Transcend

Overdeck Family Foundation

A Better Path:
DESIGNING LEARNING FOR THE AGE OF AI

January 2026 | V1

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About Transcend

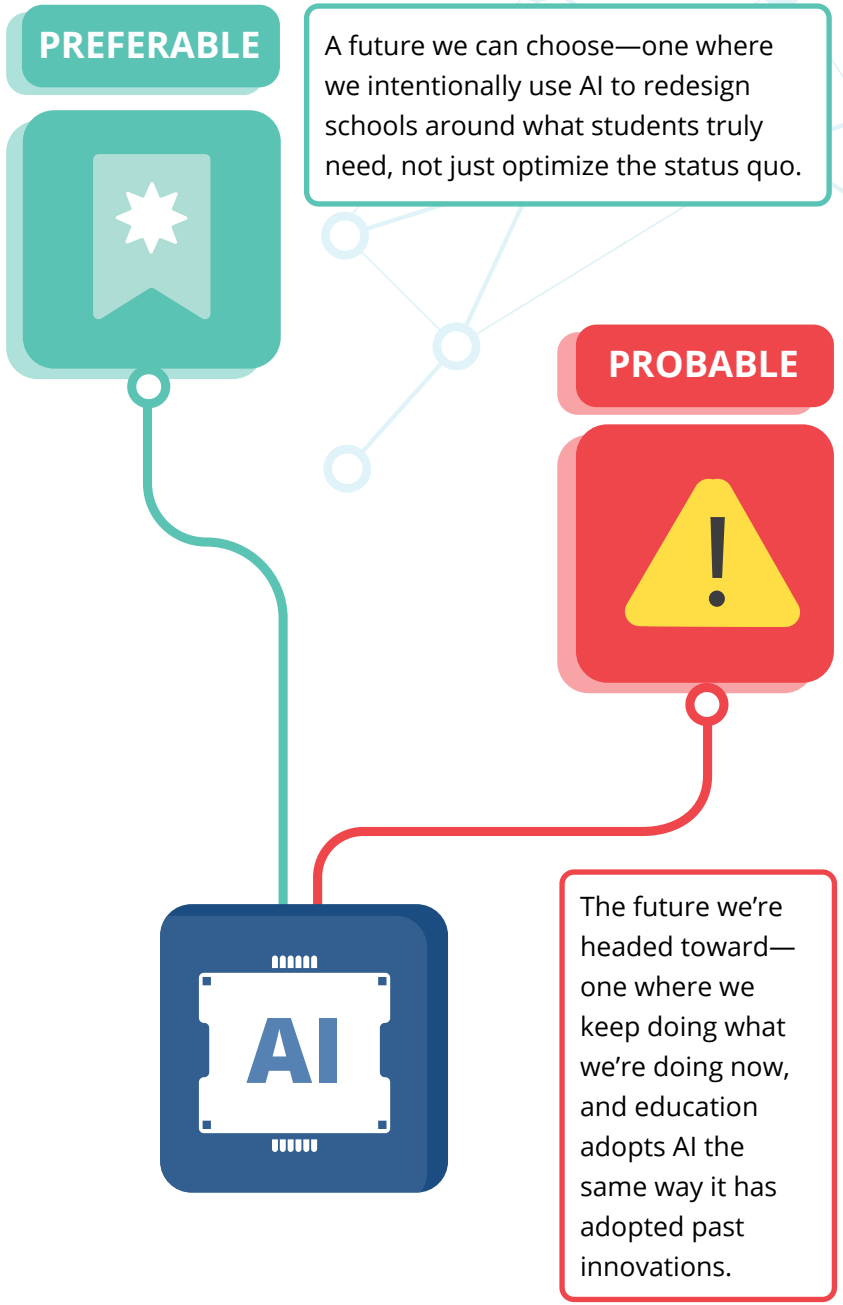
Transcend is a national nonprofit that supports communities to create and spread extraordinary learning for all. We do this by partnering closely with schools and systems, sharing tools and resources, and cultivating a surrounding ecosystem conducive to change. Scan the QR code to learn more.

EXECUTIVE SUMMARY

For young people to thrive, both individually and collectively, they need learning environments that are much more engaging and effective than most of today's schools. AI technologies have incredible potential to help us unlock such learning environments. But there is a gap in this moment between the **probable path** we are treading—which won't get us there and may even leave young people further behind—and a **preferable path**.[1]

This is showing up in three domains:

- **What School is Geared Toward:** In the age of AI, schools must prioritize holistic outcomes, which AI itself is making more feasible. However, history suggests the shift toward these outcomes risks being made in name only.
- **What School Looks and Feels Like:** AI makes extraordinarily learning experiences more possible than ever for all young people. Without intentional design, however, AI risks reinforcing industrial-era patterns rather than transforming them.
- **How School Changes:** AI can facilitate continuous community-based design by managing complexity and supporting coherence. This requires a unified vision; otherwise AI risks becoming another fragmented and ineffective reform effort.



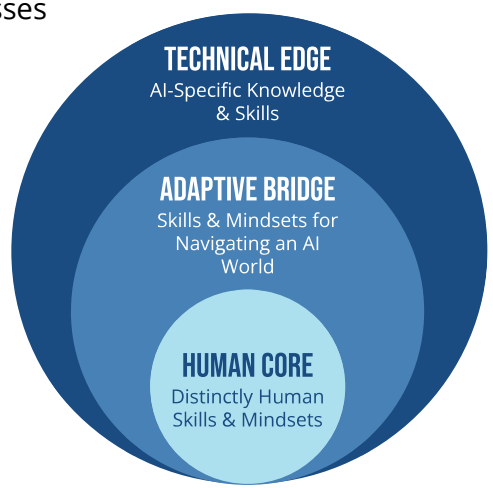
[1] A special thank you to our friends at Leading Educators for the 'possible | preferable' framing.

What School is Geared Toward

In the age of AI, school must be geared toward developing holistic outcomes that include rigorous academic foundations alongside three categories: the technical edge, the adaptive bridge, and the human core.

The probable path results in schools continuing to prioritize what's easily measured over what learners need. AI literacy risks becoming another mission statement priority that never translates to meaningful change in students' experiences or the resources that support them.

The preferable path leads to schools embracing holistic outcomes that integrate rigorous academics with three categories—the human core, the adaptive bridge, and the technical edge—and incorporates AI literacy as a new focus area. The human core includes skills AI cannot replicate, like empathy, relationship skills, and well-being. The adaptive bridge encompasses foundational capacities like critical thinking, creativity, adaptability, and learning how to learn, which are essential for navigating change. The technical edge covers AI-specific knowledge and skills like understanding algorithms and building, evaluating, and testing AI. Schools make these outcomes explicit goals and modify the student experience to support them, ensuring that key resources like curriculum, assessment, and professional learning are aligned. AI unlocks new possibilities for reliably assessing and giving feedback on this broader set of outcomes, making it feasible to measure capacities like collaboration and adaptability that have traditionally been difficult to capture. Schools treat outcomes as living commitments revisited regularly through community-based processes, remaining responsive to what young people need to thrive in an uncertain future.

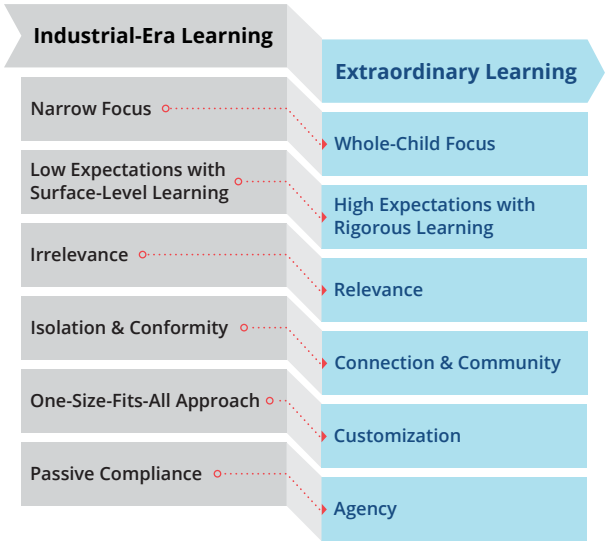


What School Looks and Feels Like

In the age of AI, young people are more able than ever to engage in learning that is rich in whole-child focus, connection and community, high expectations with rigorous learning, relevance, customization, and agency—but learning experiences must be designed intentionally to realize this potential.

The probable path results in AI reinforcing how school currently looks and feels by making it more efficient than ever to operate. Characterized mostly by the left side of **Transcend's Leaps**, it optimizes efficient learning over depth and engagement. Learners may progress quickly in some areas but without the productive struggle that builds understanding, agency, and purpose. Learning becomes individualized but isolating, disconnecting students from peers, communities, and meaningful work in the world.

The preferable path leads to schools redesigning learning in service of the experiences the right side of [Transcend's Leaps] call for. If used well, AI manages tasks like grading, scheduling, and lesson planning, freeing teachers to focus on building relationships, coaching students through challenges, and understanding each learner's academic, social, and emotional needs. AI enables personalization by sequencing content based on what students have mastered and are ready for next, blending remediation with grade-level work so all learners can progress at their own pace. Students use AI to make complex work accessible, get immediate feedback on difficult tasks, and visualize their progress toward goals they help set. Learning happens fluidly beyond classroom walls through real-world projects, internships, field work, and engaging with authentic audiences and real challenges. AI-powered tools make this possible and sustainable, by coordinating logistics and connecting learners with mentors, employers, and community partners. Learning becomes more personalized without becoming isolating, more rigorous without becoming standardized, and more relevant without losing academic depth. Realizing this vision requires more than new tools. Curriculum, assessment, adult roles, and operations must be intentionally redesigned so that AI supports a transformed student experience—one grounded in strong relationships, meaningful work, and growing student agency.

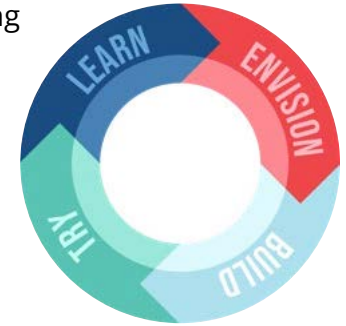


How School Changes

In the age of AI, school must change through an iterative, community-based process focused on the design of learning environments and the community conditions needed to create and sustain them.

The probable path leads to schools chasing efficiency through disconnected AI pilots while educators improvise "shadow AI" systems to fill gaps, widening disparities across classrooms and districts. This mirrors past failed reforms: fragmented innovation without community grounding that produces misalignment and short-lived adoption. Schools remain trapped in static models and a feeling of "initiative-itis" while the world rapidly evolves beyond them.

The preferable path leads to schools embracing continuous community-based design focused on two key levers: the design of learning environments and the community conditions needed to sustain them. Communities regularly reflect on desired outcomes and experiences,



compare them to current reality, and prioritize bold actions to close gaps. This iterative process deliberately departs from industrial-era structures while preserving essential elements. AI accelerates this work by managing complexity—synthesizing stakeholder input, surfacing patterns, and enabling faster iteration. Coherence is the throughline, as districts anchor AI decisions to their vision for student outcomes and experiences, ensuring that every innovation strengthens rather than fragments the whole.

Enabling the Preferable Path

Whether we continue along the probable path or move to the preferable one depends heavily on the guidance and support provided to schools and systems by different groups across the education ecosystem.

It will require cross-sector coalitions—policymakers, state and district leaders, researchers, public and professional will, support organizations, funders, product developers, higher ed institutions and employers—working together across five critical priorities:

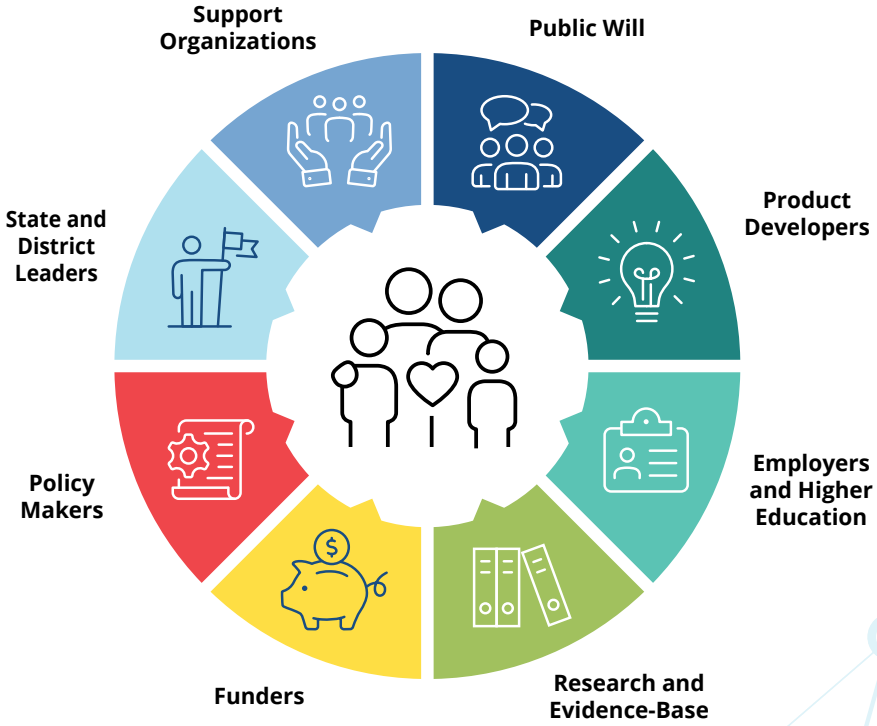
1. The field must develop shared frameworks, curricula, and assessment tools for AI literacy as a core outcome.

2. Assessment and accountability systems must enable flexible assessment windows and a wider range of ways for students and schools to demonstrate progress while holding rigorous standards across a range of holistic outcomes.

3. Educator roles must evolve for an AI era, requiring aligned changes to certification pathways, preparation programs, evaluation frameworks, and support systems.

4. Infrastructure for AI-enabled learning must be secure, interoperable, ethical, and evidence-based.

5. The ecosystem must lay the foundation for safe experimentation, create conditions for flexible innovation, and build capacity for continuous, coherent design.



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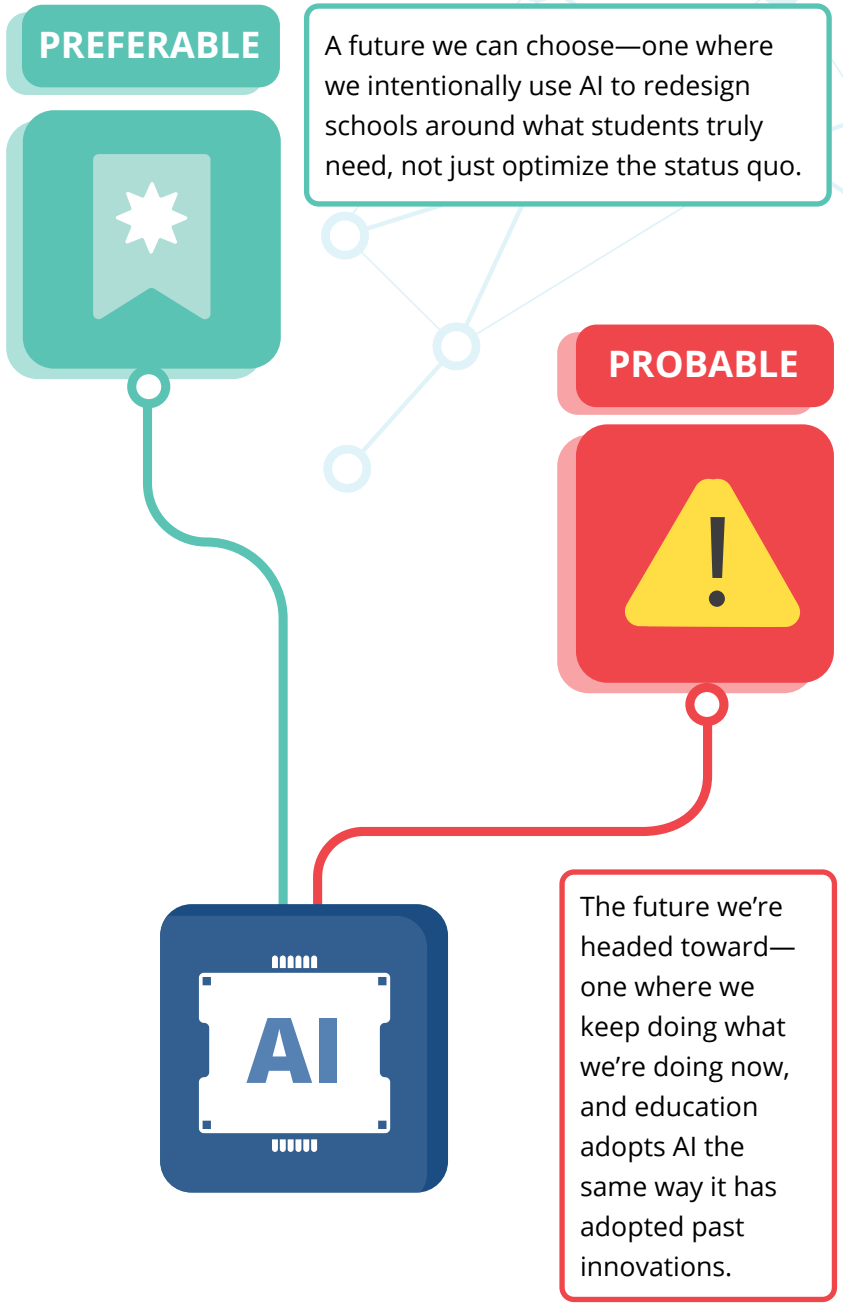
INTRODUCTION

For young people to thrive, both individually and collectively, they require learning environments that are more engaging and effective than most contemporary schools. This fact is widely recognized, and for decades, the K–12 sector has worked to move in that direction—away from industrial-era models toward a more rigorous, relevant, customized, relationship-rich, agentic, and holistic experience for all young people. Yet even with years of effort, this transformation has proven difficult to realize at scale.

A major barrier has been design. Today's scheduling structures, staffing models, instructional practices, and assessment systems were built for a time in history that was radically different from today. Past reforms became add-ons rather than redesigns, squeezed into structures that weren't built to support them, contributing to incoherence. Without meaningful transformation, efforts couldn't take root.

The rapidly evolving capabilities of AI are creating a pivotal moment. For the first time, AI is making it possible to coordinate the complexity required to deliver extraordinary learning at scale—the kind of transformative experiences outlined in Transcend's Leaps framework. But we see a gap between the **probable path** we are treading, which won't get us there and may even leave young people further behind, and a **preferable path** that could create the transformation students need.



This gap shows up in three critical domains: what school is geared toward, how school looks and feels, and how school changes. In each domain, choices made now by ecosystem entities like practitioners, product developers, funders, and policymakers will determine whether AI reinforces industrial-era patterns or transcends them.

Throughout this resource, you'll encounter three detailed vignettes showing where the preferable path could lead us, each with alternative versions that illustrate how the same scenario could unfold differently with varying levels of intentionality in AI design and implementation. The resource concludes with specific actions required from each part of the education ecosystem to move from the probable to the preferable future.

This resource is designed for flexibility. The table at right helps you navigate it based on your role and goals, showing you what to read and what to do with it.

If You Are...	Prioritize reading:	Actions to take:
A school leader	• Executive Summary	• Delegate other sections to stakeholders within your buildings • Use as discussion guide in leadership meetings
An educator	• What School Looks and Feels Like	• Share the executive summary with your school or system leader. • Turnkey what you've learned with colleagues
A parent, caregiver, or young person	• What School Looks and Feels Like	• Share the executive summary with your school leader • Bring any questions or ideas to school leadership
A member of the ecosystem supporting this work	• Executive Summary • Enabling the Preferable Path	• Share more broadly with your organization or peer organizations • Use to frame conversations about partnership opportunities

WHAT SCHOOL IS GEARED TOWARD

Where We Are Now

Learning outcomes often focus narrowly on academics, capturing only a fraction of what communities and the workforce value. Though the specific future that young people will inhabit remains uncertain, we can already foresee that academic foundations like literacy, numeracy, and conceptual understanding will remain essential, but also be insufficient.

The insufficiency is becoming harder to ignore. Young people are entering one of the most unpredictable and fast-moving labor markets in modern history, with AI reshaping tasks across industries.[2] Work in the future will be conducted via partnerships among people, agents, and robots: today's technologies could theoretically automate more than half of the current US work hours, reflecting how profoundly work may change even if this is not a forecast of job losses.[3] As adoption unfolds, some roles will shrink, others grow or shift, and new ones will emerge. Entry-level roles in AI-exposed fields are already declining, and recent graduates are facing rising under- and unemployment.[4,5] Some studies estimate that more than one-third of workers will need to upskill or reskill within a few years, with the "half-life" of skills now just 2–3 years.[6,7]

[2] World Economic Forum, 2023
[3] McKinsey, 2025
[4] Brynjolfsson, Chandar & Chen, 2025
[5] Federal Reserve Bank of St. Louis, 2025
[6] World Economic Forum, 2025
[7] IBM, 2024

Two Possible Paths Forward:

The probable path leads to outcomes that remain narrow and easily measured, with AI readiness appearing in mission statements and graduate profiles without translating into changed practice.

The preferable path is where schools embrace holistic outcomes, treat these as living commitments revisited through community-based processes, and design with coherence—orienting every decision toward preparing students for an uncertain future.

This reality complicates how schools prioritize student learning outcomes. They have long relied on backward planning, identifying what learners need to thrive and prioritizing outcomes accordingly. But the future is blurrier than ever. Rapid technological, economic, and social change is making it harder to anchor outcomes in a fixed vision of adulthood. This moment demands nimbly supporting important emerging capacities while also designing for the capacities that endure: learning continuously, adapting to new tools and contexts, collaborating across lines of difference, and exercising judgment in ambiguity.

History suggests that this will be difficult. The education field has repeatedly sought to expand student outcomes: SEL, 21st-century skills, deeper learning. While these movements built meaningful conviction, the status quo and the fundamental structures that support it remained largely unchanged. The difficulty of assessing and providing rigorous feedback on broader competencies kept schools focused on narrow outcomes that were easier to measure and improve. Outcomes appeared in graduate portraits but rarely changed how students' time was spent, curriculum and assessment, or adult preparation. The question now is whether this time will be different—if the urgency and tools AI provides can finally break this cycle.

What Holistic Outcomes Look Like

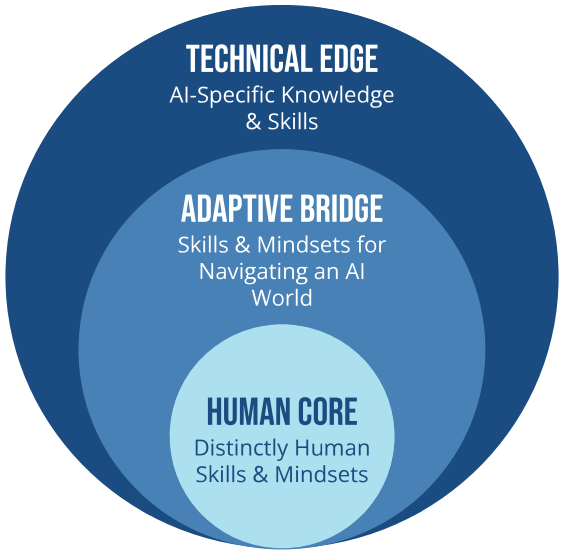
The field has already begun mapping what comprehensive outcomes should include. Our analysis of 17 frameworks reveals clear patterns pointing toward a broader, more durable set of outcomes that, alongside traditional content mastery, prepare young people to thrive in an AI-driven world. In addition to foundational academic content knowledge, the future of learning demands three distinct but equally essential categories:

The human core consists of "unAI-able" skills and mindsets: —capacities that cannot be automated, such as emotional intelligence, interpersonal skills, ethical awareness, and practices that support physical and mental well-being.

The adaptive bridge includes skills and mindsets for navigating an AI-shaped world. It includes foundational capacities like learning how to learn, creativity, critical thinking, and collaboration. These are necessary for managing change and complexity, including applying them to AI by managing when and how to use it, maintaining human oversight, and creating ethically.

The technical edge encompasses knowledge and skills related to AI systems, architectures, and performance, including

Implications of AI on Learning Outcomes



understanding algorithms and models, working with data and datasets, and building, evaluating, and testing AI.

Our analysis shows that while many frameworks address important dimensions, most emphasize only one or two of these categories—rarely integrating all three. Yet it is this integrated skill set that equips young people to thrive amid rapid technological, social, and economic change.

AI Literacy as a New Focus Area

AI literacy is the newest and least-developed dimension within the three categories, with definitions and frameworks still emerging as the field builds consensus. Currently, AI instruction across K–12 is sparse, with no coherent, vertically aligned pathway. It appears through scattered electives, isolated lessons, or late-stage computer science courses, which creates uneven exposure across schools and grades.

Without proper preparation, students will be vulnerable to misinformation and unable to evaluate AI outputs or use tools responsibly. They will also miss out on economic opportunities in AI-driven industries. Affluent learners are gaining exposure through extracurricular opportunities while under-resourced communities often are not.

AI literacy bridges two categories in our outcomes framework. The technical edge includes understanding how AI systems work and how to build, evaluate, and improve them. The adaptive bridge encompasses both AI-specific capacities—like discerning when to use AI, maintaining human oversight, and creating ethically—and capacities that remain crucial for working with or without AI, like creativity and learning how to learn. Some school systems and knowledge resources are starting to point the way. See an example of how AI literacy can be broken into more specific learner outcomes from Transcend's COMP3 portfolio.

As with all outcomes, naming AI literacy as a priority is not enough—schools must embed it across the curriculum while creating dedicated spaces for technical skill-building.

The Moment Ahead

The knowledge, skills, and mindsets young people need to thrive have already expanded. This reality complicates how schools prioritize student learning outcomes. Rapid technological, economic, and social change is making it harder to anchor outcomes in a fixed vision of adulthood. This moment demands nimbly supporting important emerging capacities while also designing for those that endure: learning continuously, adapting to new tools and contexts, collaborating across lines of difference, and exercising judgment in ambiguity.

What matters now is whether schools will actually redesign around these broader demands. If outcomes remain narrow and schools continue to prioritize what is easily measured over what learners need, AI will only amplify the gap between what students need to know and be able to do and what they actually learn and receive feedback on. Access to emerging fields and meaningful civic and economic participation will become more uneven.

But if schools embrace an integrated vision that combines rigorous academic content with the human core, the adaptive bridge, and the technical edge, a different future becomes possible. Schools that respond to their communities' evolving needs while focusing on enduring capacities will be able to leverage AI to reshape the entire learning experience. This requires treating outcomes not as fixed but as living commitments, revisited regularly through community-based processes that ask: Do these outcomes still reflect what our young people need to thrive? What has shifted in our world or community that should shape how we define success?

AI is making this transformation feasible for the first time. It is changing the possibility frontier of what can be measured and improved. AI can continuously assess progress through embedded assessments during authentic work, capturing evidence that traditional tests miss. It can provide real-time, specific feedback on complex skills like argumentation or ethical reasoning, feedback that would be impossible for teachers to deliver at scale. This makes it feasible to assess and provide rigorous feedback on a wider range of outcomes, like adaptability or interpersonal skills, that have long been difficult to capture. Whatever outcomes schools choose, they must design with coherence—orienting every other design decision about curriculum, instructional approaches, assessment, schedules, professional learning, and more toward preparing students to meet them.

WHAT SCHOOL LOOKS & FEELS LIKE

Where We Are Now

While some learners thrive, many experience learning in ways that leave them disconnected and struggling. The majority report that school is irrelevant and boring, offering few opportunities to take charge of their learning—and the longer students spend in school, the less they like it. Their days are characterized by narrow academic focus that overlooks their holistic development, isolation despite being surrounded by peers, rote tasks aimed at surface-level memorization, and passive compliance motivated by external rewards or fear of consequences.

This experience is the product of a mainstream school design that has changed remarkably little over the past century. Rigid seat time requirements, age-based grouping, siloed subjects, fixed bell schedules, standardized curricula and assessments—these structures have remained largely unchanged despite dramatic shifts in what young people need. Past reforms—when they occurred at all—usually became add-ons rather than redesigns: project-based learning squeezed into 45-minute periods, personalized learning constrained by grade levels, deeper learning measured by multiple-choice tests. Without meaningful redesign, these efforts couldn't take root and were often abandoned when funding shifted or leadership changed.

Patterns in AI adoption already risk repeating this pattern. At this time, AI is commonly being used to make the current design of school run more efficiently rather than to rethink learning. It is

Two Possible Paths Forward:

The probable path leads to industrial-era design principles that continue to constrain the student experience. Even with AI, learners still experience narrow focus, isolation and conformity, low expectations with surface-level learning, irrelevance, one-size-fits-all approaches, and passive compliance. AI optimizes for efficiency without transforming what students actually experience.

The preferable path results in AI unlocking a student experience with the ingredients for engaging and effective learning: whole-child focus, connection and community, high expectations with rigorous learning, relevance, customization, and agency. This requires intentional design about when AI enhances learning versus when analog moments are essential, students using AI themselves to develop critical fluency, and redesigning adult roles, curricula, assessments, and operations to support this transformation.

streamlining grading, planning, and administrative work—improvements that are welcome but insufficient. Over time, efficiency risks becoming the default goal: AI tutors replace peer collaboration, simulations replace real-world work, and students become dependent on prompts instead of building deep understanding. These systems often limit opportunities, labeling some learners as "behind" and restricting their access to rich experiences while advantaging those who already know how to navigate AI. The result might be smoother operations, but with those come shallower, more isolated learning that falls short of preparing young people for an AI-shaped world.

Moreover, AI remains largely in the hands of adults, like teachers using it for planning and grading, while students rarely use AI tools themselves. This creates a critical "agency gap": while students absorb awareness of AI's impacts through cultural osmosis, they lack structured opportunities to develop hands-on technical fluency.[8] Without opportunities to use AI directly, students cannot develop the agency, critical evaluation skills, and technical capabilities they need to thrive in the modern, AI-heavy workplace.

What Extraordinary Learning Looks Like in the Age of AI

Transcend's Leaps toward Extraordinary Learning describe the experiences students need to thrive: learning that nurtures every young person's mind, body, and heart while building the knowledge, skills, and mindset they need for their present and future.

Extraordinary Learning

Whole-Child Focus: Learning nurtures every young person's mind, body, and heart, promoting holistic development and well-being.

Connection and Community: All learners are part of a supportive community where they form meaningful, collaborative relationships with peers and adults and are deeply known, appreciated, and respected for who they are while also embracing the uniqueness of others.

High Expectations with Rigorous Learning: Every learner is treated as capable of excellence with access to appropriately challenging tasks that deepen understanding, broaden perspectives, strengthen higher-order thinking, and help them apply learning in new situations.

Relevance: Learning connects to young people's life experiences, interests, goals, and prior knowledge, as well as to real opportunities and challenges in their local community and beyond.

Customization: Learners experience flexibility in the focus, pace, setting, and sequence of learning, as well as variability in the resources and supports provided, ensuring each learner can succeed.

Agency: Learners take charge of their experience in meaningful, developmentally appropriate ways, and through this, they all have opportunities to impact both their life path and the world around them.

[8] AI for Equity, 2025

AI creates an opportunity to finally bring these Leaps to life, at scale. On the pages that follow you'll find three vignettes that illustrate what it could look and feel like down this preferable path. Each one illustrates a different parts of the student experience.

As you read these, reflect:

- For the young people I most care about in my life, would I prefer they learn in a traditional industrial-age school model or in the learning environments described here? Why?
- How are these learning environments meaningfully different from traditional classrooms? What essential elements of traditional classrooms have they preserved?
- Where are these environments seizing the new possibilities that AI opens up? Where are they mitigating risks

These vignettes reflect a vision of AI use that current trends suggest is very possible in the next 3-5 years.

In the appendix, and linked below after each vignette, you'll find extended versions of each. In addition, you'll find alternative scenarios including "spicier" versions that push the preferable path even further and reflect a vision for 5-10 years from today, as well as "milder" and "rotten" versions that show how the same context could slide toward the probable path.

Marco moves from circle time and read-aloud into learning centers and intervention. AI provides support like real-time translation, project prompts, literacy diagnostics, and alerts that help teachers monitor engagement.

In Math Studio, Amara uses an AI-powered learner pathway and adaptive tools for a real-world courtyard redesign project. She moves from targeted practice and a teacher mini-lesson to outdoor data collection, group reasoning, dashboard reflection, and preparation for a community-facing proposal.

Jade uses an AI Pathfinder to connect her goals, internship work (mapping affordable housing data), civics learning, advisory reflection, and at-home portfolio review into a clearer sense of possible future pathways—building toward a clearer sense of possible future pathways.

Spicy | **Medium** | Mild | Rotten

AI in Action:
K–2 Humanities with Marco

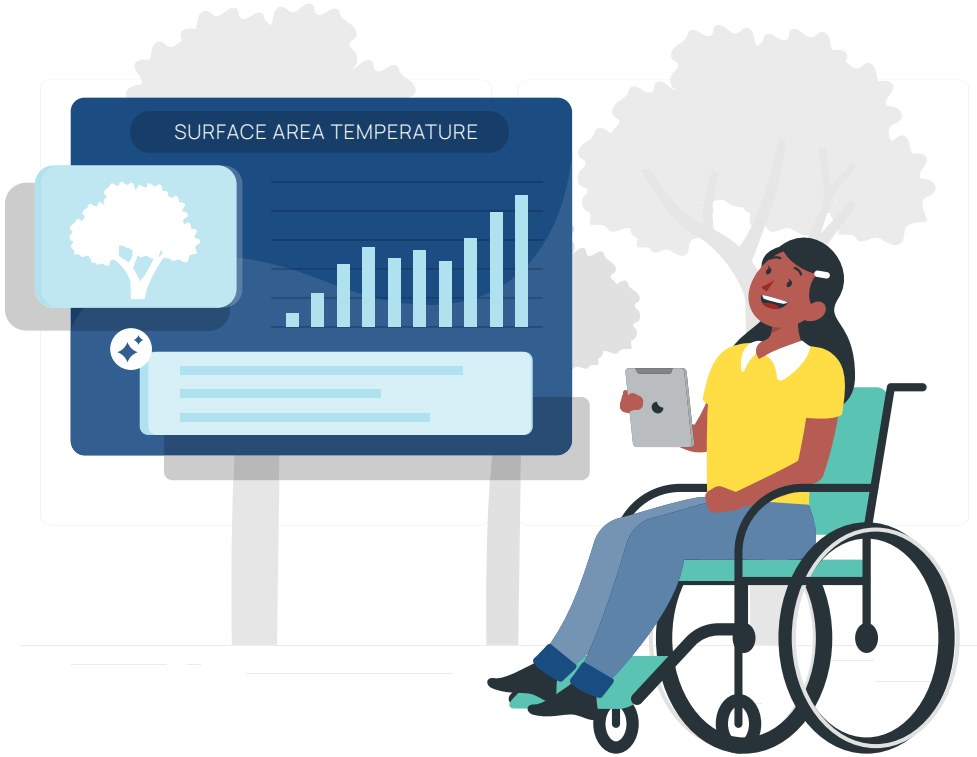
Marco's day begins in the classroom where unstructured play, creative materials, and lingering caregivers set the tone for exploration and community. At Circle Time, Marco shares his greeting in Spanish, and AI provides real-time translation for his classmates. During the read-aloud, Mr. Hafeez models decoding strategies and guides discussion while AI quietly captures engagement patterns for him to review later. The class revisits the question "Whose stories make up our community?" and AI displays a simple project flow with interview prompts that help early readers generate ideas. As learners rotate through learning centers, older students support them, and AI-informed data helps ensure that each center offers the right mix of challenge and support without dictating Marco's choices. Marco sets an intention using adaptive visual prompts and begins at Story Builders, where optional AI-generated sentence starters (pre-approved by Mr. Hafeez) help him write about his grandfather's oak tree. Peer questions spark new ideas, and Marco later shifts to the art station, creating a multisensory collage that he uploads to his digital portfolio with a short reflection. During intervention time, an AI literacy diagnostic identifies specific phoneme confusions and suggests games for Marco's group, while an alert helps Mr. Hafeez notice when Marco disengages and offer a well-timed movement break. As students read, AI serves up just-right texts aligned to their interests, and Mr. Hafeez notes the need to request more culturally varied stories for next time. Throughout the day, he circulates, documents learning with short voice notes, and collaborates with colleagues to plan tomorrow's lesson. The day closes with a sharing circle where learners describe a choice they made and select an artifact to bring home so the storytelling continues with families.

***Read the full vignette**, then see how Marco's experience could unfold differently: [Spicier] [Milder] [Rotten]*

Middle-School Math with Amara

Amara's afternoon begins with her multi-grade team, where looping teachers share planning time and co-design interdisciplinary experiences. In Math Studio, her class explores a driving question about redesigning the overheated school courtyard. She logs into her Learner Pathway to see mastered skills, suggested next steps, and how her work aligns with the shared design challenge. An adaptive app provides ratio problems tailored to her progress and flags moments when teacher support might deepen understanding. When Ms. Sun reviews her dashboard, she sees a pattern suggesting that a few learners may be assuming a proportional relationship, prompting her to pull them for a mini-lesson using examples she generated earlier with her planning co-pilot. Outside in the courtyard, students collect real measurements, test assumptions, and debate what matters most while their AI app logs data and alerts them to inconsistencies they must reason through together. Frustrated at one point, Amara gets encouragement from teammates and recognizes how different surfaces respond differently to shade, connecting back to the morning's instruction. During a class discussion, Mrs. Adebayo and Ms. Sun ask whether the AI simulation or their measurements are more trustworthy and why, guiding students to reason aloud without any technology. An AI assistant records the discourse so teachers can later analyze how students justified their claims. Back inside, Amara uses her dashboard to reflect on what she learned, how she felt during challenging moments, and what she wants to try next. As the group prepares for final proposals, AI visualizes civic implications of different design choices and generates prompts to help learners engage with an upcoming virtual meeting with a climate scientist. That evening, when Amara notices a newly planted row of trees, she pulls out her tablet to explain how shade affects surface temperature, showing how the day's reasoning connects to the world around her.

***Read the full vignette**, then see how Amara's experience could unfold differently: [Spicier] [Milder] [Rotten]*



11th-Grade Career-Connected Learning with Jade:

Jade starts her morning by opening her AI Pathfinder, a tool she has used for years to organize her goals and pull forward past projects so she can see how her interests are developing. The system highlights progress in key competencies and flags her well-being, prompting her to set an intention to take breaks as she reflects on possible postsecondary paths for her College and Career Readiness course. At her weekly internship with an affordable housing nonprofit, her AI co-pilot handles logistics, syncs the latest data, and offers targeted support when she gets stuck layering datasets to map where affordable housing aligns with community resources. During her meeting with her mentor Laura, they discuss how algorithmic choices might have affected the outputs, and Laura tags Jade's strong reasoning as evidence toward relevant competencies before sharing the draft with her team. In Civics, AI identifies shared themes across students' internships to help Jade's group refine their visual stories, while a VR simulation sparks discussion about how data can misrepresent lived experience. Mr. Rivera guides the class in unpacking this, helping learners connect design decisions to empathy and community impact. Later, Jade honors her well-being goal by taking a break before joining advisory, where her advisor Mr. Jones uses AI-informed updates to understand how her internship, civics work, and CCR reflections are shaping her interests in data and policy. In their conversation, he helps her explore the values—like fairness and belonging—that seem to guide the kinds of roles she might pursue. On Friday, Jade receives a weekly feedback summary through the Pathfinder and an invitation to join a virtual roundtable with former interns working in policy. That evening at home, she reviews her portfolio with her dad, adding her own notes while AI suggests connected competencies, and her dad uploads a voice note about his lived experience, expanding her understanding of the issues she's studying. The day leaves Jade with a clearer sense of how her academic work, internship experiences, and personal values are beginning to converge into possible future pathways.

***Read the full vignette**, then see how Jade's experience could unfold differently: [Spicier] [Milder] [Rotten]*

On the following pages, you'll find a more detailed breakdown of how AI can enable each Leap, where that shows up in the vignettes, and examples of real learning environments already moving in the preferable direction.

For each Leap, three ideas for how AI can be used to support that Leap are listed.

Blue boxes with the generate icon show where this idea appears in the vignettes.

A school is spotlit at the end to show an example of real change that is already happening.

AI can support Agency by...

Providing tools and structures for goal-setting, choice-making, and reflection so that learners can build ownership and independence.

AI can generate prompts that help students set meaningful goals, offer choices that are developmentally appropriate, and create structured opportunities for reflection on progress and process. Dashboards can track the intentions students set and prompt reflection on outcomes, while planning tools help students make decisions about their work.

In K–2 Humanities:

AI generates adaptive prompts on the board that help Marco set a goal and make a plan, placing an icon to mark his intention. When Marco chooses to begin at Story Builders, then revises his plan when he sees Tate at the art station, **AI helps him adjust his plan in the moment** while staying on track toward his goals.

Aggregating learning across contexts and surfacing patterns so that students can see their full journey and make informed decisions when directing their learning and other behaviors.

AI can compile learning from multiple settings—school, work, home, community—into unified records that reveal connections, emerging interests, and growth over time. By tracking competencies and drawing forward past reflections and projects, AI gives students the information needed to make informed choices about pathways, skills development, and what feels meaningful.

In 11th-Grade CCL:

Jade's Pathfinder aggregates learning from internship, school, and home, helping her spot emerging interests (data visualization, policy) and on what feels most meaningful. **AI helps Jade des her adaptive schedule** around those insights, an **messages her advisor to review her evolving p**

SCHOOL SPOTLIGHT:

Using AI to Support Agency at DSST

At DSST Public Schools, students used Playlab to build AI-powered chatbots to address community needs, integrating real-world applications, industry partnerships, and multiple feedback cycles. By designing solutions that have real-world relevance and impact, students leveraged AI as a tool for problem-solving and civic engagement.

For more information, explore this website.

AI can support High Expectations with Rigorous Learning by...

Enabling complex thinking through tasks that require evaluation, synthesis, and application so that all learners develop deep understanding.

AI can generate problems and prompts that ask students to defend ideas with evidence, compare multiple approaches, and apply knowledge to novel contexts, creating opportunities for higher-order thinking that might be time-intensive for teachers to design from scratch. It can also analyze student work to surface reasoning patterns, helping teachers understand the depth of each learner's thinking and adjust instruction accordingly.

In K–2 Humanities:

During centers, **AI generates interview prompts with pictures** for Marco and his peers that help these early readers engage in more sophisticated work—asking meaningful questions about people and stories in their community, and tackling conceptually advanced themes like identity and belonging.

Providing ongoing feedback and multiple opportunities to demonstrate mastery so that high expectations extend to all learners, not just those who succeed on the first attempt.

AI can track progress toward competencies over time, provide specific feedback on what has been mastered versus what needs more work, and enable students to revisit and re-demonstrate understanding as they grow. Teachers can use competency dashboards to see progress patterns, celebrate growth, and maintain consistently high expectations while honoring individual timelines.

In Middle-School Math:

When the **app flags patterns suggesting** that Conrad and others are treating relationships as proportional, Ms. Sun pulls them for a mini-lesson. Rather than marking them behind, **she tags their "represent proportional relationships" competency as progress, automatically updating their dashboards**—reinforcing that mastery comes through continued work.

Building AI literacy by requiring students to critically evaluate AI-generated content and learn when to use AI vs. when to work independently.

Learners can develop AI literacy in context by questioning AI outputs, using reasoning to assess accuracy, and learning to identify when AI might misrepresent results. Teachers can design learning experiences that position AI as a tool to interrogate, creating opportunities for students to compare AI solutions with their own reasoning. Rigorous learning still requires learners to wrestle with complex ideas and demonstrate understanding without AI—AI literacy includes knowing when to engage with technology and when to work independently.

In 11th-Grade CCL:

Jade develops **AI literacy by questioning whether the AI weighted proximity to transit is too light or if missing data skewed results**, and when **Laura tags "strong evaluation of AI output" as evidence** toward advanced reasoning—a competency Jade had previously attempted but is now mastering.

SCHOOL SPOTLIGHT:

Using AI to Support High Expectations with Rigorous Learning at Building 21

Building 21, in partnership with PlayLab, is using AI to expand the learning cycle, creating a fast feedback loop that keeps the momentum of growth going. The bot, Corbin the Competency Feedback Coach, allows students to access feedback quickly so that they can continue working toward mastery.

For more information, read an article or explore the chatbot.

AI can support Connection and Community by...

Facilitating peer collaboration across language, context, and interests so that learning becomes more social and connected.

AI can translate between languages in real time, capture and organize collaborative discourse, and link learners with peers locally or globally by identifying shared interests, challenges, and thematic connections in their work. These tools help create classrooms where every student can contribute authentically, peer learning is visible to educators, and meaningful partnerships form around shared interests even when students are working on different projects.

In Middle School Math:

AI identified connections between students' interests in the outdoors and sustainability, enabling the class to work together on the shared courtyard redesign project. **AI also coordinated role rotations**, suggesting which students may benefit from role changes based on their needs at different times, **prompting collaborative sense-making**.

Connecting learners with mentors, families, and expanding networks so that students build relationships with people who care about their growth and future.

AI can identify and coordinate connections with mentors, advisors, and community members who can provide ongoing guidance and support. AI can also make learning visible to families in real time, strengthening home–school connections. It can facilitate introductions, schedule regular check-ins, and help maintain these relationships over time—expanding students' social capital and ensuring that they have adults invested in their success.

In 11th-Grade CCL:

At the end of Jade's day, **her dad uploads to her Pathfinder a voice note** about growing up in a food desert, incorporating his lived experience into her learning journey by connecting it to her food access research and making his perspective visible to her teachers.

Aggregating insights across contexts and over time so that adults can more deeply know and support learners.

AI can capture learning as it happens—student reflections, project work, engagement patterns, and contributions from multiple educators, mentors, and family members—building continuous records that reveal each learner's evolving strengths, interests, and needs. AI can also detect emotional and social patterns and prompt check-ins at key moments. This frees educators to focus more deeply on relationships, enabling them to coordinate support, deepen trust, and have meaningful conversations grounded in each learner's full journey.

In 11th-Grade CCL:

Jade's **AI Pathfinder creates a continuous record that brings together reflections and feedback from school, work, and home**—enabling Mr. Jones to spot recurring themes, coordinate with her other teachers and mentors, and schedule future check-ins.

SCHOOL SPOTLIGHT:

Using AI to Support Connection and Community at Westlake Charter School

Westlake Charter School uses OKO to facilitate collaborative small-group learning in math. OKO acts as a virtual teaching assistant that listens to student explanations and prompts group discussion, encouraging teamwork and peer-to-peer learning while the teacher provides individualized support. The platform's collaborative puzzles and real-time feedback build student confidence and reduce math anxiety.

AI can support Relevance by...

Designing learning experiences that link academic goals to students' interests and values, positioning them to apply knowledge to authentic community challenges.

AI can help design units and projects that blend competencies with topics meaningful to students, suggest connections to community issues, and detect cross-curricular links to generate interdisciplinary lessons. It can also generate materials (e.g. adaptive texts, culturally relevant prompts, scaffolds tailored to language and prior knowledge) that make learning accessible and personally meaningful, while creating assessments that measure both content mastery and real-world impact.

In K–2 Humanities:

Through the class project "Whose stories make up our community?" AI makes connections visible by **curating images, prompts, and adaptive readers** that draw on each child's language, interests, and background. When Mr. Hafeez notices limited character diversity across adaptive readers, **he prompts AI to generate more inclusive stories**.

Connecting learners with authentic audiences, experts, and partners so that their work contributes to real-world challenges.

AI can identify professionals, community partners, and authentic audiences based on students' work and interests, help coordinate logistics and scheduling, and prepare both learners and experts for meaningful engagement (e.g., generating discussion prompts and briefing materials). It can also help students create polished work products to share with real-world audiences and scaffold conversations that deepen learning. By handling coordination and preparation, AI makes it feasible to regularly connect learning to real-world contexts and expertise.

In Middle-School Math:

AI connects the class's shared interest in outdoor spaces to an authentic community challenge—redesigning the courtyard. **AI then facilitates expert engagement by generating prompts** for a climate scientist conversation **and supporting students to present proposals** to the facilities manager.

Compiling reflections, projects, and feedback to reveal trends that highlight what engages or challenges each learner.

AI can aggregate data from multiple sources—student reflections, project work, assessment feedback, engagement patterns—to surface insights about individual learners' interests, strengths, and areas for growth that might otherwise remain invisible. Adults can review these trends with learners during check-ins, using them to inform goal-setting, connect coursework to interests, and design next-step challenges that meet students where they are.

In 11th-Grade CCL:

Reviewing Jade's **Pathfinder reflections, Mr. Jones notices that she's drawn to work helping systems serve people better**. After Jade names fairness and belonging as her guiding values, **AI enables the advisor to share this insight with her other teachers via Pathfinder**, so that they can design activities connecting to what matters most to her.

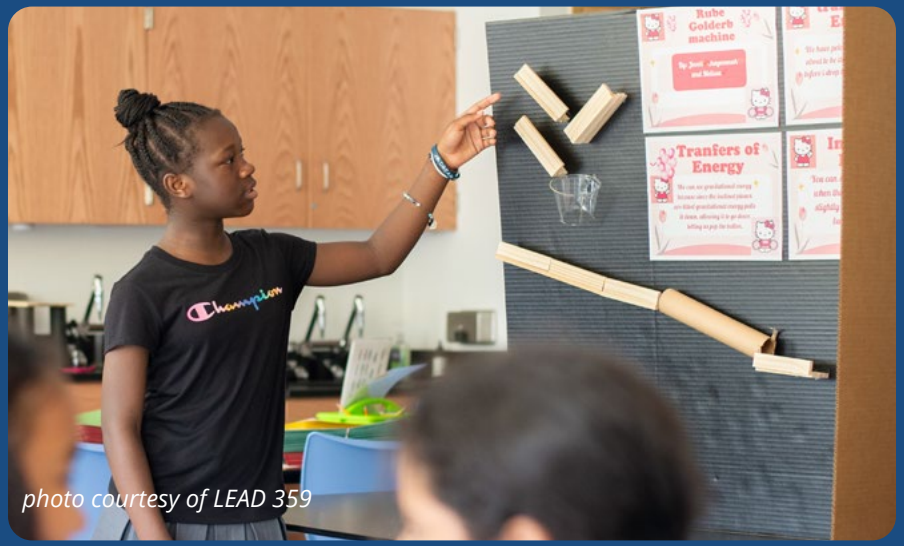


photo courtesy of LEAD 359

SCHOOL SPOTLIGHT:

Using AI to Support Relevance at LEAD

RevX is a K–12 learning model, used at LEAD 359, designed around a five-phase learning journey called DEEDS: Discover, Examine, Engineer, Do, and Share. RevX teamed up with Inkwire to create a tool that designs projects aligned to the DEEDS framework as well as a school's curriculum and learning outcomes. It can also create other materials which support that project-based learning experience, like pacing calendars, assessment tools, and community partner outreach.

For more information, explore this resource or start designing!

AI can support Customization by...

Providing flexible learning pathways, sequences, and formats so that students can progress at appropriate challenge levels and pursue diverse goals.

AI can sequence content based on what students have mastered and what they're ready for next, blending remediation with grade-level work and extensions so that students fill gaps while continuing to progress through rigorous content. It can generate content in multiple formats, making learning accessible to students with different learning preferences, language backgrounds, and prior knowledge. AI can also support diverse academic and career pathways by helping students choose courses, credentials, and experiences that align with their goals, whether college-bound, career-technical, or blended routes. This ensures that learning reflects both where students are academically and where they want to go.

In Middle-School Math:

Amara's Learner Pathway stacks micro-objectives, creating sequences that blend remediation, her current understanding of proportional relationships, and new challenges. The **app adjusts problems and recommends next steps** based on her progress.

Enabling choice in setting, grouping, activity, and pacing so that learners can work in environments and configurations that support their focus and engagement.

AI can help coordinate flexible learning environments by suggesting which students might benefit from collaborative work versus independent focus at different times, or which physical spaces match current learning needs. It can adjust time allocation, shifting schedules to match the rhythm of deep work. AI can also facilitate student choice about where to work, how long to stay, and who to work with, while ensuring that learning goals are still met.

In K–2 Humanities:

At centers, **learners choose where to go, how long to stay, and who to work with**, with AI helping coordinate these choices while maintaining learning goals. When Marco chooses to begin at Story Builders to write about his grandfather's oak tree, AI adjusts prompts based on his choice.

Generating adaptive scaffolds and resources tailored to individual learners so that all students can access grade-level content regardless of their starting point.

AI analyzes solution strategies (not just answers) to surface reasoning patterns and misconceptions, then generates resources and scaffolds customized to each learner: adaptive texts, sentence starters aligned to goals, multiple representations, and tutorials triggered at specific obstacles.

In Middle-School Math:

The app flags patterns suggesting that Conrad and others are treating non-proportional relationships as proportional, **surfacing misconceptions based on reasoning strategies**, not just wrong answers. **AI generates worked examples and projects multiple representations**, offering different formats that make complex mathematical relationships accessible to all learners.

SCHOOL SPOTLIGHT:

Using AI to Support Customization at Evergreen Public Schools

At Evergreen Public Schools, CoTeach.ai is helping make rigorous, standards-aligned math curricula accessible to diverse learners across K–12. The platform generates just-in-time scaffolds and adjustments that allow students to engage with the full rigor of Illustrative Mathematics while receiving supports tailored to their individual needs.

AI can support Whole-Child Focus by...

Supporting physical needs and movement so that all learners can fully engage with rigorous learning.

AI can help design flexible learning environments and schedules by analyzing when different students need movement, quiet focus time, or collaborative energy. It can also support learners in setting and meeting wellness goals. It is possible that, in the future, emerging technologies like augmented-reality glasses could further support physical well-being by enabling outdoor, movement-based learning: students could walk through environments with data overlays on physical objects, reducing screen time while connecting abstract concepts to embodied experiences.

In 11th-Grade CCL:

After noticing that she hasn't been taking many breaks, Jade **notes an intention to pause between tasks**. Later in the day, **Jade receives a reminder from her Pathfinder about her intention**. She grabs a snack, stretches, and checks in with a friend, then **notes in her Pathfinder how good it feels to take breaks**.

Suggesting timely interventions based on learners emotional cues to support well-being and engagement.

AI tools can detect patterns in student engagement—flagging when learners show signs of frustration, boredom, or disconnection—and alert learners and/or educators to intervene with targeted support like movement breaks, pacing adjustments, or individual check-ins. This enables teachers to respond in the moment and helps students build awareness of their own needs.

In K-2 Humanities

During read-aloud, an **AI tool unobtrusively tracks engagement** for each student, giving Mr. Hafeez insight into when learners need support—not just academically but physically and emotionally. During intervention, when Marco gets bored and clicks through answers quickly, **Mr. Hafeez gets an alert** and offers him a movement break.

Integrating SEL instruction with academics and tracking well-being indicators to generate a holistic picture of learning and development.

When planning lessons, AI can weave explicit social-emotional learning (SEL) into academic instruction. AI-powered tools and dashboards can also surface holistic views of each learner that integrate academic competencies with indicators like stress levels, break-taking habits, and emotional states during learning. Making well-being visible and building SEL skills helps educators and learners make decisions that honor both learning goals and well-being, prompting reflection on how physical and emotional needs connect to academic growth.

In Middle-School Math:

At the end of class, the **AI-powered dashboard prompts holistic reflection**—Amara writes about checking her units before re-running models, how she felt during the work, and what helped her persist through obstacles. This helps **AI track progress toward holistic competencies like resilience alongside mathematical reasoning**.

SCHOOL SPOTLIGHT:

Using AI to Support Whole-Child Focus at Hudson Lab School

Hudson Lab School uses Lenny Learning to help teachers integrate social-emotional learning. Lenny provides evidence-based lessons, creates targeted behavioral interventions, and assesses student well-being needs using vetted content and brain health research. The platform enables teachers to personalize SEL instruction and strengthen development while freeing up time for the meaningful interactions that help each child thrive.

AI can support Agency by...

Providing tools and structures for goal-setting, choice-making, and reflection so that learners can build ownership and independence.

AI can generate prompts that help students set meaningful goals, offer choices that are developmentally appropriate, and create structured opportunities for reflection on progress and process. Dashboards can track the intentions students set and prompt reflection on outcomes, while planning tools help students make decisions about their work.

In K–2 Humanities:

AI generates adaptive prompts on the board that help Marco set a goal and make a plan, placing an icon to mark his intention. When Marco chooses to begin at Story Builders, then revises his plan when he sees Tate at the art station, **AI helps him adjust his plan in the moment** while staying on track toward his goals.

Aggregating learning across contexts and surfacing patterns so that students can see their full journey and make informed decisions when directing their learning and other behaviors.

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Jade's Pathfinder aggregates learning from internship, school, and home, helping her spot emerging interests (data visualization, policy) and focus on what feels most meaningful. **AI helps Jade design her adaptive schedule** around those insights, and she **messages her advisor to review her evolving plan**.

Amplifying student voice and enabling learners to take action on their ideas so that learners can shape their environment and create real-world impact.

AI can help students design their own learning experiences by connecting subjects, mentors, and challenges based on their interests and needs. It can support students in customizing what they study, how they engage with content, and who they learn with, while ensuring coherence and rigor. AI can also help students create polished work products for authentic audiences and connect them with opportunities to address real challenges in their communities.

In Middle-School Math:

Thanks to **AI-prompted reflection**, Amara reviews her progress and notices she's ready for more advanced work. Starting tomorrow, she chooses to extend into problems involving multiple variables, and plans to **ask her Learner Pathway to offer next-level challenges**.

SCHOOL SPOTLIGHT:

Using AI to Support Agency at DSST

At DSST Public Schools, students used Playlab to build AI-powered chatbots to address community needs, integrating real-world applications, industry partnerships, and multiple feedback cycles. By designing solutions that have real-world relevance and impact, students leveraged AI as a tool for problem-solving and civic engagement.

For more information, explore this website.

The Moment Ahead

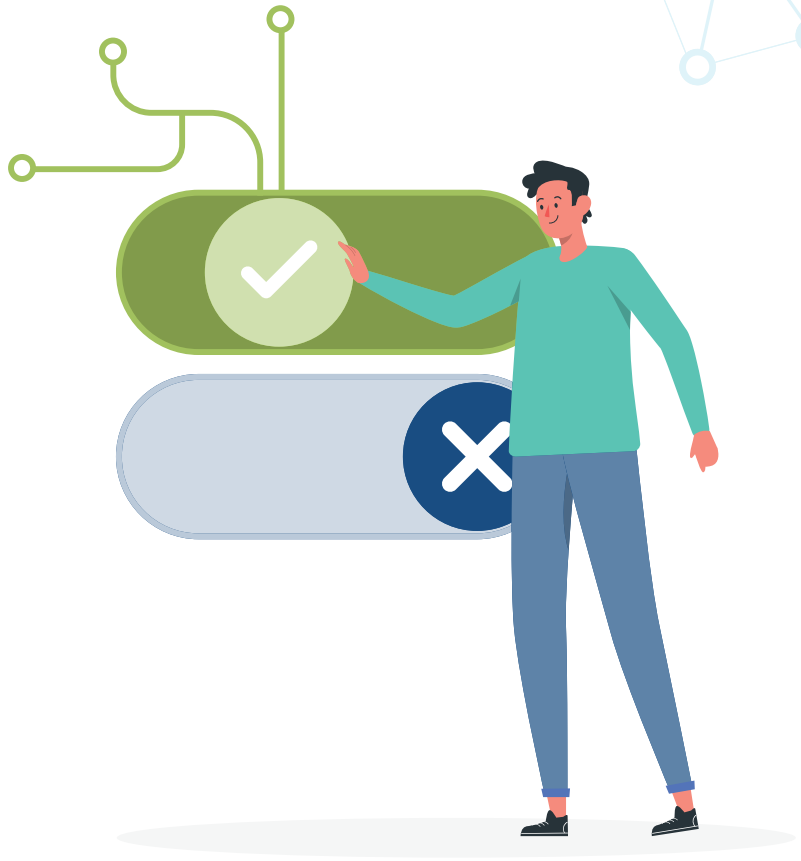
As with what school is geared toward, AI accelerates both the urgency and the possibility of transforming learning experiences across Leaps. For the first time, we have technology powerful enough to make the Leaps achievable at scale.

But without intentional design, AI risks doing worse than preserving the status quo—it could leave students further behind. Each Leap has a "left side," an industrial-era feature it moves beyond. AI can reinforce these patterns: narrow focus replacing whole-child development, isolation replacing community, surface tasks replacing rigor, irrelevance replacing meaning, standardization replacing customization, and compliance replacing agency. The "milder" and "rotten" vignette versions show how Marco's, Amara's, and Jade's experiences would shift under this probable path.

Industrial-Era Learning	Extraordinary Learning
Narrow Focus: AI that optimizes cognition could miss opportunities to nurture well-being, connection, play, and social-emotional development.	**Whole-Child Focus:** AI can make well-being visible by synthesizing holistic data on engagement, motivation, collaboration, and wellness, revealing patterns and freeing educators to focus on all dimensions of human development.
Isolation and Conformity: AI that individualizes learning and automates care could isolate students into personalized pathways while giving teachers more data but fewer meaningful exchanges.	**Connection and Community:** AI can strengthen community by handling logistics like translation and grouping, to free teachers for relationship-building, while enabling students extended opportunities for collaboration and giving adults richer context for connections.
Low Expectations with Surface-Level Learning: AI that remediates or shortcuts complex thinking could enable learners to move quickly through tasks without productive struggle.	**High Expectations with Rigorous Learning:** AI can make rigor accessible to all by identifying misconceptions early, offering multiple attempts at mastery, providing scaffolds, and connecting learners to complex content, mentors, and real-world problems.
Irrelevance: AI that merely simulates relevance through generic datasets and VR experiences could disconnect learners from their lived experiences and fail to prepare them to shape the world.	**Relevance:** AI can dissolve the boundary between school and the world by triangulating students' interests, strengths, and goals with real-world challenges and standards, while bringing in families, communities, and industries.
One-Size-Fits-All Approach: AI that automates flexibility within existing structures could optimize existing structure, like maintaining one-size-fits-all pacing that holds some learners back while others push ahead.	**Customization:** AI can enable flexibility in how, when, and where learning happens, coordinating support so every learner progresses toward rigorous goals with real-time scaffolds and extensions.
Passive Compliance: AI that prescribes goals and next steps could turn personalization into passive consumption, where learners follow rules without question and grow reliant on AI to make decisions.	**Agency:** AI can expand learners' capacity to chart their own paths by providing real-time feedback, modeling next steps, and visualizing progress while helping educators know when to step in or step back.

If schools design with intention, a different future becomes possible. This requires making deliberate choices about when to use AI to enact the Leaps and when analog, human moments are essential—when rigor requires productive friction, when connection demands face-to-face relationship-building, when agency requires independent struggle.

In contrast with where we are now, the vignettes, broken down by Leaps, and the examples of emerging practice above show where the preferable path could take us. Schools that design with intention around the Leaps can finally make extraordinary learning accessible to all students, using AI to coordinate complexity that was previously unmanageable at scale.



A Closer Look at How Educator Roles May Evolve

AI will change teaching, but how remains uncertain—and may never have a single answer. Given how decentralized schools are, this flexibility could be an asset. What matters is that communities make intentional choices rather than passively accepting what tool developers build or what they've inherited from an earlier era of schooling.

Today, most teachers work in isolation, responsible for content delivery, grading, and student support with limited collaboration. Traditional preparation doesn't equip educators for innovative models, and while there's momentum for alternatives, adoption remains limited.

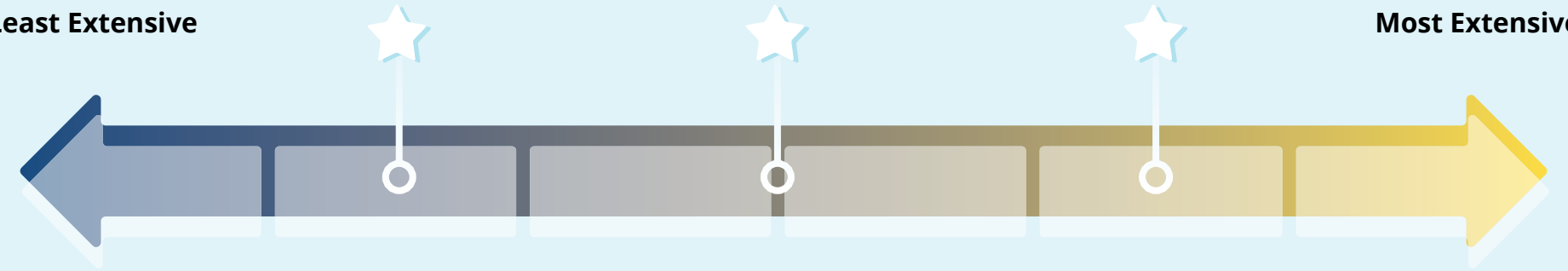
AI is being adopted for efficiency: handling tasks, grading, creating content. Teachers appreciate time savings, but roles don't fundamentally change. Professional learning remains episodic, structural issues persist, and fragmented tools create new burdens. This probable, efficiency-first path misses the opportunity to rethink what's possible.

How the Teacher Role Might Evolve

The teacher role will shift dynamically depending on what that part of the student experience requires. Teachers might use no AI during advisory, partner with AI to facilitate projects, and step back during intervention while AI provides targeted remediation. The critical shift is developing fluency across this spectrum—both to plan intentionally about when and how to use AI in different learning contexts and to make responsive decisions in the moment based on what students need.

The table below shows three points along this spectrum—not the only options but examples of different levels of AI involvement. Schools might blend approaches depending on context or develop entirely different models.

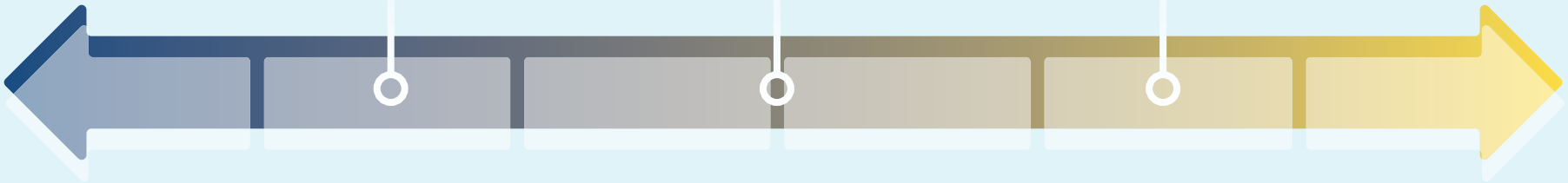
Least Extensive **Most Extensive**



AI as Teaching Assistant	AI as Teaching Partner	AI as Primary Content Deliverer
Description: AI handles admin tasks, grading, and logistics while teachers plan and lead instruction with more time for relationships.	**Description:** Instructional responsibilities are roughly shared equally. Teachers lead relational work and AI handles logistics.	**Description:** AI delivers instruction while teachers work in specialized roles focusing on coaching, mentoring, and making connections.
What AI Does: • Plans differentiated instruction and suggests groupings based on holistic data • Analyzes student work to surface patterns, provides actionable insights, and assists with grading and feedback • Handles scheduling, communications, and administrative tasks to create substantially more teacher time	**What AI Does:** • Delivers instruction across a range of content and formats based on data and teacher input • Provides real-time scaffolds and tutoring • Handles logistics like scheduling and organizing materials • Offers assessment insights and flags when teacher intervention would be valuable	**What AI Does:** • Delivers rigorous, personalized instruction grounded in learning science and best practices • Plans curricula and develops materials aligned to learning goals • Provides adaptive practice and tutoring • Provides embedded assessment with feedback, and prompts for self-reflection
What Teachers Do: • Deliver high-quality instruction to groups or individuals, enabling depth and tailored support • Review AI-generated plans, student work analyses, and feedback to make instructional decisions • Build strong relationships with students and deepen attention to well-being • Plan and develop materials, with AI support for differentiation and feedback	**What Teachers Do:** • Deliver complex instruction, lead small groups, and provide targeted support • Design learning experiences and oversee AI's instructional work • Facilitate discussions, synthesis, and connections across learning • Build strong relationships with students and deepen attention to well-being • Assess understanding through observation and conversation, informed by AI insights	**What Teachers Do:** • Apply deep knowledge of human development to guide growth as learners and people • Hold regular touchpoints with students to check in on progress, well-being, goal-setting, and sense-making beyond what AI captures • Facilitate collaboration, real-world problem-solving, and connections to community and authentic audiences
Risk: Becomes purely about efficiency without changing practice. Saved time goes to catching up on other tasks rather than deeper instruction and relationships.	**Risk:** Fluid boundaries create confusion about roles, leading to inconsistent instruction, teacher cognitive overload, and ineffective use of both AI and human expertise.	**Risk:** Without adequate oversight, adult instructional expertise erodes as AI handles content delivery, and learners miss essential human connection and support when needed.

Across the three vignettes in this paper, teachers operate at different points along the spectrum depending on the context and moment:

AI as Teaching Assistant	AI as Teaching Partner	AI as Primary Content Deliverer
In K–2 Humanities: During Circle Time, students share greetings and set intentions. Mr. Hafeez projects the daily schedule, helping students understand what's ahead. When Marco decides to share in Spanish, AI translates for his classmates. Next, Mr. Hafeez reads the class a story about community, modeling decoding strategies and pausing to ask questions that build comprehension. AI tracks student engagement so that Mr. Hafeez can review later and see what engagement or literacy supports learners might need. AI provides translation and engagement data, while Mr. Hafeez offers structure, leads instruction, and plans supports.	**In Middle-School Math:** While students work independently on their Learner Pathway, AI flags patterns suggesting that some students are treating non-proportional relationships as proportional. Ms. Sun reviews these insights and decides to pull a small group for targeted instruction, using worked examples she refined from AI-generated drafts. AI continues teaching the rest of the class through individualized instruction while Ms. Sun leads the mini lesson. After working with the group, she marks their competencies as "in progress." This is a genuine partnership: Ms. Sun orchestrates who gets what based on AI's insights and her professional judgment.	**In 11th-Grade CCL:** Jade's civics class explores how access impacts communities through a VR simulation of different neighborhoods overlaid with data. Jade notices that the simulation misrepresented something. While AI delivers this instructional content, Mr. Rivera circulates, noting learners' observations. He hears Jade's insight and makes it a teachable moment for the class: "How can humans make data more accurate?" He affirms Jade for questioning systems, telling her that this critical stance matters in any career. AI teaches the content; Mr. Rivera makes meaning, connects ideas, and builds relationships by noticing and valuing thinking.

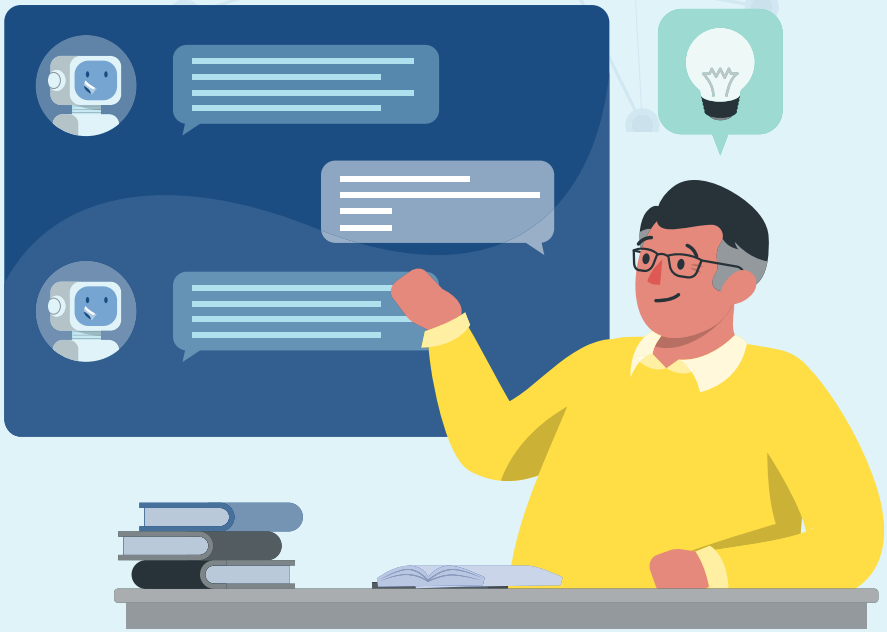


What's Required to Make This Work

Teacher roles will evolve with AI whether schools intentionally design for it or not. Teachers must develop the skills to orchestrate this evolution, deciding when AI enhances learning and when human moments are essential, or risk having tools and industrial-era inertia shape practice by default.

This requires robust support. AI fluency must become a core professional expectation. Teachers need continuous professional learning, psychological safety and protected time to experiment, and collaborative planning structures. Leaders must establish protocols for different contexts while deep relational work grounded in developmental relationships becomes central to the profession, with schools measuring and valuing these outcomes. Transformation also requires rethinking who enters teaching—expanding hiring pathways and pre-service programs that integrate AI collaboration, relationship-building, and human development alongside content expertise.

None of this happens without coordinated ecosystem support. Policymakers must create flexible certification pathways; state and district leaders must provide protected time and redesign evaluation frameworks; higher education institutions must integrate AI into preparation programs; and communities must negotiate contracts that enable role redesign.



HOW SCHOOL CHANGES

Where We Are Now

In addition to being held back by outdated aspects of teaching and learning, most schools and systems also remain held back by outdated approaches to changing teaching and learning as new needs and contexts arise. Past attempts at transformation have followed a familiar pattern: discrete interventions like new reading programs or more tutors, layered onto existing structures. These reforms assume that the current model just needs better execution, rarely transforming the student experience or expanding what outcomes schools pursue.

AI adoption is following a similar pattern. Early implementation is often scattered and hype-driven, with tools adopted for efficiency gains, AI pilots disconnected from a coherent vision for the student experience, and educators improvising their own AI solutions to fill gaps in ways that exacerbate incoherence.[9] It's not all negative, though; AI can support school design by accelerating piloting, synthesizing community feedback at scale, and supporting more nimble adaptation. But this alone won't transform learning in the ways that matter most for thriving. Without coherent change grounded in community-based design, schools risk a probable path: fragmented "initiative-itis" layering new technologies onto old structures, making incremental improvements while remaining trapped in outdated models as the world evolves beyond them.

[9] CRPE, 2025

Two Possible Paths Forward:

The probable path leads to fragmented, initiative-driven adaptation layering new tools onto old structures.

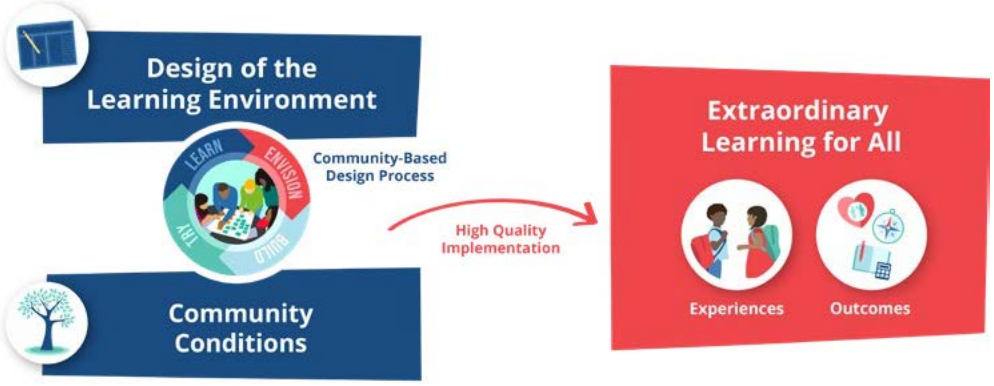
The preferable path results in community-based design as an evergreen process, where schools maintain coherence by continuously aligning their vision for student experience with the conditions, structures, and AI tools needed to implement it, regularly asking whether their design still reflects what young people need.

Community-Based Design as an Alternative

There is a better way to meet this moment. Schools and systems can anchor change efforts in a coherent vision for the student experience, continuously tending to both the design vision and the supporting conditions required to implement it effectively and sustainably.

This approach—**community-based design**—has three essential features:

1. It focuses on **two key levers of change:** (a) the design of the learning environment (aims for learners, activities and practices that make up the student experience, and supporting elements like curriculum, adult roles, operations); and (b) the community conditions (conviction, clarity, capacity, coalition, culture) required for the community to collectively craft and align on that design vision and implement effectively.



2. It supports communities to **depart from industrial-era design** in important ways (holistic outcomes, engagement-rich practices) while **preserving essential elements** (e.g., foundational academic fluencies, evidence-based instruction, and classroom management).

3. It uses an **iterative process** that blends top-down and bottom-up change, involving all groups in the community to move through disciplined design cycles toward a student experience that is as consistently engaging and effective in practice as envisioned.

In a context where society, workforce, and technology evolve rapidly, schools cannot afford to repeat "initiative-itis" patterns. Community-based design combines the agility, coherence, rigor, and human-centeredness this moment requires.

Making this approach feasible requires coordinated ecosystem action—bold leadership, dedicated capacity, enabling policies, and public will—which we detail in the ecosystem enablers section. AI can help navigate the complexity that has historically made transformation overwhelming by synthesizing vast information, surfacing patterns in student experience, and enabling rapid iteration, making community-based design feasible for far more communities to lead themselves.

The Moment Ahead

The path forward depends on whether schools use AI to enable genuine transformation or simply optimize the status quo. If they continue taking fragmented, tool-first approaches without anchoring to vision or engaging communities in shaping outcomes and experiences, AI will only make outdated models run more smoothly—the probable path.

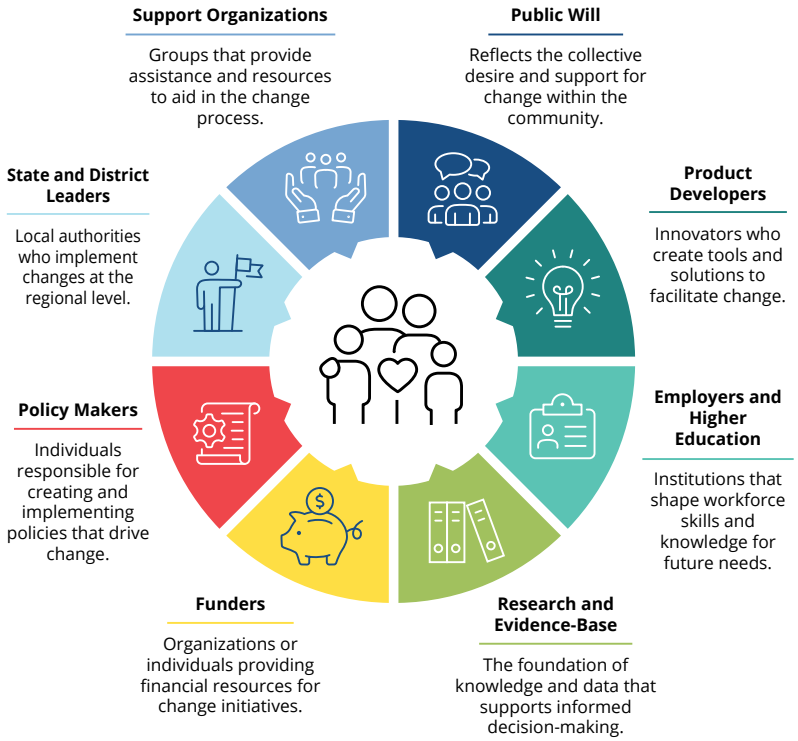
But if schools embrace community-based design as ongoing practice—using AI to manage complexity while regularly asking whether outcomes and experiences still reflect what young people need—a different future becomes possible. This requires treating community-based design not as a "one-and-done" initiative but as an evergreen process built into how schools operate. Communities must create the roles, build the capacity, and secure the resources to make this sustainable.

This is not a small lift. It requires significant investment and systemic change. But the payoff is clear: communities that make this investment will be positioned to navigate this era with coherence and agility, while those that don't risk growing incoherence and outdatedness in a context that increasingly demands much more.

ENABLING THE PREFERABLE PATH

Whether schools continue along the probable path or move toward the preferable one depends on coordinated action across the ecosystem. Lasting change requires cross-sector coalitions—policymakers, state and district leaders, public will, researchers, funders, product developers, employers, and support organizations—working together to create shared infrastructure that fosters coherence and high-quality experiences for all young people.

The field has a rare opportunity to change course. Early partnerships are forming, but real transformation will take deeper, more intentional investments and collaboration. Without strong feedback loops between classroom practice and field-level strategy, we risk building tools, policies, and research that are misaligned or irrelevant. Together, these actors can redefine learning outcomes, modernize assessment systems, transform educator roles and preparation, ensure that tools and curricula function coherently, build infrastructure for sharing evidence, and establish the policy flexibility and safety frameworks schools need to operate in continuous cycles of community-based design.



1. **The field must develop shared frameworks, curricula, and assessment tools for AI literacy as a core outcome.**
2. **Assessment and accountability systems must enable flexible assessment windows and a wider range of ways for students and schools to demonstrate progress while holding rigorous standards across various holistic outcomes.**
3. **Educator roles must evolve for an AI era, requiring aligned changes to certification pathways, preparation programs, evaluation frameworks, and support systems.**
4. **Infrastructure for AI-enabled learning must be secure, interoperable, ethical, and evidence-based.**
5. **The ecosystem must lay the foundation for safe experimentation, create conditions for flexible innovation, and build capacity for continuous, coherent design.**

1. The field must develop shared frameworks, curricula, and assessment tools for AI literacy as a core outcome.

In the preferred future, AI literacy is sustained, vertically aligned across grades, and integrated responsibly into subjects from the earliest grades. Students don't just learn about AI—they use it directly, developing hands-on fluency alongside critical evaluation skills. Students build competencies to thrive in an AI-powered world and pursue differentiated pathways in tech, creative fields, social impact, and more.

However, AI literacy instruction today remains sparse and fragmented: it consists of scattered electives or one-off lessons, if present at all. The field lacks coherent frameworks, clear definitions of what to teach and measure, the materials and professional learning that educators need, and the policies and infrastructure that would enable safe, age-appropriate student use. Without intentional investment, gaps will widen as affluent students access advanced opportunities while under-resourced communities lack basic exposure.

Realizing the preferable path requires coordinated action:

- **State and District Leaders:** Evolve content standards to integrate AI literacy and emphasize how learners use tools to model, interpret, and apply ideas across subjects; adopt coherent frameworks with vertically aligned competencies; align procurement to AI literacy goals through clear security and evidence standards and flexible contracting for pilots; provide professional learning on AI literacy frameworks and instructional strategies.
- **Higher Education Institutions**: Prepare teachers with pedagogical approaches for teaching AI literacy to students; integrate responsible AI use and data ethics into teacher preparation programs.
- **Product Developers:** Create embedded assessment tools; develop high-quality instructional materials and curricula aligned to frameworks.
- **Researchers and Evidence-Base:** Build consensus on measurable outcomes; study effective instructional approaches; validate assessment methods.
- **Funders:** Support framework development, assessment R&D, curricula creation, and professional learning infrastructure.
- **Support Organizations:** Provide implementation support and professional learning on AI literacy frameworks; curate and share effective instructional approaches; connect schools to resources and peer learning networks.

2. Assessment and accountability systems must enable flexible assessment windows and a wider range of ways for students and schools to demonstrate progress while holding rigorous standards across various holistic outcomes.

In the preferable future, AI enables formative assessment that is embedded in learning: authentic, adaptive, and continuous, capturing reasoning processes and revealing how students think, collaborate, and apply knowledge in real time. These assessments provide educators with immediate, actionable insights to inform instructional decisions, enabling them to

adjust teaching in the moment and customize learning pathways. As these approaches mature and gain validation, they can eventually scale to summative assessment as well, with accountability systems providing flexibility for schools to demonstrate student learning through multiple measures beyond traditional standardized tests. Students may never "take a test" again, yet stakeholders have more actionable information than ever before about learning across holistic outcomes.

However, overlapping barriers constrain this vision: state policies built around traditional summative standardized tests, postsecondary institutions requiring validation before accepting new measures, and school practices designed around the traditional model.

Breaking these dynamics requires coordinated action:

- **Policymakers:** Launch policy pilots that reduce the traditional testing footprint (alternate-year testing, matrix sampling); negotiate customized accountability agreements; fund R&D for AI-enabled assessments.
- **State and District Leaders:** Replace seat time with mastery-based systems; partner with developers on pilots that integrate assessment with school redesign.
- **Employers and Higher Education Institutions:** Accept new credentials and evidence (portfolios, competency records); validate new measures as predictive of success; partner with K–12 to define and signal valued outcomes.
- **Public and Professional Will:** Co-design accountability frameworks that reflect community-defined outcomes; advocate for systems measuring holistic success; embrace new forms of evidence.
- **Researchers and Evidence-Base:** Study approaches to measuring holistic outcomes; validate new assessment methods; ground measurement in learning science.

- **Product Developers:** Create integrated tools that blur instruction and assessment; develop approaches for measuring holistic outcomes.

- **Funders:** Support long-term R&D in measuring holistic outcomes and developing assessment tools; seed innovation in multi-modal assessment prototypes; unlock federal and state resources; invest in validation studies and shared infrastructure.

- **Support Organizations:** Support schools in piloting and implementing new assessment approaches; facilitate peer learning on effective practices; provide coaching on portfolio-based and competency systems.

3. Educator roles must evolve for an AI era, requiring aligned changes to certification pathways, preparation programs, evaluation frameworks, and support systems.

In the preferable future, pre-service preparation and ongoing professional learning prepare educators to collaborate with AI and build developmental relationships. Expanded certification pathways enable those with diverse expertise—including AI and technical backgrounds—to enter teaching; evaluation frameworks assess relational work alongside academics; and educators continuously experiment with AI as collaborative partners. Communities make intentional choices about how AI and educators work together—with each approach designed to enable meaningful human connection.

However, the episodic professional development that occurs in many schools and systems today won't get us to that vision. It doesn't build needed capacity, evaluation systems prioritize test scores over facilitation, and narrow certification pathways limit who can enter the profession.

Overcoming these barriers requires coordinated action:

- **Policymakers:** Create flexible certification pathways that enable varied educator roles to be filled by people with diverse expertise beyond traditional teaching credentials; provide state-level flexibility in teacher evaluation frameworks.

- **State and District Leaders:** Provide protected time and non-evaluative feedback systems for educators to build AI fluency and experiment; redesign evaluation frameworks to assess relational work and establish well-being as a measured outcome alongside academics; expand certification pathways to bring AI talent into education.

- **Higher Education Institutions:** Prepare teachers to collaborate with AI in their own practice; integrate AI collaboration, adaptive design, and building developmental relationships into teacher preparation.

- **Public and Professional Will:** Negotiate contracts enabling role redesign; advocate for professional learning time and protected experimentation.

- **Funders:** Support experimentation with new educator roles, professional learning focused on AI collaboration and developmental relationships, and grants that enable protected time for teacher learning.

- **Support Organizations:** Provide coaching and implementation support for educators experimenting with new roles; facilitate professional learning communities; connect schools to models and peer networks.

4. Infrastructure for AI-enabled learning must be secure, interoperable, ethical, and evidence-based.

In the preferable future, data systems, tools, and platforms work as a coherent ecosystem. Data flows securely across contexts, and curricula and tools are co-designed with educators and researchers to create materials that are vertically aligned and integrated with curriculum frameworks.

However, schools face disconnected tools, incompatible data systems, fragmented instructional materials, and products built for efficiency over learning.

Creating coherent infrastructure requires coordination:

- **Policymakers:** Create data privacy and security regulations; incentivize interoperability standards; fund infrastructure development

- **State and District Leaders:** Create conditions for teachers to participate in co-design; pilot tools with rapid iteration

- **Product Developers:** Co-design tools with curriculum developers, teachers, and researchers; adopt interoperability standards; ground in learning science; create feedback loops with practitioners; develop vertically aligned instructional materials integrated with curriculum and assessment

- **Researchers and Evidence-Base:** Study what makes tools usable and effective; provide evidence on learning science principles; evaluate tools for quality and impact.

- **Funders:** Support co-design partnerships; invest in interoperability standards; back tools grounded in learning science and easily integrated into one another; support strategic partnerships between product developers; invest in benchmarks.

- **Support Organizations:** Facilitate partnerships between schools, developers, and curriculum makers; support schools in selecting and implementing coherent tool ecosystems.

5. The ecosystem must lay the foundation for safe experimentation, create conditions for flexible innovation, and build capacity for continuous, coherent design.

In the preferable future, schools engage in continuous design—developing an explicit vision for learner outcomes and experiences (and the support required to implement those), comparing it to reality, and taking bold action—with AI accelerating learning, envisioning, prototyping, and iteration. Districts anchor AI decisions to this vision and the gaps they need to close to achieve it, ensuring coherence.

However, today legal uncertainty creates hesitation, rigid accountability systems discourage experimentation, capacity for continuous design is low, and current adoption remains fragmented and hype-driven.

Supporting continuous design requires coordinated action:

- **Policymakers:** Create legal clarity for responsible AI use; provide flexible funding and accountability conditions.
- **State and District Leaders:** Build capacity for community-led design; create dedicated roles to steward the design process; anchor AI strategy to their vision; participate in innovation cohorts.
- **Employers and Higher Education Institutions:** Signal evolving workforce needs; partner with K–12 to regularly update outcome frameworks.
- **Public and Professional Will:** Engage families and communities as active co-designers; maintain commitment to bold experimentation; hold schools accountable to community-defined vision.
- **Product Developers:** Build tools that make reflection and continuous improvement easier; design for coherence.
- **Researchers and Evidence-Base:** Curate practice-based evidence; build rigorous research on AI-enabled school design.
- **Funders:** Support rapid learning cycles and experimentation; invest in cross-district storytelling and documentation; build resource capacity.
- **Support Organizations:** Lead innovation cohorts; translate and scale knowledge across contexts; support communities in stewarding design processes.

CONCLUSION

We are at a crossroads. The probable path, where AI reinforces industrial-era experiences through disconnected pilots and narrow outcomes, will leave young people further behind in a rapidly changing world. The preferable path requires choosing differently: embracing holistic outcomes that prepare students for uncertainty, redesigning learning experiences that leverage AI to enable extraordinary learning, and anchoring change in continuous community-based design. The gap between these paths will be determined not by the technology itself but by the intentional choices made by communities and the surrounding ecosystem in the months and years ahead.

For the first time, we have tools powerful enough to coordinate the complexity required to deliver extraordinary learning at scale. AI makes it possible to realize the vision described in this paper, which has eluded the field for decades. But technology alone won't get us there. It will take bold leadership, dedicated capacity, flexible policies, and engaged communities working together with clarity and coherence.

APPENDIX

FULL VIGNETTES

AI has the potential to significantly alter the daily experiences of students. This section begins with three vignettes that depict what this could look like in different contexts: K–2 humanities, middle-school math, and 11th-grade career-connected learning.

Each vignette captures a desirable yet feasible take on what learning could look like in the next 2–3 years. The vignettes reflect a stretch from where most schools are now and a significant redesign of school, yet many features are recognizable; AI has just helped them to evolve considerably.

Below each vignette is a short exploration of three alternative futures. **The main vignette and the Spicier version illustrate where the preferable path could go, while the Milder and the Rotten versions are a possible result of the probable path:**

Spicier This pushes the preferable path even further. It is a spicier take on what learning experiences could look like—a fundamental reinvention of school, where AI has helped dissolve the traditional features of school design. This version will likely take several years to achieve.

Milder This moves toward the probable path. It is a milder take on what learning experiences look like in the next 2–3 years if AI is used mostly to increase efficiency and productivity. This is the path many schools and systems are on right now. It is a model that maintains the traditional design of school where AI has augmented certain practices.

Rotten This also moves toward the probable path. It is a rotten take on what learning experience could look like in the next 2–3 years if AI use is not designed intentionally and with the right supports. It is a system that further entrenches the traditional design of school and may amplify inequities.

***Feel free to read one or several**, depending on what you want to take away from this resource.*

K-2 Humanities

Middle-School Math

11th-Grade Career-Connected Learning

K–2 Humanities

Marco and 15 classmates enter the classroom. Cozy reading pods, a storytelling stage, and projection walls create flexible learning zones. Baskets overflow with costumes, blocks, and tools. Children seamlessly begin unstructured play, for as long as needed for their creativity to flow. Some role-play with costumes, others tinker with Legos, and a few, like Marco, curl up with books. A few caregivers linger, painting a mural.

Next, at Circle Time, learners share greetings and intentions. When Marco shares in Spanish, AI translates for his classmates. Mr. Hafeez projects the daily schedule, with icons for each activity.

Everyone gathers on the rug for a read-aloud: Last Stop on Market Street by Matt de la Peña. Mr. Hafeez models decoding strategies and asks questions, then the class constructs a word wall. An unobtrusive AI tool tracks how each learner is engaging academically and emotionally, for Mr. Hafeez to review later.

They revisit their project theme: Whose stories make up our community, and how can we share them? Mr. Hafeez's AI co-pilot displays the project flow, linking literacy, social studies, and AI literacy goals. Today, learners think of people to interview. Then AI generates pictures with interview prompts like "What was your favorite game when you were my age?" to guide early readers, and offers discussion prompts to help learners practice empathy as they learn about different people's experiences.

Learners move into centers, supported by visiting 3rd–5th graders. Marco lights up when he sees Johan. Centers vary based on dynamic data, but learners choose where to go, how long to stay, and who to work with. Marco sets a goal and makes a plan from adaptive prompts on the board: Think about someone important in your life. He places an icon on the board to mark his intention.

Marco chooses to begin at Story Builders, to write about his grandfather's oak tree. For learners who need them, AI generates a few supports, like sentence starters. Mr. Hafeez has previewed these, approving ones that fit learners' goals. A peer prompts new ideas by asking Marco, "What if that tree could talk?" Johan asks Marco to share memories of his grandfather, sparking a rich exchange.

Seeing Tate at the art station, Marco revises his plan, deciding that art will inspire more ideas. He creates a collage of an oak tree and uses an app to create a soundscape of birds and wind. He prints a QR code for viewers to scan and listen. "This helps people feel like they're really there," Tate says. Marco feels

proud and decides to add an image of his collage to his digital portfolio along with a short recording reflecting on how words, art, and sounds combine to tell stories. Mr. Hafeez offers a warm smile.

Next is intervention. An AI-powered literacy diagnostic that syncs with Marco's portfolio tracks growth in comprehension, phonics, and fluency. It flags common phoneme confusions and suggests games for Marco's group. When Marco gets bored and clicks through answers quickly, Mr. Hafeez gets an alert and offers him a movement break. After that, Mr. Hafeez circulates, documenting each learner's progress with short voice notes. Later, with his colleagues, he will review these clips to refine his lesson for tomorrow.

AI offers just-right readers aligned to the course scope and sequence. Emily, who loves trains, reads about a conductor, while Marco practices "ch" and "sh" sounds through a story about children in a shop. As the group reads, Mr. Hafeez notices that many books feature characters from similar backgrounds. He makes a note to prompt the AI for stories with more-diverse characters.

In a closing circle, learners explain one choice they made today and answer questions from classmates. Then, each selects an artifact, like a drawing, recording, or draft, to share with families at pickup, meaning that the question "Whose stories make up our community?" continues beyond the classroom.

Spicy | **Mild** | **Rotten**

- **Fluid Learning Ecosystem:** AI opens studios across school and community based on learner interests and projects, managing logistics to have community experts as regular co-teachers.
- **Educator Learning Loops:** Mr. Hafeez and his peers reflect on practice through a cross-district AI platform. It organizes evidence to show what's working and why, and enables them to iterate, reflect, and share insights in real time.
- **Authentic, Continuous Assessment:** AI captures learning as it happens (stories, play, academic data), building dynamic growth profiles. Teachers, families, and mentors use these snapshots of classroom life to ensure that every child is engaged and progressing.
- **Educators as Human Developers:** With AI handling lesson design, pacing, and data, Mr. Hafeez can focus on students'well-being, curiosity, and belonging. Working with small, mixed-grade cohorts, he tracks emotional and social growth as closely as academics.
- **Networked Mentorship:** AI curates Marco's art in a citywide digital gallery, connecting projects with professionals. His latest piece contributes to an artists' exhibit and serves as evidence toward mastering competencies.
- **Interoperable Tech Systems:** All AI tools sync with a learning management system that tracks progress and sends families daily snapshots, reviewed by a parent coordinator.

Spicy | Mild | Rotten

- **AI for Intervention & Monitoring:** AI differentiates practice problems and tracks progress in reading skills. It also schedules Mr. Hafeez's weekly check-ins and logs observations from short tasks.
- **Fixed Rotations with AI Support:** Learners follow preset time blocks and classroom zones, while AI makes groups and delivers some content. Some groups get adult support; others rely on AI or work alone.
- **AI-prompted Peer Talk:** During Story Builders, the AI guides discussion between peers by offering prompts and inviting everyone to share. Mr. Hafeez decided on his own to pilot this new feature.
- **Teacher Workload Relief:** Mr. Hafeez leverages AI for content curation, coherent lesson planning, and creating rubrics. AI checks that these resources align in ways that create instructional coherence.
- **Translated Family Dashboards:** AI translates newsletters and offers an AI-powered dashboard.
- **Curated Professional Development:** AI suggests on-demand micro-PD videos based on teacher data.
- **Basic System Integration:** Core AI tools share data through the district platform, reducing some manual data entry though teachers still toggle between multiple logins.

Spicy | Mild | Rotten

- **Surface-Level Assessment:** AI autogrades finished work without capturing learning process, leaving Mr. Hafeez with scores but no insight into how students think, harming his ability to give meaningful feedback and build relationships, while potentially introducing scoring biases.
- **Lost in Translation**: Marco's caregivers receive AI-translated communications. Without human oversight, these misrepresent nuance and create mistrust.
- **AI Literacy Divide:** Because they are young and the field is nascent, Marco and his peers do not learn about AI literacy. Those with less access at home fall further behind peers who can experiment with AI outside school.
- **Loss of Play and Creativity:** Many learning activities become AI-driven, leaving little room for open-ended play or imagination.
- **AI-Driven Tracking:** Predictive models use phonics and behavior data to identify "struggling" readers, assigning them more AI remediation time with less teacher and peer interaction. Labels shape expectations and placement decisions.
- **Data Privacy Gaps:** Multiple AI vendors collect young children's learning and behavioral data with unclear protections, while families remain largely uninformed about data use and how it may follow their children.

Middle-School Math

After lunch, Amara heads to the south wing, where her multi-grade (6–8) team meets. Sixty learners work with four educators who loop over multiple years and share planning time. Each teacher leads their subject area but co-designs interdisciplinary experiences several times per month. Amara lounges with friends in the common area before checking her AI-powered dashboard, which sends her to Math Studio with Mrs. Adebayo and Ms. Sun.

Amara logs into her Learner Pathway to see mastered competencies, what's next, and how it connects to the driving question "How might we redesign our school courtyard to reduce heat?" which came from the class's shared interest in making outdoor spaces more usable. She practices on an adaptive app that adjusts problems in real time, helping Amara strengthen ratios while her peer Conrad advances to slope. The app recommends next steps based on what she's mastered and where she needs practice. It adapts problems and flags patterns that signal when a teacher might step in for targeted support.

When Ms. Sun checks her dashboard, she sees that the app has noticed response patterns suggesting that Conrad and a few others are treating the relationship between ground temperature and amount of shade as proportional. Before heading outside, she pulls them for a mini-lesson. Rather than mark them behind, she tags their "represent proportional relationships" competency as in progress, automatically updating their dashboards. Earlier, she used her planning co-pilot to generate and refine worked examples that contrast proportional and non-proportional situations. Now, she walks through each step as AI projects tables, graphs, and 3D models, offering multiple ways to access the content.

In the courtyard, rotating roles keep learners engaged. AI suggests which students might benefit from more or less active tasks at different points, balancing physical and cognitive demands. Amara collects data while teammates model, explain, and challenge assumptions as they test shade and surface temperatures. An AI app logs data in real time and flags inconsistencies. When Amara can't find the cause, she gets frustrated and her teammates join her. "It's okay to pause when we feel stuck. Let's try one together." Refocused, Amara notes that the grass under a tree is cooler than the nearby asphalt. Conrad adds, "Even with equal shade, the surface matters. It's not just linear," he says, linking back to Ms. Sun's lesson.

Mrs. Adebayo and Ms. Sun gather the class and ask, "Whose data do you trust more: the AI simulation or what you measured out here? Why?" Learners defend their reasoning without any tech.

Groups debate which variables matter most, using whiteboards or pointing to real examples in the courtyard. An AI assistant captures and transcribes their ideas so that the teachers can review learners' reasoning later.

Back inside, dashboards prompt reflection. Amara writes, "Tomorrow I'll check my units before re-running the model." Reviewing her progress, she notices that she's ready for more advanced work and chooses to extend into problems involving multiple variables. The dashboard also invites emotional reflection, asking how they felt during the work and what helped them persist through obstacles.

Next week, as they prepare to present their final proposals, AI will visualize the civic impact of different design choices, helping learners weigh trade-offs like environmental effects, cost, and accessibility. It will also generate prompts to help learners discuss their findings virtually with a climate scientist. Finally, they'll present their proposals to the district facilities manager. AI-curated portfolios will showcase not only math mastery but also competencies like collaboration, resilience, and problem-solving.

Later, while walking with her mom, Amara stops to notice a newly planted row of trees. Amara opens her tablet and shows her mom a graph, explaining that the data points form a nearly straight line, showing a constant ratio between shaded area and temperature drop. She impresses her mom and herself!

Spicy | **Mild** | **Rotten**

- **Real-Time Interdisciplinary Learning:** AI detects cross-curricular links and generates experiences, extending the courtyard project into science and civics and connecting learners with professionals and community experts.
- **Rich Learning Capture:** Multi-modal AI with memory captures Amara's learning strategies, discourse, and reflections in and out of school, creating feedback loops for educators while enabling her advisor to focus on connection.
- **Multisensory Learning:** Amara wears augmented-reality glasses—a popular way to access AI without screens. Outside, they overlay temperature data on the trees and asphalt.
- **Adaptive Learning Partner:** The AI tutor and specialist agents adapt to Amara's goals, learning style, and emotional state, stacking micro-objectives that blend remediation and extension based on her solution strategies.
- **Flexible Time and Expertise:** When Amara's group hits a breakthrough, AI extends their block and shifts other lessons. It matches expertise to need in real time, bringing in virtual mentors for advanced modeling.
- **Learners as Experience Designers:** AI and her advisor help Amara custom-build her learning experience, linking subjects, mentors, and challenges into a personal ecosystem of inquiry.
- **AI Literacy in Context:** Amara develops AI literacy in math by questioning how AI represents patterns and relationships, using reasoning to verify what's accurate or flawed.

Spicy | Mild | Rotten

- **Remediation:** Amara spends more time with gamified drill apps than peers due to skill gaps. She makes progress but misses out on other opportunities.
- **Subject-Aligned AI Support:** Math remains segmented by grade, time, and subject, but AI modules offer skills practice contextualized in "real-world" word problems.
- **Token Choice:** Amara rotates to a "problem-solving station" and engages in preset AI modules on the dashboard.
- **Reclaimed Teacher Time:** AI frees up some educator time; some of it turns into additional content coverage and admin.
- **Summative Assessment Support:** AI helps Ms. Sun develop rubrics and score student work. Amara's final courtyard proposal is added to her portfolio.
- **Stand-Alone AI-powered Assessments:** Twice yearly, students complete AI-powered assessments of durable skills like critical thinking and collaboration. The data is used to plan instruction and inform adult learning.
- **AI Literacy Lessons:** Amara's educators realize the importance of AI literacy but, without a coordinated approach, they lead one-off lessons and discussions which take time away from developing math concepts and skills.
- **Early Differentiation Tools:** AI differentiates content—mostly worksheets, problem sets, and reading passages.

Spicy | Mild | Rotten

- **Teacher Displacement:** With AI planning lessons, grading, and guiding discussions, Mrs. Adebayo's role narrows from instructional design and meaningful relationships to classroom management.
- **Surface Learning:** Students rely on AI summarizers and quick-answer tools to prepare for assessments, achieving short-term success but failing to retain or deeply understand core math concepts.
- **Isolated from Real World:** Simulations and VR replace authentic experiences; Amara rarely leaves the classroom to test ideas or connect with community experts in the real world.
- **Fragmented Tools:** Amara's district adopts AI tools without a coherent vision. Educators spend extensive time learning disconnected tools. Amara feels like a lab rat, unclear what she should gain from disparate pilots.
- **Assessment as Gatekeeping:** AI assessments are locked to grade-level standards only, so Amara can't demonstrate understanding of concepts above or below her assigned grade.
- **Eroded Community:** One-to-one AI tutoring and overpersonalized pathways replace peer discourse and shared learning, isolating students from collaboration and connection.
- **Unequal Expectations:** AI models go unquestioned. When Amara needs more practice, she's labeled "behind" and gets only remediation; Conrad is labeled "advanced" and receives challenging problems.

11th-grade Career-Connected Learning

Before leaving home, Jade opens her AI Pathfinder, a platform she's used for years that keeps all her learning in one place. The built-in AI co-pilot helps her create a schedule and keep track of her goals, drawing forward past reflections and projects, like her middle-school mini-career pathways or last year's garden project, so she can spot emerging interests and focus on what feels most meaningful. She notes green indicators for data visualization and advanced reasoning competencies and an orange flag for well-being. Admitting that she hasn't been taking breaks, she adds an intention to pause between tasks. As she reviews her progress, a prompt from her College and Career Readiness (CCR) course appears, asking her to reflect on how her current experiences align with potential postsecondary paths. She jots down ideas—dual-credit data science, a GIS credential, maybe a social policy minor—then messages her advisor to review her plan.

Jade heads to her weekly on-site internship at an affordable housing nonprofit. Her co-pilot handled logistics and synced the latest data, so she dives straight into mapping which neighborhoods lack access to childcare, groceries, and public transit. She begins layering datasets; when she gets stuck, her co-pilot offers a Tableau tutorial. She creates community resource scores for each neighborhood and sees a problem: areas that look nice on paper lack nearby bus lines. When she meets with her mentor Laura, they discuss whether AI weighed proximity to transit too lightly, or if missing data skewed results.

Laura adds to the dashboard: Strong evaluation of AI output, which is tagged as evidence toward relevant competencies, including advanced reasoning, which Jade has been working towards and is now approaching mastery. Jade logs a reflection that data work blends analysis, design, and storytelling—which suits her. Her data science teacher sees the post and tags an article for her to read. The link between school and work will tighten; later, Laura shares Jade's map with her team to show how interns can surface insights that might otherwise be missed.

Next is Civics, a course that links academics to work-based projects. Jade's group is refining visual stories, a common thread AI identified across their internships. A VR simulation immerses them in real-world settings to explore how access impacts communities. When AI labels an area as "high opportunity," Jade notes how her housing data made a similar misrepresentation. Mr. Rivera, her teacher, encourages the class to consider how to make data more human, because good design starts with empathy. He circulates and draws threads between learners' experiences, telling Jade that questioning systems, human or AI, matters in any career.

Honoring her intention, Jade's Pathfinder alerts her to take a break. She grabs a snack, stretches, and checks in with a friend, then notes how good it feels

to pause. Then, she joins her advisory. After a mindfulness check-in, she shares how her internship, civics project, and CCR course have deepened her interest in data and sparked curiosity about policy. Her advisor Mr. Jones notes that she seems drawn to work that helps systems serve people better and asks her which values guide the impact she wants to make. Jade names fairness and belonging, a realization that helps her see how her skills might align with future roles. Mr. Jones shares a note with her other teachers through the Pathfinder, suggesting ways to extend this reflection into future lessons. Then, he schedules a checkpoint to revisit which paths feel most energizing to Jade.

Since it's Friday, Jade receives a feedback summary from Laura through the Pathfinder. Brief audio comments and annotated visuals highlight where Jade excelled and what she should continue to work on. Laura poses a question for next week, and invites Jade to join a virtual roundtable with two former interns "who know the policy side you're curious about." Jade records a short reflection and an ecstatic "YES" to the invite.

After dinner, Jade cozies up with her dad to review her portfolio. Her Pathfinder suggests competencies that her day's work connects to, and she adds her own insights. She updates him on her internship, and he uploads a short voice note to the Pathfinder about his experience growing up in a food desert, offering more context on how Jade can expand learning opportunities at home.

Spicy | **Mild** | **Rotten**

- **Expanded Collaboration:** AI links Jade's project to peers worldwide through micro-studios for exchanging insights and analyzing data. AI translates, scaffolds, and prompts reflection on cultural context.
- **Networked Expertise:** Educators, advisors, and industry experts form an interconnected mentorship network, while AI connects Jade's work to real audiences for feedback.
- **Seamless Transitions across Grades:** Jade experiences vertically aligned career exposure, where each year builds on the last.
- **Coordinated Logistics:** AI pings Jade's advisor when she arrives at the field site, ensuring safety without over-surveilling. AI also coordinates transport, meals, and schedules.
- **Competency Evaluation:** AI adds evidence of learning and efforts to Jade's digital portfolio and tags them to competencies, which link to stackable, industry-recognized credentials.
- **Tutoring with Human Touchpoints:** When Jade's mentor identifies a need, AI curates targeted tutorials. Jade flags confusion and AI schedules micro-conferences with teachers.
- **AI-enhanced Connection:** AI captures Jade's strengths, interests, and emotional patterns, enabling adults across her network to provide timely support and deepen relationships.
- **Immersive Skill Recognition:** Jade uses VR tools to explore careers and gain technical skills, while AI captures performance data and converts it into evidence for her transcript.

Spicy | Mild | Rotten

- **Surface-Level Tasks:** The CCR educator assigns rote tasks like AI-assisted interview practice, distributes AI-generated assignments, and uses dashboards to track post-graduation plans rather than providing meaningful guidance.
- **Fixed Career Learning:** The school day is 7 periods long and bell-based; Jade spends one period using AI to assist with tasks in her CCR course.
- **Seat-Time Credits:** Jade earns credits via seat time, with AI used to track her attendance and automate her transcripts.
- **Token Career Exposure:** College and career building experiences are limited to token exposures, like isolated electives, short projects, or one-off workplace visits.
- **Simulated Internships:** Jade's internship is entirely facilitated by AI, reducing the time burden on employers. She interacts with her mentor via AI chatbots.
- **AI Monitoring Systems:** AI tracking follows learners during out-of-school experiences for safety and alerts advisors when students miss class for well-being check-ins.
- **Over-Personalization:** In CCR, Jade sits next to her peers but they work on individualized AI modules, each pursuing their own unique pathway without collaboration.
- **Early Competency-Based Learning:** Jade earns a badge for "data visualization" after completing a single AI module.

Spicy | Mild | Rotten

- **Inequitable Access:** Highly resourced learners at Jade's school leverage networks to secure high-quality internships, while peers without those connections are left without placements.
- **Biased Pathways:** AI uses historical data to auto-sort learners into pathways. Jade and some of her female peers are passed over for pathways in STEM fields in favor of males.
- **Experiential Learning without a Network:** Under-resourced schools offer simulation-only experiences which lack the adult and peer connections necessary for networking.
- **Credentials without Weight:** AI has auto-certified Jade's competencies without authentic evidence or industry validation and knows that those badges and credentials won't have credibility in the labor market.
- **Disconnected Career Prep:** Career preparation is reduced to checklists and drill apps. Jade memorizes requirements and generic career facts, but gains little connection to real-world skills.
- **Narrowed Pathways:** AI-driven career tools overfit to early interests and local data, steering learners toward "safe" pathways. Jade's exposure narrows instead of broadens.
- **Degraded Human Guidance:** Mentors are stretched thin so that AI "simulates" mentorship, while advisors rely on AI tools offering shallow, biased suggestions.

Analysis of Outcomes Frameworks

Framework	Technical Edge	Adaptive Bridge	Human Core
AILit Framework [OECD & others]	X	X	
AI competency framework for students [UNESCO]	X	X	
ISTE Standards [ISTE]	X	X	
Five Big Ideas [AI4K12.org]	X	X	
Digital Competence Framework for Citizens [European Commission]	X	X	X
OECD Learning Compass 2030 [OECD]		X	X
Framework for 21st Century Learning [P21]		X	X
CASEL Framework [CASEL]		X	X
Deeper Learning Competencies [Hewlett Foundation]		X	
Building Blocks for Learning [Center for Whole-Child Education]		X	X
Career Ready Practices [Advance CTE]		X	X
Holistic Framework [ACT]		X	X
Durable Skills Advantage Framework [CompTIA and America Succeeds]		X	X
Future 9 Competencies [Redesign]		X	X
Skills Builder Universal Framework [Skills Builder Partnership]		X	X
XQ Competencies [XQ]	X	X	X
4D Competencies Framework [Center for Curriculum Redesign]		X	X

WORKS CITED

1. AI for Education & Student Achievement Partners. (2025). Guide to integrating generative AI for deeper math learning. https://www.aiforeducation.io/ai-resources/guide-to-integrating-generative-ai-for-deeper-math-learning

2. AI for Equity. (2025). AI Innovation Index Fall 2025: Inaugural Data Analysis Report.

3. Brynjolfsson, E., Chandar, B., & Chen, D. (2025). Canaries in the coal mine: Early evidence of AI's impact on young workers. Stanford Digital Economy Lab. https://digitaleconomy.stanford.edu/wp-content/uploads/2025/08/Canaries_BrynjolfssonChandarChen.pdf

4. Carnegie Learning. (2025). The state of AI in education 2025: Key findings from a national survey. https://discover.carnegielearning.com/hubfs/PDFs/Whitepaper%20and%20Guide%20PDFs/2025-AI-in-Ed-Report.pdf

5. Chen, B., Cheng, J., Wang, C., & Leung, V. (2025). Pedagogical biases in AI-powered educational tools: The case of lesson plan generators. The Social Innovations Journal. https://osf.io/preprints/osf/zqjw5

6. Chen Kulesa, A., Croft, M., Robinson, B., Wells, M. K., Rotherham, A. J., & Bailey, J. (2026). Learning systems: Shaping the role of artificial intelligence in education [Three-part series]. Bellwether. https://bellwether.org/publications/learning-systems/

7. Chen Kulesa, A., Mission, M., Croft, M., & Wells, M. K. (2025). Productive struggle: How artificial intelligence is changing learning, effort, and youth development in education. Bellwether. https://bellwether.org/publications/productive-struggle/

8. Chen Kulesa, A., Mission, M., Wells, M. K., & Kotran, A. (2025). Building AI readiness: Actionable K-12 insights and investment pathways. Bellwether. https://bellwether.org/publications/building-ai-readiness/

9. Croft, M., Chen Kulesa, A., Mission, M., & Wells, M. K. (2025). Measuring artificial intelligence in education. Bellwether. https://bellwether.cmail20.com/t/t-l-ghrkjx-jhelujhtd-j/

10. Darling-Hammond, L. (2025). Educating in the AI era: The urgent need to redesign schools. Forbes. https://www.forbes.com/sites/lindadarlinghammond/2025/05/30/educating-in-the-ai-era-the-urgent-need-to-redesign-schools/

11. Donnelly, C., & Chakrabarti, M. (Hosts). (2025, September 3). How to redesign schools for the AI age [Radio broadcast transcript]. On Point. WBUR. https://www.wbur.org/onpoint/2025/09/03/redesign-schools-ai-student-chatgpt

12. Dusseault, B., Hurwitz, J., Berardino, M., & Michel-Herf, N. (2024). Districts and AI: Tracking early adopters and implications for the 2024-25 school year. Center on Reinventing Public Education. https://crpe.org/districts-and-ai-tracking-early-adopters-and-what-this-means-for-2024-25/

13. Dusseault, B., Sims, M., & Berardino, M. (2025). AI early adopter districts: The promises and challenges of using AI to transform education. Center on Reinventing Public Education. https://crpe.org/ai-early-adopter-districts-the-promises-and-challenges-of-using-ai-to-transform-education/

14. Fischer, K. (2025, May 12). This is what AI in the classroom looks like. The Learning Agency. https://the-learning-agency.com/the-cutting-ed/article/this-is-what-ai-in-the-classroom-looks-like/

15. Ganesh, L., & Patel, A. (2025, September 11). Let learning lead: Designing with GenAI's pedagogical possibilities. The Learning Agency. https://the-learning-agency.com/the-cutting-ed/article/let-learning-lead-designing-with-genais-pedagogical-possibilities/

16. Ham, M., Holland, B., & Rabbitt, B. (2025). From urgent to future: Charting a course for AI in K-12 education. The Learning Accelerator. https://practices.learningaccelerator.org/artifacts/from-urgent-to-future-charting-a-course-for-ai-in-k-12-education

17. Hardman, P. (2025). Beyond the hype: What 18 recent research papers say about how to use AI in instructional design. Dr Phil's Newsletter, Powered by DOMS™ AI. https://drphilippahardman.substack.com/p/beyond-the-hype-what-18-recent-research

18. Horn, M., & Tavenner, D. (Hosts). (2025, April 30). The premortem on AI in education [Audio podcast episode]. In Class Disrupted. The 74 Million. https://www.the74million.org/article/podcast-the-premortem-on-ai-in-education/

19. Horn, M., & Tavenner, D. (Hosts). (2025, June 11). Artificial intelligence in education: Risks, opportunities and what's next [Audio podcast episode]. In Class Disrupted. The 74 Million. https://www.the74million.org/article/artificial-intelligence-in-education-risks-opportunities-and-whats-next/

20. Kotran, A. (2025). We need to talk about jobs: Widespread disruption from automation is barreling toward the U.S., and everyone is hoping for the best—or too busy trying to decide which AI tool to buy. Notes on AI Readiness. https://alexkotran.substack.com/p/we-need-to-talk-about-jobs

21. Kosmyna, N., Hauptmann, E., Yuan, Y. T., Situ, J., Liao, X., Beresnitzky, A. V., Braunstein, I., & Maes, P. (2025). Your brain on ChatGPT: Accumulation of cognitive debt when using an AI assistant for essay writing task. arXiv. https://doi.org/10.48550/arXiv.2506.08872

22. Klein, A. (2025). What it means for a high school graduate to be 'AI-ready.' Education Week. https://www.edweek.org/technology/what-it-means-for-a-high-school-graduate-to-be-ai-ready/2025/12

23. Lake, R. (2025). Can AI help solve the math crisis? US math scores have been declining for over a decade—does AI offer possible solutions? Think Forward: Learning with AI. https://crpe.substack.com/p/can-ai-help-us-solve-the-math-crisis

24. Leading Educators. https://leadingeducators.org/

25. Leading Educators & FullScale. (2025). Generative practice: Practical insights for unlocking the instructional potential of AI from the School Teams AI Collaborative. The Learning Accelerator. https://practices-assets.learningaccelerator.org/artifacts/pdf_files/Generative-Practice_STAIC-Report.pdf

26. Learner-Centered Collaborative. (2025). Designing the future: Case studies highlighting AI in service of learner-centered classrooms. https://learnercentered.org/wp-content/uploads/2025/07/AI-case-study.pdf

27. LearnerStudio. (2025). Learning to flourish in the Age of AI: Confronting the storm: A path to human flourishing. https://thelearnerstudio.org/wp-content/uploads/2025/11/Learning-To-Flourish-In-The-Age-Of-AI.pdf

28. Lee, A., & Culver, M. (2025). Five principles for prosocial AI: How to design (and choose) technology that strengthens human connection. The Rithm Project. https://therithmproject.substack.com/p/five-principles-for-prosocial-ai

29. Lohr, S. (2025). How do you teach computer science in the A.I. era? The New York Times. https://www.nytimes.com/2025/06/30/technology/computer-science-education-ai.html

30. McGee, N. J., Kozleski, E., Lemons, C. J., & Hau, I. C. (2025). AI + learning differences: Designing a future with no boundaries. Stanford Accelerator for Learning, Stanford University. https://acceleratelearning.stanford.edu/app/uploads/2025/07/AI-Learning-Differences-Designing-a-Future-with-No-Boundaries_Final.pdf

31. Microsoft. (2025). AI in education: A Microsoft special report. https://cdn-dynmedia-1.microsoft.com/is/content/microsoftcorp/microsoft/bade/documents/products-and-services/en-us/education/2025-Microsoft-AI-in-Education-Report.pdf

32. Murphy, K. L., & Logan, A. (2025). Human skills in the age of AI: Why essential competencies matter more than ever. LearnerStudio. https://thelearnerstudio.org/wp-content/uploads/2025/09/Human-Skills-in-the-Age-of-AI_For-Web.pdf

33. Oakley, B., Johnston, M., Chen, K.-Z., Jung, E., & Sejnowski, T. (2025). "The Memory Paradox: Why Our Brains Need Knowledge in an Age of AI." In The Future of Artificial Intelligence: Economics, Society, Risks and Global Policy (Springer Nature, forthcoming).

34. O'Brien, K., & Downie, A. (2024). AI upskilling strategy. IBM Think. https://www.ibm.com/think/insights/ai-upskilling

35. Ozkan, S., & Sullivan, N. (2025). Recent college grads bear brunt of labor market shifts. On the Economy. Federal Reserve Bank of St. Louis. https://www.stlouisfed.org/on-the-economy/2025/aug/recent-college-grads-bear-brunt-labor-market-shifts

36. Ruiz, P., Tsai, K., & Reljac, M. C. (2025). Hearing from students: How learners experience AI in education. Digital Promise. https://digitalpromise.org/2025/07/21/hearing-from-students-how-learners-experience-ai-in-education/

37. Stanford HAI. (2025). Artificial Intelligence Index Report 2025. AI Index Steering Committee, Institute for Human-Centered AI, Stanford University. https://hai-production.s3.amazonaws.com/files/hai_ai_index_report_2025.pdf

38. TeachAI & CSTA. (2025). Guidance on the future of computer science education in an age of AI. https://www.teachai.org/cs

39. UNESCO. (2025). AI and the future of education: Disruptions, dilemmas and directions. https://www.unesco.org/en/articles/ai-and-future-education-disruptions-dilemmas-and-directions

40. Uhl, K., Swartsel, A., Velazquez, R., & Stroud, Q. (2025). Reimagining postsecondary success in the age of AI. Jobs for the Future. https://www.jff.org/idea/reimagining-postsecondary-success-in-the-age-of-ai/

41. Wallace, H., Berkey, N., Gross, B., Fotuhi, O., Ceccato, D., Wandsneider, E., & Jennings, M. (2025). The missing rung: Rebuilding career ladders in the age of AI. WGU Labs. https://cdn.prod.website-files.com/63bd879ba121b5fb1e3d205d/68921906d0f8b0a5e318ad9f_WGU%20Labs_JFF%20White%20Paper_The%20Missing%20Rung_07-28-25%20(1).pdf

42. Wetzler, J. (2025). The graduate's guide to thriving in the AI age. LinkedIn. https://www.linkedin.com/pulse/graduates-guide-thriving-ai-age-jeff-wetzler-ympqe/

43. World Economic Forum. (2023). The Future of Jobs Report 2023. https://www3.weforum.org/docs/WEF_Future_of_Jobs_2023.pdf

44. World Economic Forum. (2025). The Future of Jobs Report 2025. https://www.weforum.org/publications/the-future-of-jobs-report-2025/

45. Yee, L., Madgavkar, A., Smit, S., Krivkovich, A., Chui, M., Ramirez, M. J., & Castresana, D. (2025). Agents, robots, and us: Skill partnerships in the age of AI. McKinsey Global Institute. https://www.mckinsey.com/mgi/our-research/agents-robots-and-us-skill-partnerships-in-the-age-of-ai