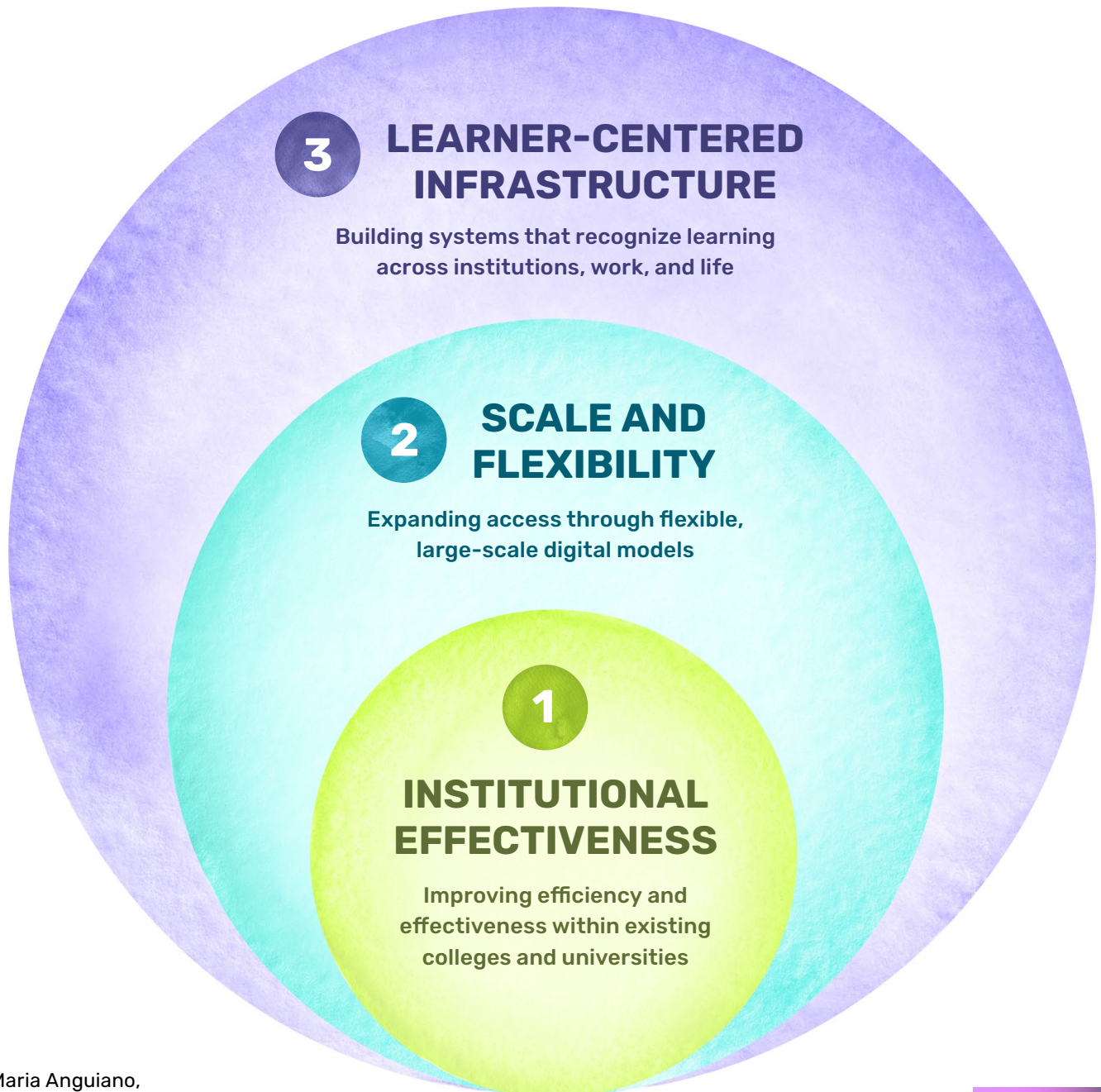


Designing the Future of Learning

Three Spheres of Postsecondary Innovation



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COLLEGE
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Key Takeaways

- **Innovation in postsecondary education is unfolding across three distinct spheres:** institutional effectiveness, scale and flexibility, and learner-centered infrastructure. While each addresses a different structural barrier to opportunity, the spheres are most powerful in combination. Progress in one creates the conditions for progress in the others.
- **Digital learning models demonstrate that flexibility, affordability, and quality can coexist.** Institutions such as Western Governors University and Arizona State University illustrate how redesigned structures, competency-based progression, rolling start dates, and digital delivery can better align education with the realities of working adults and nontraditional learners.
- **Learner-centered infrastructure is the emerging frontier.** Too much of what people learn through work, caregiving, community leadership, and short-form learning goes unrecognized by educational institutions and employment systems. Building infrastructure that is learner-owned, portable, and connected to real pathways for advancement is the next critical investment for California and the nation.



innovation /inə'vāSHən/ refers to any meaningful shift in how education is organized, delivered, or validated that expands opportunity for learners.

Foreword

Over the past year, Maria Anguiano, our Entrepreneur-in-Residence, has consistently challenged us to think beyond the construct of today's postsecondary system. She has invited us to consider where learning happens, who gets to define and validate capability, and what becomes possible when we design around learners rather than institutions. Through this work, she has also invited us to see how emerging digital technologies, including AI, can serve as a catalyst for both strengthening existing systems and reimagining what comes next.

This report reflects a tension that sits at the heart of our work at College Futures Foundation.

As a field, we must hold two truths at once.

The first is that attainment matters. In today's economy, postsecondary credentials remain one of the strongest pathways to economic mobility, and expanding equitable attainment remains critical to ensuring more value for more learners in more places.

The second is that we must begin building toward a world where learners can have their knowledge, skills, and experiences validated, recognized, and truly owned. Learning happens everywhere—in classrooms and workplaces, through caregiving and community leadership, in formal programs and informal experiences. Too much of that learning, however, remains invisible to the systems responsible for creating opportunities.

At their best, postsecondary credentials help learners communicate their capabilities and access new opportunities for economic mobility. At their worst, they can act as gatekeepers, leaving important knowledge and skills unrecognized. A more learner-owned approach to validating learning offers a path toward something more expansive, inclusive, and reflective of the many ways learners develop capabilities throughout their lives.

What I find most compelling about the framework Maria offers is that it refuses to treat these truths as competing priorities. Conversations about innovation are often framed as a choice between improving the systems we have and imagining entirely new ones. Maria reminds us that both can and are happening. We can strengthen institutions, expand more flexible pathways, and build learner-centered infrastructure at the same time. In fact, real change depends on it.

The three spheres outlined in this report are interconnected and mutually reinforcing. Together, they offer a way to understand how to leverage digital technology to innovate within our institutions and systems that exist today while reimagining what comes next.

This report is an invitation to use our imagination for a more equitable future. To imagine a future where learning is more visible, more portable, and more connected to opportunity. A future where learners have greater ownership over how their capabilities are recognized and valued. A future that honors the many ways people learn throughout their lives and creates new pathways for that learning to translate into economic mobility.

We cannot yet fully see that future. But we can begin building toward it. We must.

I am deeply grateful to Maria for her partnership, imagination, and willingness to challenge conventional thinking. My hope is that this report encourages all of us to recognize the innovation already underway, while continuing to imagine what learners might need from the systems we have yet to create.

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Introduction

California is at an inflection point. For decades, education and workforce systems have been organized around institutions as the primary anchors of learning, validation, and opportunity. This model has created tremendous value and supported generations of learners, but it has also left many people behind, especially those whose skills, knowledge, and experience were developed outside traditional degree pathways.

At the same time, the conditions surrounding learning and work are shifting. Artificial intelligence is reshaping how knowledge is accessed and applied, reducing the premium on information alone and elevating the importance of judgment, adaptability, and other human capabilities.¹ Work itself is changing more quickly, with skills evolving faster than traditional education pathways can keep pace.² As a result, learners' paths through education and work are increasingly nonlinear. People move in and out of institutions and jobs at different life stages, often reskilling multiple times across a career. They therefore need learning experiences that are more flexible, portable, and responsive to their evolving goals and circumstances.³

These shifts raise questions that go beyond tools or platforms. While technology can enable new forms of learning and recognition, it cannot solve the deeper structural challenges embedded in today's systems.

The more fundamental question that needs focused attention is:

What do learners need to thrive in the future, and how should education be designed to support them?

Answering that question requires looking across the full landscape of where and how postsecondary innovation is occurring.



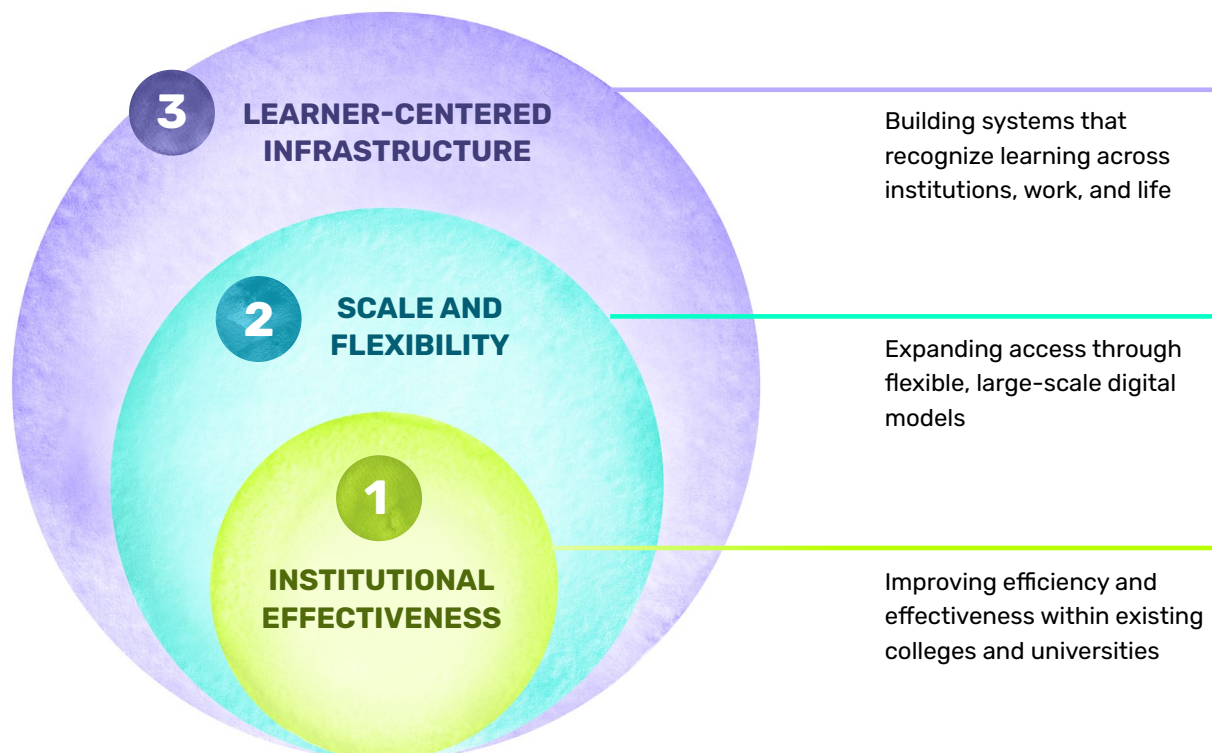
Three Spheres of Innovation in Postsecondary Education

Innovation in postsecondary education is often invoked without a clear definition. In this report, innovation refers to any meaningful shift in how education is organized, delivered, or validated that expands opportunity for learners. The report examines this innovation specifically through the lens of equity—asking not just where change is occurring, but whether it is reaching learners for whom traditional postsecondary pathways have not worked.

The transformation of postsecondary education today is unfolding across three distinct spheres: 1) improvements within existing institutions, 2) the expansion of scaled digital learning models, and 3) the emergence of learner-centered infrastructure designed to support economic mobility across a lifetime.

These spheres should not be understood as stages of evolution but as layers of innovation occurring across the ecosystem. While each sphere operates on a different aspect of the system, they are most powerful in combination, as progress in one creates the conditions for progress in the others. Together, they offer a framework for understanding not just where change is happening, but what kind of systemic change is required to make postsecondary education work for the full diversity of California’s learners.

FIGURE 1. Three Spheres of Innovation in Postsecondary Education



Sphere One:

Institutional Effectiveness

The first sphere of innovation focuses on improving effectiveness and efficiency within existing colleges and universities. Across both public and private institutions, faculty, administrators, and institutional leaders are experimenting with new approaches to teaching, advising, student support, and institutional operations. These efforts aim to strengthen the system that millions of learners rely on today, with the goal of improving retention, completion, and equitable outcomes.

Much of this activity centers on redesigning **teaching and learning**. Institutions are experimenting with AI-powered tutoring tools, adaptive learning platforms, and real-time feedback systems that allow students to receive personalized guidance as they work through complex material. Although in its early days, research on these developments suggests that well-designed AI learning systems can significantly improve student performance and engagement in higher education, particularly in high-enrollment STEM courses where students have historically struggled to receive personalized feedback and guidance.⁴ The California Education Learning Lab has been a central vehicle for this work within the state, funding intersegmental collaborations that pair institutions across the University of California, California State University, and community college systems. Through one such collaboration, UC Riverside, Cal Poly Pomona and Norco College are developing AI-powered tools that adapt to individual students' learning needs across engineering disciplines and guide them through their academic journey. In another example, at UC Berkeley, the foundational Data Science 8 course has integrated an AI tutor to help students break down complex problems and develop stronger quantitative reasoning.

A second area of institutional innovation focuses on **faculty practice and instructional design**. As digital tools become more central to the learning experience, institutions across California are investing in faculty development programs that help instructors integrate emerging technologies into their teaching in ways that are grounded in evidence and designed to promote equity. In the San Diego region, the Equitable AI Alliance—a Learning Lab-funded partnership between San Diego State University, UC San Diego, and the San Diego Community College District—illustrates what this can look like in practice. Supported by a \$1.5 million AI Grand Challenge grant, the Alliance is designed to ensure that every student, regardless of background or point of entry into higher education, has access to AI literacy resources and career readiness tools, including shared AI infrastructure across all three institutions.⁵

Institutions are also focused on improving the **student experience**, particularly around advising, pathway navigation, and access to academic support. Across California's community colleges, AI-powered tools are increasingly being deployed to help students navigate financial aid, course planning, and career pathways, with the goal of extending support beyond traditional office hours to students who need it most. The California Community Colleges Chancellor's Office recently expanded a systemwide partnership to make FERPA-compliant AI learning assistants available across all 116 campuses, following a yearlong pilot involving 260 instructors and over 8,000 students across 84 colleges. Early evidence suggests positive impacts on student engagement, though rigorous outcome data is still being collected and analyzed.⁶

Finally, institutions are applying AI and advanced analytics to strengthen **administrative effectiveness and operational efficiency**, reducing administrative overhead and freeing up staff time and resources that can be redirected toward student-facing support. One of the most consequential applications is in financial aid administration—an area where administrative complexity has long created barriers for the students who need support most. The California State University recently deployed AI-powered advising agents across its campuses, supporting enrollment, retention, and campus-specific processes, including customized communications to students via mobile-friendly platforms. The goal is not efficiency for its own sake but advancing access and success: When advising guidance is personalized and more accurate, and easier for students to navigate, fewer students fall through the cracks at the moments that matter most.⁷

Together, these efforts represent meaningful progress toward making the current system more responsive for the students it serves. Yet most of these innovations operate within the constraints of existing institutional structures and funding models. Many remain small-scale pilots, institutional capacity to sustain and scale new approaches varies widely across campuses, and leaders often face limited time and resources to move promising ideas from experimentation to system-wide change. As institutions continue to innovate within the boundaries of existing models, a second sphere of innovation is already reshaping core assumptions about how, when, and where postsecondary education can be delivered.



Sphere Two: Scale and Flexibility

The second sphere of innovation is defined not just by new tools or delivery methods, but by a fundamental rethinking of how postsecondary education is structured. Where sphere one is focused on improving outcomes within existing institutional models, sphere two considers how more flexible structures and technology-enabled delivery can better serve working adults and other learners whose lives do not fit easily within traditional structures. The innovations operating in this sphere have demonstrated that flexibility, affordability, and quality are not competing values and that postsecondary learning can be delivered at a scale that reaches hundreds of thousands of learners without sacrificing quality or the support structures that help students persist and complete credentials.

Much of this innovation has emerged through **large-scale online and hybrid learning models**. Arizona State University, Western Governors University, and Southern New Hampshire University have each built national learning platforms capable of serving hundreds of thousands of students across the United States. These models rely on centralized course design, digital learning infrastructure, and large instructional teams that combine faculty expertise with learning science, instructional design, and student support services. By separating course design from delivery and by leveraging digital infrastructure, these institutions can reach learners far beyond the geographic boundaries of a traditional campus while maintaining consistent academic quality.⁸

Digitally enabled **competency-based education** represents one of the most significant structural departures from traditional time-based learning models. Rather than advancing students based on seat time or academic calendars, competency-based models allow students to progress as they demonstrate mastery of clearly defined skills and knowledge, accelerating when they already possess relevant capabilities and taking additional time where deeper learning is needed. Western Governors University has been the national pioneer in this approach, building a model that now serves hundreds of thousands of students.⁹ In California, Calbright College has emerged as the state's own experiment in this model, a fully online, statewide community college serving working-age adults who have largely been left out of traditional higher education. Over 90 percent of its students are 25 or older, and enrollment has grown by more than 400 percent over two years. Questions about cost-effectiveness and completion rates remain, but Calbright's trajectory illustrates the scale of unmet demand for flexible, competency-based pathways among California's adult learners.¹⁰

Scaled digital models also demonstrate the potential to **reduce costs while expanding access**. High-quality digital learning experiences require significant upfront investment in instructional design, technology infrastructure, and continuous improvement. However, unlike traditional models where each institution often builds similar courses and supports independently, digital assets can be shared, refined, and deployed across large numbers of learners. When thoughtfully designed, this creates economies of scale that can lower costs and make learning more affordable without sacrificing quality.

Of note, the goal is not to replace faculty or reduce education to content delivery. Many forms of learning, particularly those involving discussion, mentorship, feedback, collaboration, and applied

practice, remain deeply human endeavors. Rather, digital infrastructure can allow institutions to invest faculty time where it matters most while reducing duplication and expanding access to high-quality learning opportunities. Institutions operating at scale have demonstrated that this combination of shared infrastructure and targeted human support can make degree pathways available to learners who might otherwise be priced out entirely.

Importantly, many of these institutions have also invested heavily in **structured learner support systems** designed specifically for working adults and nontraditional learners. Large-scale online universities frequently pair flexible course delivery with proactive advising, success coaching, and career-aligned program design to help students persist and complete their programs. These support structures recognize that flexibility alone is not sufficient; learners also need academic guidance, proactive intervention, and a sense of belonging as they navigate complex educational and career decisions.

Rising interest in these models also reveals the policy and regulatory constraints that continue to shape postsecondary education. Many federal and state policies remain tied to assumptions about seat time, academic calendars, and full-time enrollment. Financial aid programs often struggle to accommodate rolling start dates—which allow learners to apply and begin coursework frequently, rather than waiting for traditional semesters—or competency-based progress. Accreditation frameworks were largely designed for campus-based institutions rather than large-scale digital learning systems. These policy structures can make it difficult for innovative models to expand access even when they demonstrate strong outcomes.

Scaled digital models represent a significant expansion of how postsecondary education can be delivered, but they share a common limitation with the improvements of sphere one. Both remain centered on the institution as the primary validator of learning. The capabilities a learner develops through work, caregiving, military service, or community leadership remain largely invisible within these systems. Addressing that challenge requires a different kind of innovation altogether; one focused not on how institutions deliver education, but on how learning itself can be translated into opportunity wherever it occurs. That is the focus of the third sphere.



Sphere Three:

Learner-centered Infrastructure

The third sphere looks beyond institutions as the organizing center of education. It focuses on a different question completely: How can learning, wherever it occurs, be recognized, documented, and connected to real pathways for advancement? Rather than focusing solely on improving or expanding institutional pathways, this approach centers the learner, their growth, economic mobility, and ability to shape their own path, as the organizing principle of the work. The goal is an equitable, learner-centered civic infrastructure that supports learning as a lifelong, personalized, and adaptable process, enabling it to translate into economic opportunity at every stage of life. The innovations within this sphere are less mature than those in the first two, and the infrastructure required to support them is still being built. That is precisely what makes this moment consequential: The decisions made now about how to design these systems will shape whether they expand opportunity equitably or entrench the advantages that have long favored those with access to traditional credentials.

At the core of this sphere is a different view of how and where learning actually happens. Human capability does not just develop in a classroom, program, or institution. It is built over time through applied practice, relationships, and experience across multiple contexts—including work, caregiving, community leadership, military service, and civic participation. Capabilities such as judgment, communication, collaboration, adaptability, and ethical reasoning are shaped through real-world interaction and responsibility, and they grow over time. Research on labor market demand reinforces the importance of these capabilities: An analysis of nearly 76 million U.S. job postings found that durable human skills appear in approximately 76 percent of postings.¹¹

Yet most education and workforce systems are not designed to recognize this kind of learning. They rely on time-based structures and institutional credentials as primary signals of capability, leaving much of what individuals know and can do unrecognized or undervalued. For learners who have built skills through work, caregiving, or community leadership experience rather than through the pursuit of formal credentials, this gap has direct economic consequences, leaving capable people unable to demonstrate what they know in ways that employers and institutions recognize and trust. Closing that gap requires purpose-built infrastructure for documenting, validating, and translating learning across systems.

An important set of innovations within this sphere focuses on creating trusted mechanisms to document and translate learning across systems in ways that center the learner. **Learning and Employment Records** (LERs) have emerged as one response to this challenge. Rather than documenting only courses completed or credentials earned, LERs capture verifiable evidence of demonstrated competencies, work-based experiences, certifications, and applied learning over time. Critically, these records are designed to be learner-owned and controlled, allowing individuals to decide how their information is shared as they move across education and employment systems. Initiatives such as the U.S. Chamber of Commerce Foundation's T3 Innovation Network¹² and Credential Engine¹³ are working to establish the technical standards, shared language, and governance structures needed for these records to function across systems. California-specific implementation of this infrastructure

remains limited, representing both a gap and an opportunity for the state to shape how these systems develop in ways that work for everyone.

When designed effectively, these systems allow evidence of learning and skills to accumulate and travel with the individual over time. Their promise lies in enabling employers to evaluate what a person actually knows and can do, rather than relying primarily on degrees and transcripts as proxies for capability. Realizing that promise will require more than technical interoperability. Portable learning records must rely on shared definitions and validation approaches trusted by employers, protect learner ownership and data rights, and provide clear signals that connect skills and capabilities to real opportunities.

Taken together, the innovations within this sphere point toward the emergence of a learner-centered infrastructure designed to support economic mobility across a lifetime, not just when a degree is conferred. This infrastructure does not replace the role of colleges and universities but complements them, ensuring that learning across all contexts can be recognized, carried forward, and made to count. Building it will require sustained investment in technical standards, governance structures, and shared language across education and employment systems. It will also require a clear equity commitment, which means designing these systems from the start to serve the learners who have the most to gain from having their capabilities recognized, and the most to lose if these systems default to the same hierarchies they are meant to disrupt. That is the animating challenge of this sphere, and the reason it demands attention now.

A LEARNER EXPERIENCE OF THE SPHERES

Each sphere addresses a distinct dimension of the transformation underway in postsecondary education, but their significance and interdependence may be clearest when viewed through the experience of a single learner.

Consider a working adult in California's Central Valley who has spent six years building expertise in logistics operations at a regional employer. She enrolls at her local community college, accumulates credits, and transfers to a scaled digital institution that offers the flexibility her schedule requires.

At each transition, the question is the same: Does the system recognize what she already knows and can do—not just the credits she has earned—but the operational judgment, team leadership, and problem-solving she has built on the job over half a decade? If sphere one is not working well, her community college experience fails her before she ever transfers. Without sphere two, no institution exists that can meet her where she is. Without sphere three, the capabilities she has built through years of applied work remain invisible to the next employer who evaluates her. She does not experience these as three separate systems. She experiences them as one. When any part fails, the consequences fall on her.

All Spheres Matter to Progress

This scenario illustrates why the three spheres should not be viewed as competing visions or sequential priorities. They represent complementary layers of a common system, each addressing a different structural barrier to opportunity, and extending the reach of the others.

Institutional improvement, expanded access through flexible digital models, and learner-centered infrastructure for recognizing and connecting learning to opportunity are all necessary conditions for an equitable postsecondary ecosystem. None is sufficient on its own. What's more, narrowing the focus to any single sphere introduces meaningful systemic risk. Strengthening institutional quality without expanding flexible pathways leaves learners whose lives do not fit traditional models without viable options. Scaling digital models without also building shared infrastructure for recognizing learning beyond institutional walls simply relocates the same fundamental limitation to a new set of providers. And sphere three, however promising, depends on the other two spheres functioning well, and augments them in turn. Sphere three makes it possible for the full range of a learner's capabilities to be recognized and valued, regardless of where they were developed.

Real transformation will require progress across all three levels simultaneously.

California has historically led the nation in expanding postsecondary access. Meeting the current moment will require a comparable level of ambition. The scale and pace of change in learning and work now demand a broader conversation about how opportunity is created, sustained, and carried forward across a lifetime, and for a system built to make that promise real for every learner, regardless of where they start.



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About the Author

Maria Anguiano is a board director and strategist recognized for leading complex organizations through transformation and growth. She serves as Vice Chair of the University of California Board of Regents, helping to oversee one of the world's largest public enterprises, with a \$50 billion annual budget and \$180 billion in assets under management. She is also Chair of the Board of The James Irvine Foundation and serves on the KIPP Foundation board, advising on organizational effectiveness, program and investment strategy, and executive governance.

Previously, Maria served as Executive Vice President at Arizona State University, where she built and scaled a global digital learning business reaching millions of learners. Earlier, she held the CFO roles at UC Riverside and at the Minerva Project, a venture-backed education technology start-up. Maria has raised and managed billions in capital across the public, private, and philanthropic sectors. A former investment banker, CPA, and auditor, she brings extensive experience in large-scale finance, strategic planning, and organizational transformation.

Fluent in Spanish and deeply influenced by her family's immigrant journey, she brings a unique blend of financial acumen, systems thinking, and purpose-driven leadership to every boardroom.



About College Futures Foundation

At College Futures Foundation, we believe in the power of postsecondary opportunity. We believe that securing the postsecondary success of learners facing the most formidable barriers will ensure that all of us can thrive—our communities, our economy, and our state. We believe that the equitable education system of the future, one that enables every learner to achieve their dreams and participate in an inclusive and robust economy, will be realized if we are focused, determined, and active in our leadership and partnership.

We also know that the past few years have brought profound shifts in California's education and workforce landscapes—including college enrollment declines alongside high demand for affordable, career-connected training, national conversations on student debt and mental health, and numerous other changes prompted or accelerated by COVID-19 and a nationwide racial reckoning. These changes have underscored the realities of how inequitably our systems center and serve diverse people. We know that the coming years will present equally significant challenges and opportunities, and that we must be well-prepared to meet these moments.

Our Vision: We envision a California where postsecondary education advances racial, social, and economic equity, unlocking upward mobility now and for generations to come.

Our Mission: Our mission is to increase postsecondary completion for learners who are underserved. We center learners and their aspirations and needs on the path to achieving their educational goals.

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