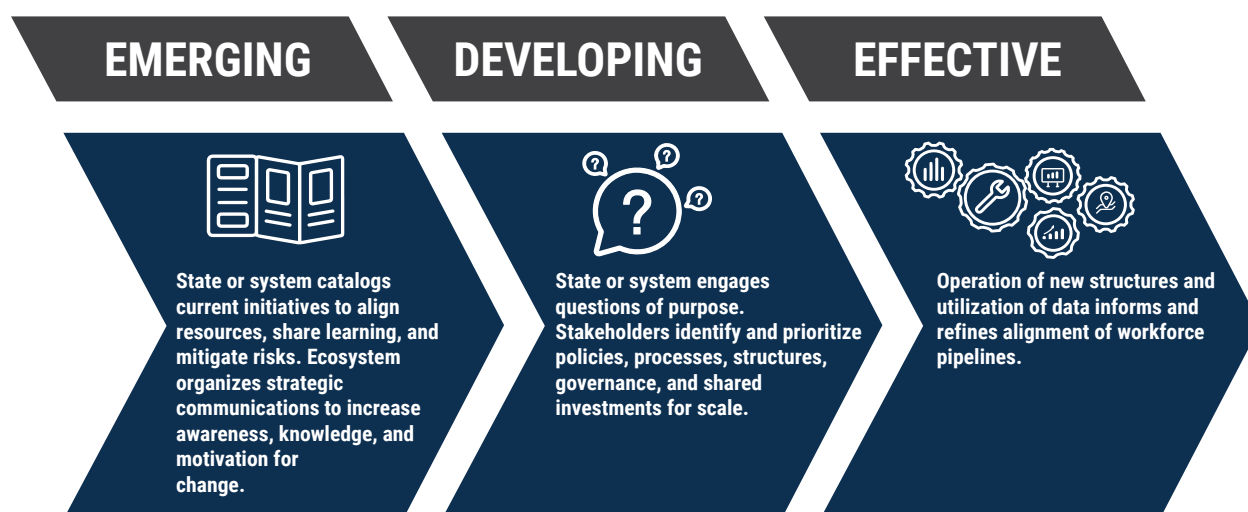|		**EMERGING**	**DEVELOPING**	**EFFECTIVE**
DATA	**STANDARD-IZATION**	Awareness of national frameworks and competency models. Established processes for mapping institutional data and identifying variable gaps.	Engagement with employers to adopt common standards. Testing and coding of skills across LMS, SIS, HRIS or Talent management systems.	Utilization and refinement of Credential Wallet across talent ecosystem (industry, region, or employers).
DATA	**SHARING**	Engage ecosystem partners and initiate data sharing agreements (K–12, postsecondary, labor or workforce, industry organizations, employers).	Establish data governance policies, structures, and work cadence.	Have active LER pilots that allow individuals to share LERs from community college to employer which includes feedback loop back to identify effectiveness of training and gaps for improvement.
TECHNICAL CAPCIRTY	**SYSTEMS**	Awareness of interoperability standards. Research of LMS and SIS specifications, limitations, and procurement horizons.	Engagement with employers to define technical specifications for verification services and wallet providers. Exploration of API integration between LMS, SIS, and HRIS with credential, verification, and portability services.	Utilization and refinement of LER across talent ecosystem (industry, region, or employers).
TECHNICAL CAPCIRTY	**DIGITAL READINESS**	Personnel have access to digital tools and incentives to develop proficiency using them.	Explore products and open-source platforms to automate standard tasks (e.g., credit awards for known experiences). Faculty and staff roles and responsibilities include expectations of technical proficiency.	Units invest in technologies to optimize human efforts for customized needs.

State or System Infrastructure, Policies, and Processes

LER Foundation

LERs are tools to align education and experience achievements with workforce needs for a skills-based talent ecosystem.

TABLE 1A. LER STAGES OF DEVELOPMENT: SKILLS-BASED EDUCATION AND EMPLOYMENT ECOSYSTEM—DATA STANDARIZATION

EMERGING	DEVELOPING	EFFECTIVE
State or system catalogs current initiatives to align resources, share learning, and mitigate risks. Ecosystem organizes strategic communications to increase awareness, knowledge, and motivation for change.	State or system engages questions of purpose. Stakeholders identify and prioritize policies, processes, structures, governance, and shared investments for scale.	Operation of new structures and utilization of data informs and refines alignment of workforce pipelines.

"New, innovative programs succeed because they do two things: listen closely to students' voices and needs, and partner with broad coalitions."

An envisioned skills-based education and employment ecosystem depends on integrated efforts supported by LERs. Moving toward that goal depends on coordination between diverse stakeholders to manage the complexities of data and technology, engage industry and curricular expertise, and target outreach to campus and community audiences. Moreover, each state, system, campus, and LER ecosystem needs a model of change that can be adapted for localized needs but still be interoperable within the larger system (Lanius 2023).

Strategy 1: Manage and Align the Current Work of a State or System

Participants in each of the three state systems identified disconnected and often overlapping grants, initiatives, and programs aimed at aligning elements of the education and employment ecosystem, such as system comprehensive learner record pilots, campus LER pilots, governor's workforce initiatives, community-based and industry-centered training partnerships, efforts to define employability or twenty-first century skills, and K–12 and postsecondary committees to align career and technical education. Moreover, they identified the threats of overburdening limited time, talent, and technology resources and disconnected learning and decision-making for the whole. The first steps for any state or system are to get all of the project managers together, identify who is doing what, eliminate duplicative efforts, share resources whenever possible, and cultivate shared learning.

Insights and Recommendations

Start now, if you haven't already. Layered state or system, campus, and unit efforts can run concurrently.
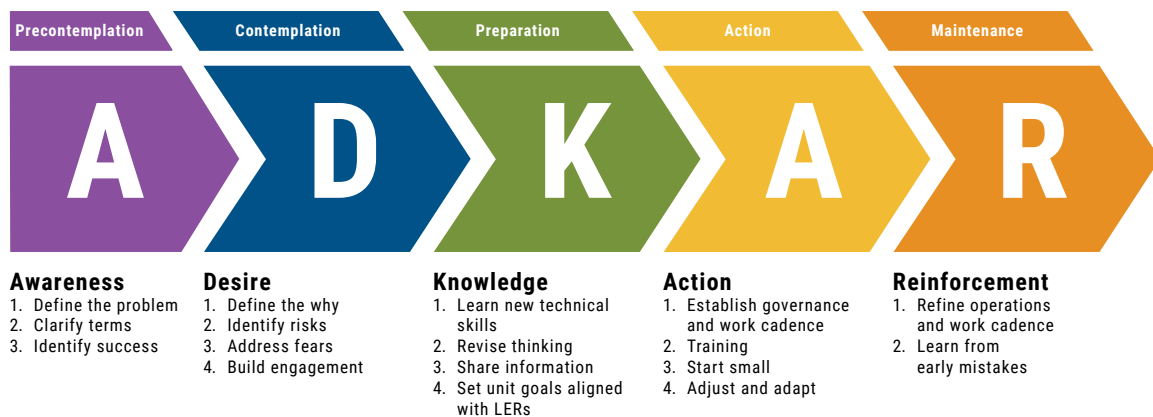
Aim for consistency and sustainability. Efforts cannot rely on in-kind resources or move forward with only add-on efforts from a few invested individuals.

Support knowledge and talent. Develop succession plans and knowledge sharing for highly specialized content.

Strategy 2: Develop Strategic Communications

Strategic communication addresses the human elements of change by preparing, equipping, and supporting stakeholders to engage, adopt, and use LERs successfully. A fundamental lesson of change management is that a tool is only as good as those willing and able to use it. A communications strategy asks stakeholders to engage questions of purpose to understand messages that resonate with audiences. We suggest an adaptation of the Prosci ADKAR model for organization change management (see figure 2). ADKAR is an acronym for the stages of individual understanding needed for successful change: awareness, desire, knowledge, ability, and reinforcement. The structured approach meets each person along their learning journey to introduce not just the what of change but also the *why* and *how in order* to motivate and sustain the new way of doing things. Though the process takes time and intentionality, it decreases the likelihood of people and organizations reverting to the old process.

FIGURE 2. PROSCI ADKAR MODEL FOR ORGANIZATION CHANGE MANAGEMENT

Precontemplation	Contemplation	Preparation	Action	Maintenance

A D K A R

Awareness
1. Define the problem
2. Clarify terms
3. Identify success

Desire
1. Define the why
2. Identify risks
3. Address fears
4. Build engagement

Knowledge
1. Learn new technical skills
2. Revise thinking
3. Share information
4. Set unit goals aligned with LERs

Action
1. Establish governance and work cadence
2. Training
3. Start small
4. Adjust and adapt

Reinforcement
1. Refine operations and work cadence
2. Learn from early mistakes

Start with awareness. Even among system experts and partners selected for their knowledge and expertise, confusion about terminology and discussions about the scope of the work related to LERs tend to be predominant. To start, convening a small group of leaders and decision makers to clarify and agree on terms and shared goals will lay the groundwork for long-term strategic communications. Effective, strategic communications must identify target audiences—worker-learners, campus professionals, employers, community partners, and general audiences—to bring skills into education and employment conversations, introduce LERs, and support the development, launch, and sustainment of LERs (see Appendix B: Coordinating Strategic Communications).

Insights and Recommendations

Centralize communications. Minimize conflicting messages and align understanding for the defined ecosystem (state/region/industry).

Manage expectations. Recognize the significance of the change efforts and attend to individuals' fears, confusion, and overwhelm in strategic communications. A steady, meaningful pace to meet stakeholders where they are and bring everyone forward will require time, but it offers better odds for lasting change.

Design for worker-learners. Employ human-centered design to ensure equity and ethical access across stakeholders, especially worker-learners as holders of LERs. The principles of mobility, equity, sovereignty, and trust are dependent on worker-learners understanding, taking ownership of, and using LERs.

Strategy 3: Structure for Statewide Scale

While working with system and campus representatives, the complexity of LERs often felt overwhelming, especially given the state and system infrastructure, policies, and processes in play. For campuses and systems, the first effort is to participate in state and system efforts. For example, The Alabama Talent Triad positions the work of the state allowing higher education partners to understand how their initiatives align with state-level efforts. The second effort is to understand, communicate, and translate the work of the ecosystem to mobilize organizational change on campuses and across the system.

FIGURE 3. ECOSYSTEM DYNAMIC MODEL OF CHANGE

STATE:
COLLECTIVE IMPACT
- Clarify the vision
- Establish lanes of responsibility
- Define success with metrics
- Encourage and reinforce communication
- Create work structure

Share and refine sticky communications

SYSTEM:
STRATEGIC COMMUNICATIONS
- Craft messaging and communication channels
- Generate awareness and desire to engage with change
- Build capacity to create and implement new approaches

Share and refine effective practices

CAMPUS:
ORGANIZATIONAL CHANGE
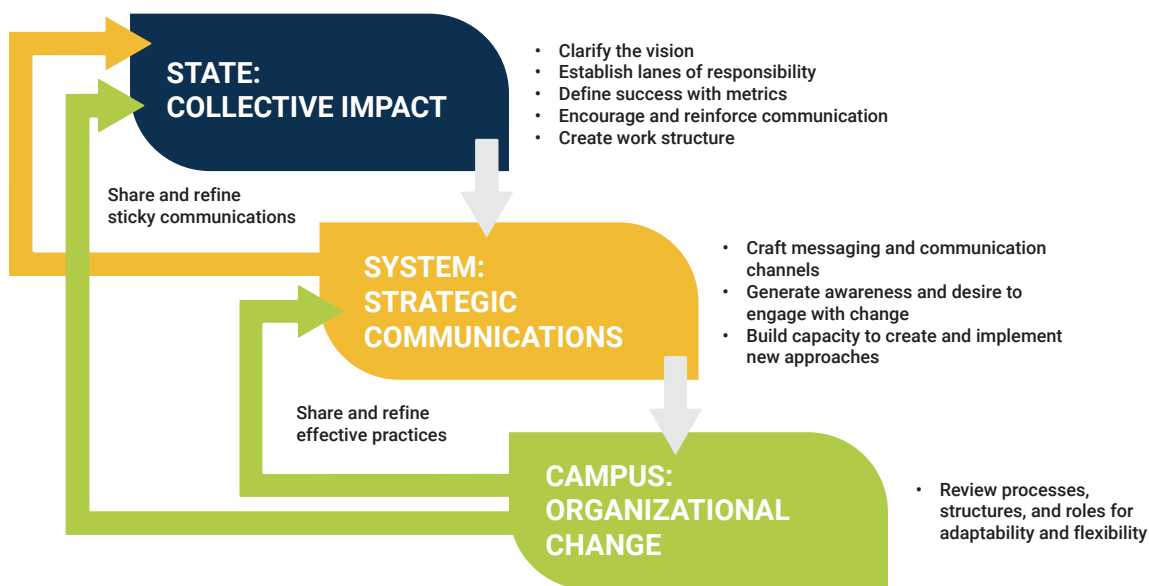- Review processes, structures, and roles for adaptability and flexibility

Figure 3 integrates a statewide collective impact framework with strategic communications to build awareness, knowledge, and motivation for organizational change. If the system is best positioned to lead LER efforts, collective impact provides a structure to convene a network of stakeholders, organizations, and institutions to learn together, align, and integrate a plan for the state talent ecosystem. The convener, whether the system or another state entity, should anticipate significant front-end investments of time and resources to convene and coordinate stakeholders. Collective impact invites stakeholders to come together to coalesce around a

shared vision, define success, and create work structures. The process of working together to identify lanes of responsibility, prioritize efforts, share in governance, and invest in shared systems builds consensus and trust. Moreover, talent and technology are not static, they will require ongoing efforts to update and maintain use, iterate for improved functionality, and support human capital for continuous improvement.

Working with system and campus representatives, the complexity of LERs often felt overwhelming, especially given the state and system infrastructure, policies, and processes in play. For campuses and systems, the first effort is to participate in state and system efforts. For example, the Alabama Talent Triad positions the work of the state to enable higher education partners to understand how their initiatives align with state-level efforts. The second effort is to understand, communicate, and translate the work of the ecosystem to mobilize organizational change on campuses and across the system.

Insights and Recommendations

Governance matters. Efforts should be coordinated by a central, stable entity with the power to convene and the authority to make decisions at the state level. While gubernatorial and legislative initiatives may offer money and direction, they may also be difficult to sustain. The best-fit coordinating entity is likely to be different in every state—such as state higher education executive offices, the community college system, or the state workforce agency—the key is that it is central and sustainable.

Consider the order of operations. For more decentralized ecosystems, clarifying the message of LERs through strategic communications may be necessary to identify the stakeholders. For example, discussion of a skills-based talent ecosystem may not resonate until explicit connections are made to current efforts (e.g., competency-based education, workforce employability task forces, career and technical education alignment).

Support human capital. Dedicate full-time individuals to coordinate efforts across change streams, ecosystems, and sectors. Revise job descriptions of key personnel to include time and responsibility for outcomes.

Academic Engagement and Faculty Development

LER Foundations

Learning validation of postsecondary courses and programs using shared frameworks enables skill-to-skill matching across the education and employment ecosystem.

Curriculum flexibility is fundamental to structuring incremental learning to provide worker-learners with choice, affordability, and efficiency without redundancies of time and cost.

TABLE 1B. LER STAGES OF DEVELOPMENT: SKILLS-BASED EDUCATION AND EMPLOYMENT ECOSYSTEM—LEARNING VALIDATION AND CURRICULUM FLEXIBILITY

EMERGING	DEVELOPING	EFFECTIVE
Academic programs are mapped to outcomes and credit is awarded using competency-based assessments.	Policies and procedures to receive, review, and assess learning from other postsecondary providers including transfer and military.	Ability to demonstrate skill mastery and gaps using frameworks shared across the Education and Employment ecosystem: awarding skill-based credit, recognizing skill-based achievements, and identifying skill gaps.
Awareness and access to technology and training to adapt programs across modes of delivery and scheduling and training cycles.	Incentives and support to right-size learning as micro-credentials, badges, short-term certificates, and non-credit options. Including addressing policy and financial aid barriers to alternative credentials.	Ability to create and implement custom training across credit formats, time cycles, and modes of delivery based on identified skill gaps.

The goal of LERs is an ability to demonstrate skill mastery and identify skills gaps using frameworks shared across the talent ecosystem. Faculty expressed a belief that they must own the connections between their courses and the jobs that they are preparing students to enter: "We don't want to create more paper tigers." Both employers and faculty seek data-supported feedback loops. Sustaining effective practice depends on agreement on skills, maintenance of competency frameworks, and the care and feeding of expertise-based partnerships with employers. An effective skills-based ecosystem will be able to answer the following questions:

- Who gets hired?
- What knowledge, skills, and abilities (KSAs) are identified for success in each job?
- What KSAs do incumbent workers need to upskill?
- Can we provide right-sized training to meet identified needs?

Strategy 4: Map Learning to Skills and Competencies

Skills have emerged as the fundamental unit of learning and accomplishment. Skills allow us to compare and crosswalk between learning environments and work contexts and provide a shared language for the talent ecosystem. Current efforts for competency-based education are often limited to technical training and

professional education. Supporting and incentivizing academic units to map their courses and programs to disciplinary, industry recognized, and licensed standards of knowledge, skills, and abilities (KSAs) and levels of mastery enables standardization of assessment and comparison and validation of learning outcomes. The faculty intensive processes can be accelerated by AI mining of documents and open-source repositories and frameworks. Whether human developed or machine derived, the generation and coding of skills and competency metadata enables an institution or system to issue a digital credential—or a comprehensive learner record (CLR)—the precursor to an LER.

Strategy 5: Integrate Credit for Prior Learning

The contemporary talent ecosystem reflects the patterns of mobility for worker-learners—working and learning environments and timelines are rarely separate and distinct. This mobility requires higher education institutions to adapt processes of enrolling, placing, and awarding credit on the basis of validated learning outside of the institution. The work of acknowledging KSAs encompasses both a technical ability to ingest a digital credential and the *willingness* to do so.

Our system of shared governance recognizes the expertise of faculty and entrusts them with curricular content, assessment, and credit awards. Engaging faculty to establish policies and procedures to receive, review, and assess learning from transferring institutions, military, noncredit certifications, and work-based learning utilizes both their expertise and attends to the human elements of change: awareness, confidence, and trust. We recognize credit for prior learning (CPL) as a critical component to the national imperative on the transfer and award of credit; however, we know that CPL is not universal, and LERs offer incentive to extend efforts to include all disciplines. Efforts can be accelerated through open-source repositories, frameworks, and tools, but ultimately, validation of learning requires approval of faculty. The technical capability and the student support processes to accommodate the change will need to run in parallel.

Strategy 6: Adapt Instruction to Right-Size Learning

Worker-learners and employers want more options—specifically, programs focused on the skills and contexts they need that are provided in the time frames and delivery modes they prefer at costs more in line with perceived value. Moreover, the addition of skills and competencies to existing credentials (CLRs) is not enough for employers to redesign their hiring and advancement practices; rather, they want the ability to assess and match skills gaps with right-sized training (Camilleri, Muramatsu, and Schmidt 2022).

Continued investments in faculty development focused on quality digital instruction and diversifying learning paths will help community colleges capture the short-term education and training market. Hiring managers expressed concerns about quality learning as they encounter, and discover in interviews, the proliferation of credentials—more than 1 million in the U.S. alone (Credential Engine 2023)! Google data shows that individuals search for short-term courses and look for their known, local institutions; t when they don't find what they are looking for, however, they will look for other training options and providers (Velázquez 2023).

The work of reconfiguring microcredentials, badges, short-term certificates, and noncredit options and delivering content on alternate training cycles falls on the faculty—consider incentives, barriers, and support for more faculty, more courses, and more programs.

Insights and Recommendations

Aim for 80-20. The 80-20 principle suggests an optimal split of automating 80 percent of standard processes and reserving human effort for 20 percent of new or custom reviews. What transfer pathways, credentials, and experiences have we processed already that we can automate for efficiency and consistency? What sources do we trust as external validators, including other institutions, systems, and consortia (e.g., the ACE Military Guide)? How do we streamline credit awards for new reviews to track growth and benchmarks for standardization (see Appendix D: Academic Adaptation)?

Consider team-based program delivery. Some academic departments are beginning to specialize to be more flexible across modes of delivery, timelines, and credential types. This may mean hiring, sharing, or informally delegating instructional design, content development, instruction, and assessment to specialists.

Mitigate talent loss. Develop succession plans for highly specialized content knowledge. Revise job descriptions of key personnel to include time and responsibility for outcomes.

Workforce Partnerships

LER Foundation

Building trust based on shared understanding and expertise will accelerate collaboration for skills-based training, hiring, and advancement facilitated by LERs.

TABLE 1C. LER STAGES OF DEVELOPMENT: SKILLS-BASED EDUCATION AND EMPLOYMENT ECOSYSTEM—WORKFORCE PARTNERSHIPS

EMERGING	DEVELOPING	EFFECTIVE
Pulse	**Partnerships**	**Pipelines**
Program-aligned advisory boards are aware and interested in a skills-based talent ecosystem to better align training with workplace needs. Faculty and hiring managers explore and adopt skills and competency frameworks for cross walking between learning and work experience.	Industry sector partnerships have a regular meeting cadence and work together to identify occupational demand, remove barriers to training (e.g., clinical placements in healthcare, equipment needs for training in manufacturing), and explore and invest in effective training models.	Tight alignment between faculty, employers, and industry organizations supports direct hire pipelines, custom training options, and incumbent worker upskilling pathways. The community supports a developmental, human-centered approach to the employment ecosystem (K–12, social services, regional workforce agencies, and training providers).

Strategy 7: Invest in Partnerships for Pipeline Development

We asked our community college partners to invite employers from their ecosystems into our conversation; figure 4 shares what they told us. Employers identify workforce pipelines as a goal—not just to hire and train people today but to cultivate and prepare for the changing needs ahead. Strategies 4 and 5 align and document knowledge, skills, and abilities across education and work; however, they do not bring new, qualified worker-learners into the ecosystem. Opening access and supporting lifelong learning to keep current with change will require all of the stakeholders of the ecosystem to align efforts, expectations, communications, outreach, and support.

FIGURE 4. EMPLOYER PERSPECTIVES ON THE SKILLS-BASED TALENT ECOSYSTEM

Insights from Ivy Tech and their partnering employers suggest that investments in people pay off in productive partnerships. Figure 5 shows how staff are dedicated to connecting with employers to facilitate partnerships, leverage state and sector resources, share models of effective practice, and identify funding sources for training costs. We heard from employers that Ivy Tech staff supported proactive communications around state law and policy changes, provided technical assistance for grants and state funding, and convened community-based partnerships to address local wrap-around service needs for worker-learners. In parallel, staff work with students, student services, and academic affairs to coach students, support talent pipelines, and close the gaps between academic and student service units. The most productive partnerships freed faculty to work directly with hiring managers and supervisors to create custom, right-sized training programs fit for the training cycle, delivery mode, and credit status needs of worker-learners. Faculty, hiring managers, and supervisors all expressed a desire to improve feedback loops to ensure alignment and to tighten the timeline of changes—whether to improve instruction and assessment of knowledge, skills, and abilities or to develop curriculum for emerging needs.

FIGURE 5. IVY TECH CAREER LINK WORKFORCE PARTNERSHIP TEAM

Image reprinted with permission from Ivy Tech Community College.

Credential and training options are proliferating, creating both an opportunity and a threat for community colleges. Responsive, aligned, and supported academic-workforce partnerships enable community colleges to bolster consistent enrollments with skills-based training and lifelong learning pathways. Evidence suggests that worker-learners and employers look to trusted colleges first; however, if colleges do not have options that fit their time, cost, and skill needs, they will look elsewhere (or create it themselves). The threat of leaving postsecondary providers out of credential to career pathways is real.

Insights and Recommendations

Identify a clear entry point for employers. Employers say (and campuses recognize) that knowing who to contact and how to partner with campuses—much less with systems—is not clear. Prominently identifying a front door with a single point of contact will enable tracking, ensure responsiveness, and identify ownership of the partnership or request. A smooth handoff to the right person or unit is key to building new relationships and developing new initiatives with existing partners.

Trust grows enrollment. Direct engagement of faculty who listened to employer needs cultivated trust and reliability. They developed feedback loops to better assess worker KSAs to create custom training for skills gaps and to align course delivery with employment schedules. In turn, employers looked to their partnering community college exclusively for hiring and supported consistent enrollments for worker-learners.

Student Support

LER Foundation

Closing skills gaps depends on engaging an inclusive, diverse pool of worker-learners and is a core principle of LERs.

TABLE 1D. LER STAGES OF DEVELOPMENT: SKILLS-BASED EDUCATION AND EMPLOYMENT ECOSYSTEM—STUDENT SUPPORT

EMERGING	DEVELOPING	EFFECTIVE
Awareness of student mobility and lifelong learning patterns; early conceptions of incorporating and extending access and attainment initiatives for underrepresented minority (URM) and adult students to all learner and workers.	Efforts to rethink recruitment, enrollment, academic advising, academic support, student services, and career coaching enable seamless on- and off-ramps for worker and learners.	Student support structures and processes center skills to support custom credential to career pathways for workers and learners.

Strategy 8: Rethink Student Services

Worker-learners want clear choices, affordability, and personal opportunity for social mobility. LERs hold appeal for worker-learners interested in showcasing the range of their skills including those achieved through nontraditional learning channels, on-the-job training, military experience, professional development, and other types of formal and informal learning. The Motlow State Community College LER pilot suggests that students are on board with LERs—99 percent of students opted into an LER after watching a short video. While students are identified as enrolled worker-learners and campus frontline faculty and staff are identified as target audiences for strategic communications, we note the specific need to train student-facing frontline faculty and staff and develop learner-centered outreach materials and support services.

As a longer-term change effort, most campuses are struggling with a mismatch: student services and student success units are configured for full-time students on a linear path from enrollment to academic advising for course planning—maybe accessing career coaching—to completion of a traditional degree. For modern worker-learners who are working, supporting families, and learning part-time, the experience is disjointed: "We lose students when we bump them around [between offices]. Credit for prior learning is awarded after students are enrolled and often after they are taking the course they could have skipped. Advising conversations are disjointed—insights from career coaching are not part of course registration."

We heard a need to bridge the silos of current student services units for holistic student support. For LERs, process maps can align recruitment, enrollment, academic advising, academic support, and student services, as well as career-focused coaching, admissions, advising, and counseling, around skills that establish cohesive credential to career pathways for worker-learners. The solutions and outcomes of organizational change may range from using (or improving the effective use) of client management systems to changing organizational structures to support shared learning and bridge gaps. Each campus will need to engage campus representatives in process mapping or design thinking sessions to develop and support change efforts.

Data and Technology

LER Foundations

To issue and ingest digital credentials, standardized data must be shared through interoperable systems in addition to being created and tested by faculty and staff with the trust and technical knowledge to innovate.

Trust and use of LERs will depend on:

- Data governance to enact legal protections, ensure ethical standards, and minimize risk for LER holders
- Technical verification, security, sovereignty (user-ownership), and portability of data-rich digital credentials

TABLE 1E. LER STAGES OF DEVELOPMENT: SKILLS-BASED EDUCATION AND EMPLOYMENT ECOSYSTEM—DATA AND TECHNICAL CAPACITY

		EMERGING	DEVELOPING	EFFECTIVE
DATA	**STANDARD-IZATION**	Awareness of national frameworks and competency models. Established processes for mapping institutional data and identifying variable gaps.	Engagement with employers to adopt common standards. Testing and coding of skills across LMS, SIS, HRIS or Talent management systems.	Utilization and refinement of Credential Wallet across talent ecosystem (industry, region, or employers).
	SHARING	Engage ecosystem partners and initiate data sharing agreements (K–12, postsecondary, labor or workforce, industry organizations, employers).	Establish data governance policies, structures, and work cadence.	Have active LER pilots that allow individuals to share LERs from community college to employer which includes feedback loop back to identify effectiveness of training and gaps for improvement.
TECHNICAL CAPCIRTY	**SYSTEMS**	Awareness of interoperability standards. Research of LMS and SIS specifications, limitations, and procurement horizons.	Engagement with employers to define technical specifications for verification services and wallet providers. Exploration of API integration between LMS, SIS, and HRIS with credential, verification, and portability services.	Utilization and refinement of LER across talent ecosystem (industry, region, or employers).
	DIGITAL READINESS	Personnel have access to digital tools and incentives to develop proficiency using them.	Explore products and open-source platforms to automate standard tasks (e.g., credit awards for known experiences). Faculty and staff roles and responsibilities include expectations of technical proficiency.	Units invest in technologies to optimize human efforts for customized needs.

For the purposes of this playbook, the deep technical work of LERs is being developed and tested by other stakeholders, namely partnerships of global corporations and universities. For campuses and systems, especially community colleges, the ground-level work of data and technology relate to applying standards, implementing systems, and ensuring interoperability (T3 Innovation Network 2020).

Reviewing and ratifying the principles of interoperable learning and employment records will need to be addressed at the ecosystem level (Strategy 3). In coordination with state or system consensus, campuses can focus on the specifics of their programs and needs of their people while experimenting with LERs.

Interoperability: The ability of systems to work together, exchange, and make use of information from other systems. In education, interoperability is the ability of a system to exchange education and workforce information with and use information from other systems without special effort on the part of the user. This means all individuals, including learners and employers, have appropriate access to education and workforce information, allowing them to make informed decisions in the workplace.
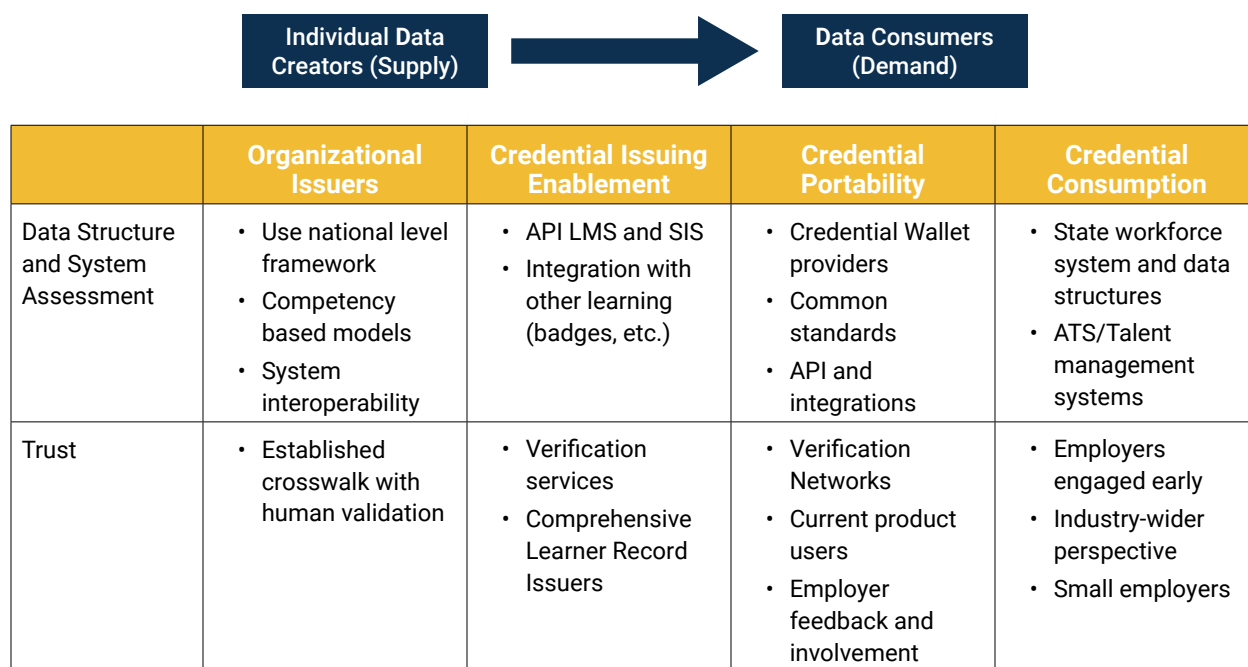
Strategy 9: Govern Globally, Code Locally

Participants in our session echoed the voices of the ecosystem: LERs hinge on trust in the privacy, security, sovereignty, and validation of data. The human side of data is complex, political, and time consuming but fundamental to trust. A data governance committee, in alignment with Strategy 3, will need to identify legal and ethical protections and establish data structures, systems assessments, and standards for issuers.

Trust is also about the people who are seen as LER technical leaders within the system or campus. Identify people who not only understand the technical aspect of the systems and structures needed but can also clearly communicate the value and importance to others to move others through the ADKAR process noted in Strategy 2.

Figure 6 positions institutions on the left to assess frameworks and build an interoperable model that is organized and validated for worker-learners. The validated credential is then handed off to a provider that interfaces with the data consumers. Keep in mind that institutions are also consumers—they may have already ingested credential and experience data as part of their admissions and credit for prior learning processes. The ecosystem continues to build through ongoing feedback loops.

FIGURE 6. BUILDING TRUSTED DATA SYSTEMS

	Individual Data Creators (Supply) →		Data Consumers (Demand)	
	Organizational Issuers	**Credential Issuing Enablement**	**Credential Portability**	**Credential Consumption**
Data Structure and System Assessment	• Use national level framework • Competency based models • System interoperability	• API LMS and SIS • Integration with other learning (badges, etc.)	• Credential Wallet providers • Common standards • API and integrations	• State workforce system and data structures • ATS/Talent management systems
Trust	• Established crosswalk with human validation	• Verification services • Comprehensive Learner Record Issuers	• Verification Networks • Current product users • Employer feedback and involvement	• Employers engaged early • Industry-wider perspective • Small employers

Campuses and systems (organizational issuers) can expect to map their own institutional data, ensure proprietary data meets interoperability standards, identify variable gaps, and develop credential metadata. Technology and standards exist to extract metadata from documents (course syllabi, curricula, resumes, competency frameworks, and job descriptions) and make systems interoperable within a defined scope; however, these investments can be costly, so starting small and scaling up can be key. Institutions can start with nontechnical solutions (Strategy 4) to validate processes such as skills mapping. These manual validation processes can be used to train AI models that can be validated to accelerate the process of building and updating frameworks, build trust in automation, and build the case for larger technical investments. Using the 80-20 rule noted in Strategy 6, the institution can begin to scale the process to other credentials and programs.

Strategy 10: Begin Experimenting—Build, Measure, and Learn

Developing an LER—with all of the slow ecosystem processes and campus dependencies—can feel impossible (or improbable in the next 10 years). Systems can adapt agile principles (build small, learn fast) by beginning with one talent ecosystem bounded by industry and region (see figure 7). Invest in fully supporting the development, implementation, and ecosystem rollout of a basic, minimally viable LER. Document the process, observe how real users interact with the LER and measure impact. Use the information to adapt and refine not just the technology but the processes, design, and communications to increase uptake and improve usability. Once you have a working model, you have a blueprint to share and replicate across ecosystems.

FIGURE 7. AGILE BUILD-MEASURE-LEARN METHODOLOGY

As an example of agile development, the College System of Tennessee is piloting a comprehensive learner record to develop a proof of concept generating a digital credential. As part of the process, they have established data definitions, standards, and policies for microcredentials and learner records.

Motlow State Community College—a college within the system—is building and piloting a skills wallet app for mechatronics in middle Tennessee (see figure 8). The pilot ecosystem includes stakeholders along robotics career pathways outlined by the Advanced Robotics for Manufacturing (ARM) Institute, including high school, technical college, community college, and university providers of mechatronics training and automotive and advanced manufacturing employers in the region.

In affirmation, we hypothesize a basic ecosystem should include the following: faculty of an academic program; hiring or supervising managers recruiting for the aligned skills; and an industry/workforce intermediary. Industry intermediaries provide expertise in skill and competency frameworks from multiple contexts and

promote "stickiness" for adopting skills-based learning assessment, hiring, and advancement (Goger et al. 2022). Engaging at least two employers and two training providers increases buy-in and the likelihood that the technology and underlying systems are interoperable.

Feasibility studies to date suggest that much of the work—and the benefit of documenting processes—relates to navigating domains that are normally siloed (Goger et al. 2022). Finally, and most significantly, the behaviors and needs of real worker-learners navigating a real talent ecosystem remain theoretical. In exploratory design thinking sessions, frontline workers raised critical concerns about privacy, accessibility, inexperience with technology, and discrimination in the workplace. Our efforts must center on helping worker-learners understand how to keep track of their information, communicate their skills more effectively, and connect to opportunities to grow their career.

FIGURE 8. MOTLOW STATE COMMUNITY COLLEGE METAVERSITY PILOT
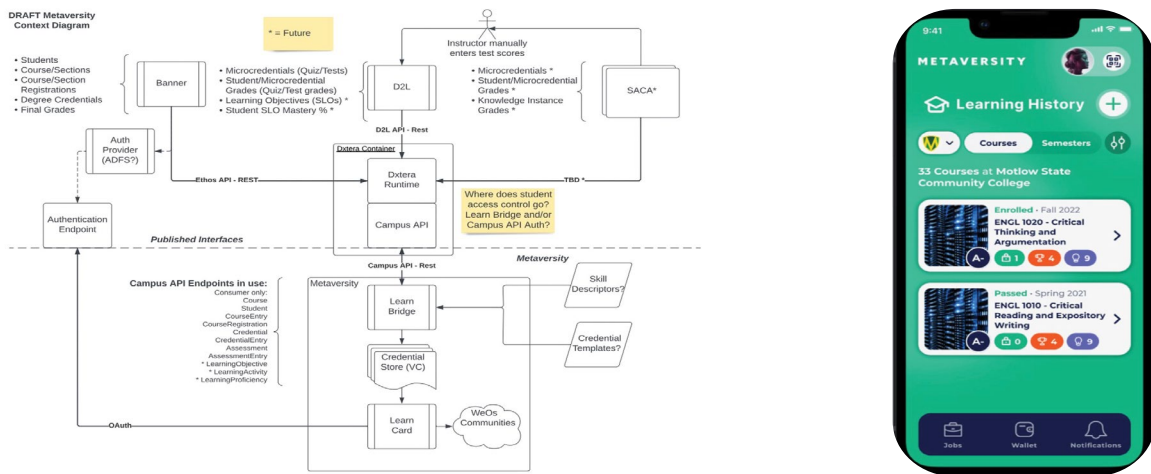
Image reprinted with permission from Motlow State Community College.

Insights and Recommendations

Engage worker-learners in human-centered design. For agile to be effective, users should be engaged in the design process to understand what features matter and how users engage with the technology.

Attend to disparate impact. Engaging unemployed and underemployed worker-learners is an explicit goal of LERs. We also recognize that the intent is unproven, and efforts should intentionally attend to both data and human signals to ensure that LERs do not widen disparities.

Strategy 11: Invest Just Enough in Technology

LERs require both human and technological investment; the balance is marked by tradeoffs in time and money. The Digital Credential Ecosystem positions technology providers and national organizations to help campuses identify interoperability needs and procurement requirements. In keeping with a developmental, agile plan, we suggest a lean budgeting approach adapted from the technology sector for basic implementation. Table 2 outlines a pragmatic approach for most community college budgets. The outlined costs are based on the assumptions that:

- Stakeholders of the LER ecosystem will already have modern learning management systems (LMS), student information systems (SIS), and human resource information systems (HRIS) that support data exchange and interoperability via application programming interfaces.
- A digital wallet will be implemented to support the LER system
- The LER 1.0 ecosystem will include:
  - Two to three institutions or campuses with integrations to both their SIS and LMS to the LER digital wallet
  - One to two employers with integrations to their HRIS system to the LER digital wallet
  - Five to eight system integrations total
- Organizational change management includes support for strategy, communications, digital and multimedia designs, and training based on a six-month implementation timeline. Personnel support is estimated based on standard consulting rates at half time for 24 weeks
  - Organizational change and strategic communications project manager ($115–$145 x 20 hours x 24 weeks)
  - Human-centered designer ($69–$115 x 20 hours x 24 weeks)

TABLE 2: IMPLEMENTATION AND OPERATIONS COST ESTIMATES FOR LER 1.0

ITEM	IMPLEMENTATION COST	OPERATIONS AND MAINTENANCE COSTS PER YEAR
Implementation of new LMS/SIS/HRIS applications	$0*	$0
Data integrations with LMS / SIS / HRIS systems • Five to eight total systems • Includes system integration with shared services (as noted in the above diagram) AND with the Digital wallet	$20–$60K per system Est. $100K–$480K	$2K–$10K per system Est. $10K–$80K
Digital Wallet Implementation • Variation based on: • Open source vs. commercial wallet implementation • Amount of User Interface / User Experience Wallet customization	Est. $25K–$100K	Est. $5K–$10K
Organizational Change Management • Strategy, Communications, and Training • Visual branding, graphic and multimedia elements	Est.$55,200–$69,000 Est.$32,640–$55,200	Est. $5K–$10K
TOTAL	$213K–$704K	$20K–$100K

Strategy 12: Cultivate Trust with a Commitment to Learning and Improving

An effective LER solution will only grow and be sustainable if worker-learners, employers, and education providers use it. The developmental approach of this playbook supports purposeful progress: build, measure, learn, and improve. As we consider a skills-based talent ecosystem, it is important to address some hard truths and practical realities, such as that data transparency can reveal some things we would rather keep hidden; technology never works perfectly; not everyone will opt-in; and people are more than a collection of skills. Early iterations of LERs will likely introduce confusion before they offer greater clarity. The current talent paradigm is broken, however, and employers will have to adapt to survive. Higher education has a similar choice. If we ask students to have a growth mindset, then we must too.

Appendix A: Mapping the Skills-Based Talent Ecosystem

Objectives

- Catalog current initiatives
- Map timelines, stakeholders, target populations, and outcomes
- Share learning and align efforts
- Identify and mitigate risks

Format

- Design thinking* session(s): In-person, full-day workshops or two virtual sessions of two hours each

Participation: Program Managers Representing Grants, Projects, and Collaborative Initiatives

- System and campus projects
- State initiatives: governor's office, legislative, workforce task forces, state agencies)
- K–12/career technical education
- Nonprofit/philanthropic investments: National Governors Association, Credential Engine, Jobs for the Future, Digital Promise, C-BEN, Society for Human Resource Management
- Workforce investments: chambers of commerce, industry associations, economic development associations

Outcomes

- Skills-based talent ecosystem map
- Risk mitigation plan identifying duplications and disconnects of current time, talent, and technology investments

Resources

- Alabama Talent Triad Overview

Design thinking is a structured, interactive session that engages participants in sharing knowledge, identifying opportunities and threats, and negotiating ideas and solutions in real time. They are best suited to complex problems with unknown solutions.

Appendix B: Coordinating Strategic Communications

Objectives

- Craft messaging and communication channels
- Generate awareness and desire to engage with change
- Build capacity to create and implement new approaches

Participation: Marketing and Communications Leaders and LER Experts

- State agencies: governor's office, higher education, K–12 education, workforce development
- Community college system and campus representative(s)
- K–12/career technical education
- Nonprofit/philanthropic partners: National Governors Association, Digital Promise, Society for Human Resource Management
- Workforce investments: chamber of commerce, industry associations, economic development associations

Format

- Design thinking session: In-person, full-day workshop or two virtual sessions of two hours each

Outcomes

- Adopt shared glossary of terminology
- Establish charter and work cadence for strategic communications

Resources

- The Prosci ADKAR Model
- Alternative Credentials, Considerations, Guidance, and Best Practices
- *White Paper on Interoperable Learning Records*, "Terminology and Key Conditions" (p. 8–9)
- "It's in the Design: Design Learning and Employment Records for Greater Equity"

Appendix C: Structuring the Work of the Ecosystem

Objectives

- Identify and align current initiatives in the state skills-based talent ecosystem
- Affirm guiding principles
- Organize and orient around shared goals
- Establish working groups and define lanes of responsibility
- Define communications channels

Participation: Stakeholders Representing Pipelines, Pathways, and Partnerships

- Community college system and campus representatives: academic affairs, student success, registrars,
- workforce development, data/institutional research, and information technology
- State policy (governor's initiative, SHEEO (State Higher Education Executive Officers Association), workforce task forces)
- K–12/career technical education
- Nonprofit/philanthropic partners: National Governors Association, Credential Engine, Jobs for the Future, Digital Promise, C-BEN, Society for Human Resource Management
- Workforce: chamber of commerce, industry associations, economic development associations

Format

- Collective impact design thinking session(s): In-person, full-day workshop or two virtual sessions of two hours each
- Ongoing meeting cadence

Outcomes

- Charter and work cadence for collective impact
- Charter and participants for strategic communications working group
- Campus change working groups: student success, academic affairs, workforce partnerships, data and technology

Resources

- Alabama Talent Triad Overview
- "What Is Collective Impact?"

Appendix D: Academic Adaptation

Objectives

- Identify and adopt best-fit skills and competency framework(s)
- Assess open-source software and AI tools
- Map courses and programs to standardized frameworks
- Reorganize incremental training options

Participation: Academic Affairs and Aligned Employer Partners

- Faculty/subject-matter experts
- Curriculum developers
- Instructional designers
- Assessment
- Aligned employers
- Industry/sector advisers

Format

- AI ingestion of documents (course catalogs, syllabi, credentials, industry standards, licensing standards, etc.)
- Human review and validation of machine-generated KSA data

Outcomes

- Adopted skills/competency framework
- Mapped academic credentials coded for LER metadata
- Establish working cadence

Resources

- *Alternative Credentials, Considerations, Guidance, and Best Practices*
- *Quality Framework for Competency-Based Education Programs*
- T3 Innovation Network
- Open Skills Management Tool
- "Credential Transparency Description Language"

Appendix E: Developing Skills-Based Talent Pipelines

Objectives

- Define ecosystems: K–12, postsecondary providers, employers, industries, community agencies
- Continuously validate competency-based education standards and skills and competency frameworks
- Build trust through transparency and feedback loops
- Create efficiencies for individual colleges, state-wide systems, and employers

Participation: Stakeholders Representing Ecosystem Pipelines, Pathways, and Partnerships

- Faculty
- Secondary-education partnership staff
- Curriculum development and review committees
- Employer human resources and supervisors
- Community organizations: chamber of commerce, industry associations, economic development
- associations

Format

- AI ingestion of documents (course catalogs, syllabi, credentials, industry standards, licensing standards, job descriptions, hiring and advancement rubrics)
- Ongoing meeting cadence

Outcomes

- Roadmap from current state to sustained pipeline
- Community asset map for resources to support life needs of worker-learners (e.g., transportation, food insecurity, housing, health care, childcare)
- Dynamic credential to career pathways with local training providers and costs
- Establish working structures and cadence

Resources

- ACE Apprenticeship Pathways
- U.S. Chamber of Commerce Foundation's T3 Innovation Network
- Alabama Talent Triad Overview

Appendix F: Process Mapping Worker-Learner Skills-Based Pathways

Objectives

- Assess student services through skills-based lens
- Review organizational structure to align with student needs and bridge gaps
- Assess client management systems to keep track of worker-learners

Participation: Representatives of Student Service Units

- Recruitment
- Admissions
- Financial aid
- Academic advising
- Career coaching
- Navigators/student services

Format

- Design thinking session(s): In-person, full-day workshop or two virtual sessions of two hours each
- Process mapping

Outcomes

- Worker-learner–centered, skills-based credential to career process map
- Organizational change strategy

Resource

- "Using Process Mapping to Understand the Student Experience"

Appendix G: Networking a State or System Data Ecosystem

Objectives

- Establish LER coordinating structures and governance networks to expand capacity, ensure ethical
- standards, and minimize risk, especially for URM worker-learners
- Use and advance open-source frameworks to define and translate skills into credential metadata
- Identify gaps and begin collecting identified variables

Participation: Stakeholder Information and Data Officers

- Registrars
- Information technology officers
- Campus or system institutional researchers
- Curriculum development and review committees
- Secondary education and career and technical education
- Employer human resources system administrators
- Industry or sector advisers

Format

- Regular meeting cadence

Outcomes

- Data governance charter
- Data maps and data flows (institutional data to be shared, requirements for sharing, and requested data from identified sources)

Resources and Examples

- Education Design Lab
- Open Skills Network
- Credential Engine
- U.S. Chamber of Commerce
- Skills-Based Hiring and Advancement: LERs, Resumes, and Related Data Standards
- Job Data Exchange
- Comprehensive Learner Record Standard
- C-BEN
- Smart Resume Ecosystem Map

Appendix H: Agile Development of LER MVPs

Objectives

- Develop LER demonstrating community college generation of a digital credential
- Develop community college ability to ingest LERs to identify skills gaps for incumbent worker
- training
- Document learning, processes, and costs for replication

Participation: Defined Ecosystem Supported by Agile Project Management and Development Team

- Best-fit, willing partners: faculty and hiring manager from one industry or region
- Full-time dedicated agile project manager
- Cross functional team: design, development, data, and documentation

Approach

- Agile development
- Lean budgeting: invest in just enough technology to support user needs
- Prioritize integration with current data systems

Outcomes

- Proof of concept
- Documentation for replication
- Technology assessment and procurement guidelines for interoperability

Resource

- *2023 Digital Credential Ecosystem Report*
- SmartReport Ecosystem Map

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