Portrait of an Evidence-Based Education Ecosystem: Driven by a Future-Ready Portrait of a Graduate

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Drawing from the LEARN Network's panel series and inspired by the Portraits of a Graduate being adopted across the nation, this white paper presents a vision for a *Portrait of an Evidence-Based Education Ecosystem*—a system where research, practice, and policy continuously inform one another to support human flourishing. This vision builds on insights from a series of national conversations hosted by the LEARN Network in summer 2025, which brought together state, local, and national education leaders to explore what an evidence-based ecosystem could look like in practice.

We are at a pivotal moment for education in the United States. The rapid rise of artificial intelligence, growing concerns about student disengagement and lackluster achievement, uncertainty about the future of work in an era of automation and robotics, and other factors have placed numerous stresses on our education system. The bottom line: Education must evolve to prepare every learner for a rapidly changing world.

However, for decades the U.S. education system has relied on an outdated model that includes standardized curricula, seat-time credits where time is fixed and learning is variable, and assessments designed to rank and sort students in a one-size-fits-all approach to education.[1] This model no longer prepares our youth for the realities of the dynamic economy we live in and expect in the future.[2]

Instead, we must redesign our education system to use evidence and research on what students need to learn in order to thrive in today's world and how they learn best—ensuring that teaching, assessment, and supports are aligned to these insights. There's a steady drumbeat for shifting policies to focus on evidence emphasizing the "science of reading"[3] and the "science of learning,"[4] underscoring the urgent need for an education system grounded in evidence and continuous learning.

Yet despite investments in evidence-based education, national education outcomes remain stagnant.[5] "The paradox," renowned education policy expert Linda Darling-Hammond observed, "is not a lack of evidence, but a lack of integration" in how teachers teach and how students learn.[6] We know what works; the challenge is embedding it coherently into daily practice, policy, and design.

> *"The paradox is not a lack of evidence, but a lack of integration."*
>
> —Linda Darling-Hammond

How can we realize this vision of an evidence-based education ecosystem?

Insights from states and districts across the nation

In 2025, the Leveraging Evidence to Accelerate Recovery Nationwide (LEARN) Network led a series of panel conversations with education leaders to discuss a vision for an evidence-based education ecosystem. Maryland's State Superintendent Carey Wright, for example, emphasized that, to create an evidence-based education ecosystem, state leaders must "stick with what works relentlessly," grounding decisions in evidence and maintaining coherence.[7] Similarly, Jason Glass, former Kentucky commissioner of education and former

director of the Iowa State Department of Education, called for states to expand what counts as evidence—valuing authentic, performance-based assessments with demonstrations of student learning alongside traditional measures.[8] In a follow-up conversation, Susan Patrick, senior principal education researcher in SRI's Center for the Future of Education and Technology, also urged educators and policymakers to imagine a future "where students demonstrate evidence of learning in real time" in an ecosystem that empowers every learner to thrive.[9]

The LEARN Network, led by SRI with funding from the Institute of Education Sciences, aims to promote learning growth across the nation by increasing the use of evidence-based educational products.

Panelists also remarked on how the rise of AI has intensified the urgency of this shift. Erin Mote, CEO and founder of InnovateEDU, a nonprofit that accelerates ecosystem development, described today's learners as "whitewater kayakers" navigating unpredictable currents that demand adaptability, metacognition, and self-direction.[10] AI-powered tools can help educators personalize learning, connect evidence to practice, and make visible the pathways through which students acquire and apply knowledge. Used responsibly, AI can support personalizing learning to meet students where they are.

An evidence-based education ecosystem therefore seeks to integrate what decades of science and practice have revealed: that learning is most powerful when it is personalized, relational, and competency-driven, and when systems use data and continuously focus on improvement and growth.

The LEARN Network's 2025 Panel Series — Envisioning an Evidence-Based Education Ecosystem

This white paper draws on insights from a national four-part panel series hosted by the **LEARN Network** in summer 2025, *Envisioning an Evidence-Based Education Ecosystem*. The series convened leaders across research, policy, and practice to explore what it will take to build an education ecosystem that continuously generates and uses evidence to improve learning for all students. Panels were moderated by Dr. Victoria Schaefer, director and senior manager at SRI.

Panel 1: State System Perspectives on Scaling Evidence Use

- **Dr. Carey Wright**, State Superintendent of Schools, Maryland State Department of Education
- **Dr. Jason Glass**, Superintendent, Laguna Beach Unified School District; former Commissioner of Education, Kentucky and Iowa

Panel 2: National Perspectives on Scaling Evidence Use

- **Dr. Linda Darling-Hammond**, President and CEO, Learning Policy Institute
- **Dr. Vivian Tseng**, President and CEO, Foundation for Child Development

Panel 3: Local Perspectives on Scaling Evidence Use

- **Chris Jones**, Executive Director, Virginia Association for Teaching, Learning, & Leading (VATLL)

Panel 4: AI and the Future of Evidence-Based Education

- **Susan Patrick**, Senior Principal Education Researcher, SRI
- **Erin Mote**, Co-Founder and Executive Director, InnovateEDU

To learn more: Visit learntoscale.org for panel recordings and summaries.

Toward a portrait of an evidence-based education ecosystem

To think about what such an ecosystem might look like, we can turn to the Portrait of a Graduate (also called Profile of a Graduate), which states and districts across the nation are adopting to redefine what students should know and be able to do for a thriving future. Portraits of a Graduate define the knowledge, skills, and dispositions future-ready learners need, emphasizing competencies such as problem-solving, creativity, collaboration, critical thinking, and adaptability (see box for an example).[11] They are new visions that challenge conventional measures of success and call for an education ecosystem cohesively grounded in evidence—not only in what students must learn to thrive, but in how they learn best.

The Virginia Board of Education developed the Profile of a Virginia Graduate, which describes the "knowledge, skills, experiences and attributes that students must attain to be successful in college and/or the work force and to be 'life ready.'" It provides a north star to educators and leaders in the state to ensure a coherent approach to systems change, including redesign of the Virginia Standards of Learning, school accreditation requirements, accountability, systems of assessments, and high school graduation requirements. A life-ready Virginia graduate must:

- "Achieve and apply appropriate academic and technical knowledge (content knowledge);
- Demonstrate productive workplace skills, qualities, and behaviors (workplace skills);
- Build connections and value interactions with others as a responsible and responsive citizen (community engagement and civic responsibility); and
- Align knowledge, skills, and personal interests with career opportunities (career exploration)."

A definition of "evidence" and its use across the ecosystem

In an evidence-based education ecosystem, evidence is both the foundation and the connective tissue linking research, practice, and policy in service of student learning. Researchers commonly define evidence as research and data that provide credible proof that a specific practice or strategy improves relevant outcomes for learners, as well as rich contextual information on how those outcomes are achieved and for whom.[12]

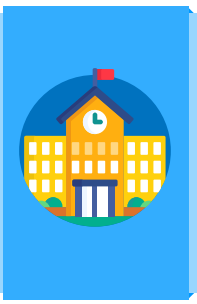
Our definition of evidence is more expansive and multidimensional. It includes systematically collected **research evidence** that identifies effective practices and determines whether initiatives and systems are achieving their intended outcomes, **performance evidence** that captures demonstrations of students' mastery, and **process evidence** from educators and systems that demonstrates implementation quality and opportunity of access. But it also includes the **rich, contextual information** that emerges from classrooms, communities, and students themselves.

The aim is to create a balanced, coherent system where all of these forms of evidence inform and reinforce one another.

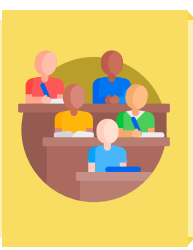
Evidence spans all levels of the ecosystem

The different forms of evidence serve different purposes across the levels of the education ecosystem.

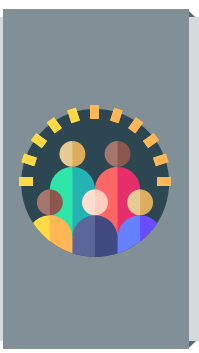
SYSTEM LEVEL: research, alignment, and impact evidence to guide national and state policy. Evidence at this level encompasses rigorous research and evaluation identifying effective practices and curriculum, as well as analyses of whether large-scale initiatives, funding models, and accountability systems achieve intended outcomes across the education ecosystem.



DISTRICT, SCHOOL, AND EDUCATOR LEVEL: implementation data and classroom inquiry that inform daily practice. Educators generate and use evidence daily through continuous cycles of inquiry and refinement. Formative-assessment data, classroom observations, and reflective practice enable teachers and leaders to adapt instruction—using evidence-based pedagogies—in real time, thereby connecting research to daily decision-making and capturing nuances often absent from large-scale studies.



STUDENT LEVEL: performance evidence of students' mastery and learning. As states adopt Portraits of a Graduate, evidence of students' learning increasingly means proof of mastery as measured through portfolios, exhibitions, digital badges, and authentic projects that demonstrate students' ability to apply knowledge and skills.



COMMUNITY LEVEL: locally defined outcomes and shared measures of success. Those most affected by education decisions should have the power to shape them. Communities help determine what kinds of evidence they need, what questions matter most, and how findings are used to guide local priorities. This democratized approach positions families, educators, and community partners as co-producers and users of evidence—able to leverage data to make decisions for themselves and to ensure that learning goals and measures of success are relevant, inclusive, and grounded in lived experience.[13]

Together, these forms of evidence should create a connected ecosystem linking rigorous research, practical insight, and authentic learning experiences.

The current use of evidence across the ecosystem shows emerging bright spots but also persistent barriers

Over the last two decades, the United States has invested heavily in research and infrastructure to support evidence-based decision-making in education. Federal initiatives such as the Institute of Education Sciences (IES) and What Works Clearinghouse, along with the Every Student Succeeds Act's tiers of evidence,[14] have strengthened our capacity to test and validate effective programs and interventions. Foundations, states, and researchers have also developed large bodies of research on practices, programs, and policies in literacy, math, social-emotional learning, and other domains.

These combined efforts have led to strengths and emerging bright spots in the use of evidence across the education ecosystem. For example:

- **System and local actors** are using evidence more intentionally, offering early examples of how a coherent, research-informed ecosystem can improve teaching and learning.
- **National, state, and local organizations** are bridging the gap between research and practice through networked improvement communities, research–practice partnerships, and innovative accountability models that center continuous learning.[15]
- **States** are aligning standards, assessments, and accountability systems with deeper learning and Portraits of a Graduate, defining success more broadly to include critical thinking, collaboration, and problem-solving alongside test performance.[16]
- **Districts and schools** are adopting continuous improvement cycles to generate local evidence and adjust instruction in real time,[17] signaling a cultural shift from compliance and external evaluation toward practitioner-led learning.
- **Community partnerships** are expanding the boundaries of evidence use. Families and local organizations are co-defining outcomes, designing metrics, and using data collaboratively to sustain progress—making evidence more relevant, relational, and rooted in lived experience.[18]

Together, these show the power of a more integrated ecosystem, one in which technology and emerging AI tools help synthesize data, surface real-time insights, and personalize learning to students' needs—closing the feedback loop between research, policy, and practice.[19]

However, national student outcomes remain uneven and achievement levels in core subjects have declined, revealing an enduring disconnect between evidence generation and evidence use.[20] Structural and cultural barriers persist, such as:

- **Disconnection across levels.** Evidence often moves vertically—from researchers to policymakers—but rarely circulates back from classrooms to inform policy or research agendas. Feedback loops are weak or absent, preventing the ecosystem from functioning as a continuous-learning system.[21]
- **Overreliance on narrow measures.** Many accountability frameworks still prioritize standardized test scores over authentic demonstrations of learning. This narrow focus constrains innovation and fails to capture the skills and competencies needed for future-ready graduates.[22]
- **Limited capacity for evidence use.** Educators and leaders often lack preservice training, time, tools, and ongoing professional learning to interpret and apply research effectively. Evidence is not yet a universal competency within the education workforce.[23]
- **Uneven access to quality data.** Differences in infrastructure, interoperability, and data governance across states and districts create gaps in who can access and use evidence to drive improvement.
- **Blind spots.** Even when data are available, they are not always disaggregated or contextualized to highlight disparities which persist unnoticed.

Taken together, these bright spots and barriers reveal that the use of evidence across the U.S. education system remains fragmented. As a result, the benefits of evidence rarely reach students in consistent, visible ways in their day-to-day learning experiences. Efforts to build coherence—ensuring that research, policy, and classroom practice are connected and mutually reinforcing—are essential to closing this gap and creating a system where evidence directly supports teaching, learning, and student growth.

Our vision for an evidence-based education ecosystem

We envision an evidence-based education ecosystem actively using research and data to inform practice where all students thrive. Such an ecosystem isn't just about collecting data or applying isolated research findings—it's about how all parts of the system (curriculum, instruction, assessment, policy, professional learning, educator preparation, etc.) coherently and continuously use evidence to make decisions and adapt.

This demands new models of education: redefining purpose, connecting student learning through relationships, prioritizing relevance, and reflecting for deeper learning as well as rigor. As Darling-Hammond noted, "learning is a function of experiences and relationships," and effective systems must be organized to support motivation, belonging, and continuity of learning.[24]

The education system must evolve to become a living, learning ecosystem. We must reignite the science of learning—linking cognitive, emotional, and social development—as a driver to creating new systems. In other words, we must integrate evidence across all levels of the system to create an education ecosystem that is future-ready and profoundly focused on human flourishing.

Importantly, an evidence-based education ecosystem delivers benefits for students, educators, and policymakers by aligning every level of the system around research, data, and continuous improvement. Such a system ensures that instructional, organizational, and policy decisions are guided by what works, for whom, and under what conditions—maximizing the impact of public investment and supporting positive learning outcomes.

In our vision, an evidence-based education ecosystem transcends data points or research outputs. It represents a living infrastructure for learning—one that connects rigorous research, authentic student work, and practitioner and community insights into a continuous cycle of improvement. Building such an ecosystem would not only raise student outcomes but also realize a future-ready, human-centered education system.

In this system, evidence is continuously generated, accessed, and applied to guide learning, teaching, and policymaking.

The move toward a connected and adaptive system requires modernization

Building a connected, adaptive education system means reimagining how we define, measure, and support learning.

> ***"If we were starting from scratch and using the evidence we have on how students learn best, what we'd design would look nothing like the one-size-fits-all system we have today."***
>
> **— Susan Patrick[25]**

Modernizing education means more than upgrading technology—it requires redesigning the very systems that define learning, teaching, and accountability. The shift to a connected and adaptive evidence based ecosystem calls for moving from seat time to demonstrated competency, from uniform pacing to personalized learning, and producing authentic evidence of what students know and can do through performance assessments and meaningful tasks. It requires engaging communities, workforce, educators, families, and students in discussions on what results matter most and shifting from backward-looking accountability to using real-time evidence that reflects growth, mastery, and well-being on graduate profiles. It means replacing the one-size-fits-all model with learner-centered approaches that empower students as active participants in their education. This modernization also depends on building educator capacity to use evidence in daily practice, to assess authentic student work with reliability, and to lead innovation grounded in research.

Our vision is predicated on four opportunities for modernization:

- **Design accountability systems centered on growth, mastery, and multiple measures of success.** Emerging policy frameworks show this is possible.

Kentucky's United We Learn Initiative

Under Kentucky's United We Learn initiative, leaders engaged thousands of students, families, and educators in co-designing a new vision for public education built on deeper learning, local innovation, and community ownership—replacing compliance-driven accountability with measures of engagement, growth, and readiness for life beyond school.[26]

- **Strengthen educator capacity by integrating evidence use into preservice preparation and ongoing professional learning.** Give teachers and leaders the skills to utilize, collect, interpret, and act on research and data in ways that are formative and improvement-oriented, not punitive.

Mississippi's Statewide Literacy Reforms

In Mississippi's statewide literacy reforms, leaders embedded the science of reading into policy and practice by aligning standards, teacher preparation, and professional learning around evidence-based instruction, supported by new data systems and organizational structures for sustainability.[27]

- **Leverage technological innovation—particularly the ethical use of AI—to help synthesize insights from multiple data sources, making evidence more actionable and localized.** If used responsibly, AI can reduce administrative burden and create real-time feedback loops that connect classrooms, districts, and policymakers.
- **Grow community partnerships.** As local actors gain the tools and authority to define what matters and to leverage data for their own decision-making, evidence use can become more democratic and sustainable.[28]

In a thriving evidence-based ecosystem, evidence flows across classrooms, districts, and state systems, creating feedback loops that guide learning, teaching, and policymaking around shared goals for future readiness while ensuring that learning is responsive to local contexts and tailored to meet students' diverse needs.

The system is anchored by the Portrait of a Graduate

Let's imagine what such an evidence-based education system looks and feels like. The Portrait of a Graduate offers a valuable framework and strategic compass for this transformation. It articulates the knowledge, skills, and competencies—such as critical thinking, creativity, collaboration, communication, adaptability, and civic engagement—that a state uses to redefine success for students. Moving from vision to practice requires redesigning curriculum, instruction, and assessment around these competencies and recognizing learning wherever it occurs—often referred to as competency-based education.[29]

What is competency-based education?

One proposed definition of competency-based education points to five key aspects:[30]

- Students advance upon demonstrating mastery.
- Competencies include explicit, measurable, transferable learning objectives that empower students.
- Assessment is meaningful and a positive learning experience for students.
- Students receive timely, differentiated support based on their individual learning needs.
- Learning outcomes emphasize competencies that include application and creation of knowledge, along with the development of important skills and dispositions.

Thus, an education ecosystem grounded in evidence and guided by the Portrait of a Graduate will be marked by:

- Learning recognized across contexts—school, community, and work.
- Teachers and students acting as researchers.[31]
- Learning environments designed for belonging, motivation, and well-being.
- Verified credentials that carry real value for learners and employers.
- Competency-based progression and performance assessments established as the norm.

In such a system, using evidence is not an external responsibility—it is internal practice. In the LEARN Network panel series, Glass described the goal as "expanding what counts as evidence," shifting accountability from compliance metrics to authentic demonstrations of mastery.[32] Education becomes a continuous improvement enterprise, powered by the belief that every learner can thrive when people engage in inquiry based on evidence and drive systems to improve, too. Jones described a vision where teachers were extremely intentional in their efforts as researchers and in supporting the whole child. He emphasized how having research tools that can help teachers answer questions will help unlock our future ecosystem.[33]

Modern tools like AI guide teaching, learning, and decision-making

In our vision, AI serves as the "invisible infrastructure" that links research and practice in real time.[34] Large language models can be applied to analyze thousands of professionally vetted research studies, curated information sources, and closed data sets, enabling AI systems to generate timely, context-specific recommendations for human decision-makers. The potential benefits include:

- Better use of the research base and evidence to inform policy and practice.
- Better measurement of students' knowledge, skills, and competencies aligned with Portrait of a Graduate outcomes.
- Greater transparency through the demonstration of authentic student work and performance.
- Stronger accountability through continuous monitoring of student progress along developmental learning progressions.

Here's what AI integration might look like for actors across the ecosystem:

- For **students**, AI powers adaptive, just-in-time learning, helping them navigate clear learning pathways.
- For **teachers**, AI tools function as teaching copilots, offering insights into student progress, coaching on evidence-based practices, and managing routine tasks.
- For **system leaders**, **research partners**, and **policymakers**, AI analytics continuously assess what works, for whom, and under what conditions—closing feedback loops across classrooms, programs, communities, schools, and states.

While we cautiously acknowledge the potential and promise of AI to enhance student learning and improve instructor efficiency, it is essential to develop thoughtful policies that address critical challenges related to accuracy, transparency, privacy, safety, and ethics. Human decision-making and educator professional judgement are paramount in assessing the information generated by AI tools in specific teaching and learning contexts.

A clearer picture of evidence use in education comes into focus

Now imagine what student learning might look like in such an evidence-based ecosystem. Each student has a clear picture of the knowledge, skills, and dispositions the need to acquire, defined in their Portrait of a Graduate. Students learn and apply those competencies across settings—at school, online, in their communities, and through work-based or service experiences. They collaborate with peers, mentors, and educators, building relationships that make learning relevant and connected to real-world goals. Each knows what they must work on for their learning goals each day and what comes next. Each has a digital wallet and portfolio that includes a digital record of what they have learned, linked to portfolios of evidence showing what they know and can do.

Empowered and connected learners

Progressions are based on demonstrated mastery, and all students are held to the same high standards for demonstrating mastery. There is flexibility in how, when, and where learning occurs, with multiple pathways to mastery. Evidence flows continuously across classrooms, schools, and community partners, helping educators personalize learning and align supports to individual needs. AI plays a supporting role by analyzing patterns, surfacing insights, and identifying struggles early. Educators use evidence to adapt instruction, strengthen engagement, and connect learning to students' interests and identities. In this system, personalization is not technology-driven alone, but people-centered and grounded in relationships, relevance, and evidence-informed practice.

On the instructional side, teachers become inquiry-based researchers and designers of learning experiences. AI brings research to the moment of teaching. It starts with capacity-building to focus on better preparing both preservice and in-service teachers to do research and use evidence as well as understand how to leverage AI most effectively. Instead of being buried in scholarly journals, learning science is embedded in practical tools that support decision-making in the classroom. AI surfaces what works best for whom, empowering teachers to engage in dialogue, reflect, and adjust based on evidence.

Educators as inquiry-based designers

Education leaders at the local and state levels set the vision for continuous learning and coherence across policy, accountability, and funding, aligning systems so that every initiative reinforces evidence-based teaching and equitable outcomes. Jones described teachers in this vision as intentional in using research, principals as highly collaborative, and district leaders as visionary.[35] Researchers, employers, and community partners also play critical roles—translating research into practice, ensuring that student competencies connect to workforce and civic needs, and expanding learning opportunities beyond school walls. Together, these actors create a dynamic ecosystem where evidence, relationships, and innovation drive improvement and ensure that all learners thrive.

Leaders who build the conditions

Realizing this vision requires transforming our education system into a dynamic learning ecosystem—living laboratories of continuous improvement. In this ecosystem, every policy, practice, and product is informed by the evolving evidence base, and every actor contributes to generating and using that evidence. Teachers are supported as skilled professionals who integrate the science of learning into daily practice; students are empowered with agency, purpose, and personalized pathways; and families and communities are active partners in shaping meaningful learning experiences.

Communities as engaged partners

Call to action: Make evidence the organizing force of systems

Bold, coordinated action across all levels of the education system is needed to realize this vision of an evidence-based education ecosystem. The challenge now is to ensure that evidence becomes the foundation for every policy, classroom, and innovation effort—making evidence the organizing force of the education ecosystem. We offer nine key recommendations, each with a set of specific actions, for system actors to implement to move us closer to this vision.

Build a Shared Knowledge Base of the Science of Learning

The field—including educators, researchers, policymakers, and partners who support students' learning inside and outside of school—must commit to knowing, adopting, and using the evidence base consistently.

- Curate, synthesize, and disseminate research on effective learning, teaching, and leadership.
- Apply findings from the science of learning and development to redesign curriculum, assessments, professional learning, and systems of support.
- Align every decision, investment, and policy to research, discontinuing practices that contradict what we know about how students learn best.

As Darling-Hammond and Vivian Tseng observed, democratizing evidence means ensuring that research is not confined to journals, but embedded in the daily work of educators, leaders, and policymakers.[36]

Infuse Research into Educator and Leader Preparation

Preparation programs must be redesigned so that every educator and leader is an evidence user and generator.

- Embed research literacy, design-based inquiry, and continuous improvement into teacher and leader preparation.
- Require licensure and certification to demonstrate competence in using and interpreting evidence to inform decisions.
- Reform accreditation processes to assess whether institutions prepare candidates to apply the science of learning and evidence-informed strategies effectively. This will build a profession grounded in research and driven by continuous improvement.

Align Accountability with Fidelity to Evidence

Accountability must evolve from compliance to continuous learning.

- Reward schools and systems that consistently align their work with the science of learning.
- Support modernizing accountability to build models that include results-based accountability with reciprocity and codesign with local interest-holders' input on measures.
- Use accountability to reinforce transparency, collaboration, and improvement—not punishment.
- Establish evaluation frameworks that measure fidelity to research-based practices rather than adherence to outdated structures.

As Wright stated, "policy combined with accountability can drive behavior."[37] Systems must use this power to promote alignment, coherence, and adherence to evidence.

Evaluate and Scale Innovation Through Evidence

Innovation must not outpace the research that guides it. Every new approach—curricular, technological, or structural—should be evaluated for alignment with the science of learning and development.

- Test innovations under real-world conditions to understand what works, for whom, and under what circumstances.
- Build and share evidence on the conditions that enable successful implementation and scale.
- Create innovation pipelines that incorporate evidence-building as a design feature, not an afterthought.

Innovation and evidence must operate in partnership, strengthening the other.

Build Human Capacity and Infrastructure

Systems are made up of people, and their capacity determines whether evidence is used with fidelity.

- Develop human capacity at all levels of the system to build, interpret, and use evidence for improvement.
- Build infrastructure—including research partnerships, open-access repositories, and interoperable data systems—that makes evidence easy to access and apply.

Ensure fairness in access so that all educators and institutions, regardless of geography or resources, can participate in and benefit from evidence-based practices.

Build Capacity and Guardrails for the Ethical Use of AI

AI can make evidence actionable in real time, but its power must be matched by responsibility.

- Expand AI literacy among educators, leaders, and developers.
- Develop public infrastructure for AI in education—secure data sets, transparent algorithms, and testbeds for evaluation.
- Apply the ED SAFE AI principles (Safety, Accountability, Fairness, and Efficacy)[38] to ensure AI enhances, rather than replaces, human decision-making.

As Patrick affirmed, "AI offers an opportunity to personalize learning and apply research on how students learn best."[39] The goal is to align AI with the science of learning, ensuring that data and algorithms serve humanity's best educational purposes.

Align Education Technology Products to the Evidence Base

Educational products and innovations—from technology to curriculum—should advance learning based on evidence and align with the goals of a Portrait of a Graduate, rather than accelerating outdated, efficiency-based "factory" models of education defined by narrow metrics.

- Require developers to demonstrate that products are grounded in validated research on cognition, motivation, and development.
- Evaluate products for their real impact on learning before large-scale adoption.
- Incentivize alignment between technology design and evidence-informed frameworks, ensuring that innovation reinforces what we know about effective learning.
- Ensure evidence demonstrates an educational technology product's impact on learning and provides guidance for the conditions for success: what is required for implementation, how responsive the product is to adaptation, and the core components for implementing with fidelity to achieve desired outcomes.
- Encourage evaluation frameworks that identify what works, for whom, and under what conditions, to build understanding of context and efficacy.
- Promote procurement practices to incentivize evidence use.

When educational technology products align to the science of learning, they can serve as a bridge between research and evidence-based practices, rather than accelerate low quality or prioritize efficiency.

Align and Redesign Systems Using the Evidence Base

To move from fragmentation to coherence, we must align every part of the system—standards, accountability, funding, professional learning, and technology—around the evidence base.

- Redesign systems so that their structures reflect what research says about how students learn best.
- Include continuous feedback loops during pilots and development cycles from educators, technology developers, and research partners, ensuring insights from educators and learners directly inform product design, iteration, and enhancement.
- Support reciprocity where evidence flows bidirectionally—linking educators, leaders, and developers co-constructing learning systems—to co-design tools and systems that address real needs, adapt, and advance continuous improvement.
- Align incentives and measures to reward evidence-informed decisions.
- Build feedback loops that allow evidence to flow seamlessly across classrooms, districts, states, regions, and national systems.

This systemic alignment ensures that education operates as an ecosystem—adaptive, interdependent, and guided by continuous learning.

Align Portraits of a Graduate, Competency-Based Learning, Performance Assessments, Recognition Systems, and AI Use

The power of the Portrait of a Graduate lies in connecting vision to evidence-based practices. To fully realize this potential, states and districts must move forward to align Portraits of a Graduate, competency-based learning, performance assessments, recognition systems, and AI use into a coherent, evidence-based system of education.

- Align Portrait of a Graduate competencies with measurable, authentic assessments that reflect mastery, not seat time.
- Create innovation zones with a research agenda and evaluation component.
- Build competency-based systems that ensure students advance upon demonstrated mastery with evidence of learning.
- Support performance assessments and student work as valid evidence of learning.
- Design recognition systems—badges, micro-credentials, and learner records—that communicate verified evidence of skills valued by higher education and employers.
- Use AI to analyze education and workforce data and needs for fostering alignment across systems.

This alignment transforms disconnected initiatives into a unified system that develops, measures, and recognizes learning based on evidence and human potential.

The path forward demands courage and coherence

The call for a truly evidence-based education ecosystem has never been more urgent. In an era defined by rapid technological change and widening inequities, education must evolve into **a system that learns continuously—one guided by the science of learning, sustained by evidence, and empowered by innovation and human agency.**

The task ahead is to integrate what we know into every layer of education—to make evidence the language of learning, improvement, and accountability. This transformation is not optional; it's essential to preparing future-ready learners who can thrive in a world defined by change. We know how people learn; we now must align systems accordingly to realize the new *Portrait of an Evidence-Based Education Ecosystem* that our students need and deserve.

Endnotes

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This document was supported by the Institute of Education Sciences, U.S. Department of Education, through Grant R305N220012 to SRI International. and inspired by insights from Linda Darling-Hammond, Jason Glass, Chris Jones, Erin Mote, Susan Patrick, Victoria Schaefer, Vivian Tseng, and Carey Wright as part of a LEARN Network conversation series. The opinions expressed are those of the authors and do not represent views of the Institute, the U.S. Department of Education, nor the panelists.

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