From "Replacement" to Redesign

A Vision for Teaching in the AI Era

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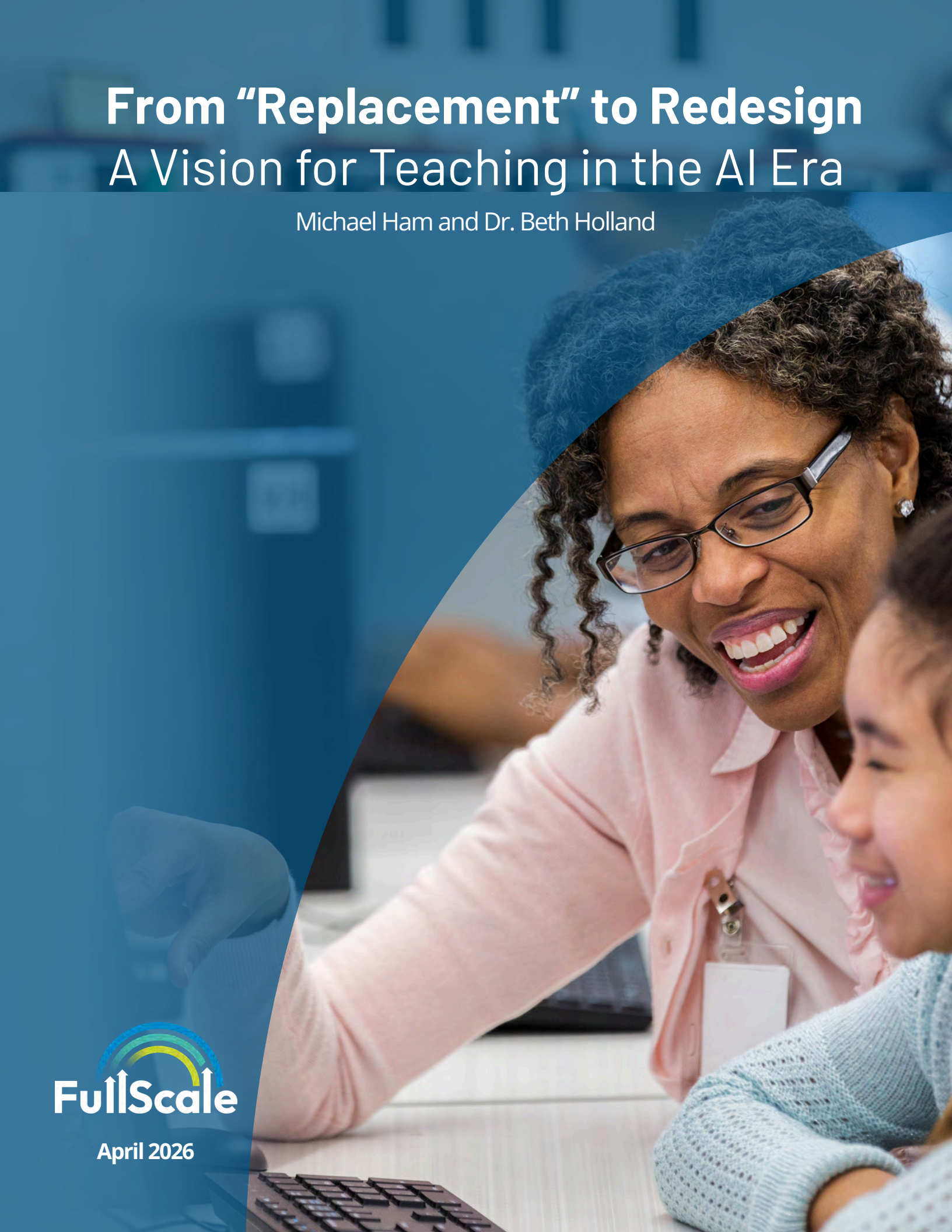

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The AI Teacher "Replacement" Narrative

A growing national narrative suggests that artificial intelligence (AI) may soon replace teachers.[1] As new AI systems demonstrate increased capacity to generate instructional materials, analyze student work, and support classroom tasks, many pundits, policymakers, and technology developers frame this shift as inevitable. **After all, if machines can plan lessons, provide feedback, and adapt content, what role do human educators play?**

This question has surfaced repeatedly during periods of technological change.[2] From film strips and educational television to early teaching machines,[3] new tools have prompted speculation about whether teaching can be reduced to the efficient delivery of information. However, research and practice have long challenged this assumption, showing that learning develops not through information delivery alone,[4] but through relationships, context, motivation, and identity.[5]

AI brings this familiar tension into sharper focus. This technology *can* now perform many tasks associated with teaching, (e.g., content generation, organization, data analysis), and even do so while sounding human. However, it *cannot* replicate the uniquely human forms of judgment and interpretation, or sustained human relationships on which learning depends.

At the same time, the persistence of this "replacement" narrative reflects not just the capabilities of AI, but longstanding misalignments in how educator roles have been designed. When teaching is structured primarily around task completion and information delivery, it becomes easier to imagine those responsibilities being offloaded to machines. What appears to be a technological disruption is, in many ways, a structural one.

The central question, then, is not whether AI can replace teachers, but whether education systems will redesign the role so that human expertise can be exercised fully and sustainably in an AI-enabled environment. This paper examines how current role design has made replacement narratives more plausible, identifies the forms of human expertise that drive learning, and outlines a path for evolving educator roles to better support those capacities over time.

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[1] McClain, C., Kennedy, B., Gottfried, J., Anderson, M., & Pasquini, G. (2025, April 3). How the U.S. public and AI experts view artificial intelligence. Pew Research Center.
[2] Collins, A., & Halverson, R. (2018). Rethinking education in the age of technology: The digital revolution and schooling in America. Teachers College Press; Cuban, L. (2001). Oversold and underused: Computers in the classroom. Harvard University Press.
[3] Watters, A. (2023). *Teaching machines: The history of personalized learning*. MIT Press.
[4] Dewey, J. (1916). Democracy and education: An introduction to the philosophy of education. Macmillan.
[5] National Academies of Sciences, Engineering, and Medicine. (2018). How people learn II: Learners, contexts, and cultures. National Academies Press.; Piaget, J. (1959). The language and thought of the child (M. Gabain, Trans.; 3rd ed.). Routledge & Kegan Paul. (Original work published 1923); Vygotsky, L. S. (1986). Thought and language (A. Kozulin, Trans.; Rev. ed.). MIT Press. (Original work published 1934)

Structural Challenges with the Traditional Educator Role

The appeal of the AI "replacement" narrative reflects structural challenges in how education systems define and support the educator role. Long before the emergence of generative AI, educators signaled that the role had become increasingly difficult to sustain. **Recruitment and retention challenges, rising burnout, and persistent student disengagement point to a consistent pattern:[6] systems continue to expand expectations for a single educator role without providing corresponding authority, differentiation, or support.**

Policy and system design have reinforced this pattern over time. Systems have layered responsibilities including planning, instruction, assessment, data analysis, administrative compliance, and student support into a single position. At the same time, standardization pressures, pacing requirements, and accountability structures constrain educators' ability to adapt instruction to learners in context. Together, these conditions shift teaching from the exercise of professional judgment toward the completion of tasks.

This shift matters. When systems define teaching through discrete activities, they also manage and evaluate the role through that same lens. Technology then enters as a more efficient way to complete the work as defined. Replacement is not a leap in logic. It is the natural conclusion of how systems have structured the role.

These pressures reflect real needs. Educators manage substantial workloads, and systems seek greater efficiency and responsiveness. AI can support this work. However, focusing primarily on task substitution reinforces the same design limitations that have historically strained the role. Tasks are not the work itself. They are the visible outputs of deeper forms of expertise. Planning reflects decisions about learning progression. Feedback shapes motivation and skill development. Data supports interpretation and instructional response. **When systems center attention on tasks alone, they obscure the expertise that gives those tasks meaning and direction.**

The Human Expertise that Drives Learning, Now and in the Future

Whether the human expertise to interpret evidence, understand learners in context, build relationships, and guide progress over time[7] shows up in practice depends on the broader design of both the educator role and the system itself. Policy and system leaders determine who holds this expertise, how it is developed, and the conditions under which it can be sustained over time. Each domain of expertise therefore reflects both a form of human capability and a set of design choices that enable or constrain its use within educator roles.

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[6] Doan, S., Steiner, E. D., & Woo, A. (2024). Findings from the 2024 state of the American teacher survey. RAND Corporation.
[7] National Academies of Sciences, Engineering, and Medicine. (2018). How people learn II: Learners, contexts, and cultures. National Academies Press.

This design challenge becomes more urgent as learning expands. As instruction extends across settings, schedules, and modalities, no single educator can hold all of the knowledge, relationships, and judgment required to support each learner. Students increasingly rely on coordinated teams of adults who bring different forms of expertise to their learning experiences. While these capabilities are already visible across many schools and systems, they do not emerge on their own. Systems must intentionally design roles, structures, and supports to make this expertise possible.

The table below, and the sections that follow, identify the core forms of human expertise that drive learning, describe what each entails, and illustrate how it appears in practice. Together, they establish a shared language for the professional judgment and responsibility that education systems must support through role design and policy as they navigate AI. This human-centered approach is grounded in social learning theories, which posit that learning is a fundamentally social process mediated by guidance and interaction.[8]

Table 1: Human Expertise Needed To Drive Learning

Expertise	Description	Examples of Practice
Learning Progression	Deciding when and how learning advances based on evidence, context, and readiness	Interpreting learning signals, adjusting pacing, determining mastery, and guiding next steps over time
Growth and Skill Development	Supporting improvement through feedback, reflection, and iterative practice	Coaching, formative feedback, motivation, and development of learning and teaching strategies
Learner Development and Continuity	Holding sustained responsibility for a learner's academic, social, and personal growth	Advising, mentoring, identity development, and long-term accountability for learner trajectories
Community and Civic Context	Connecting learning to lived experience, opportunity, and purpose beyond school	Community partnerships, career-connected learning, real-world application, and civic engagement

[8] Bandura, A. (1977). Social learning theory. Prentice Hall; Elmore, R. F. (2004). School reform from the inside out: Policy, practice, and performance. Harvard Education Press; Lave, J., & Wenger, E. (1991). Situated learning: Legitimate peripheral participation. Cambridge University Press; Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes (M. Cole, V. John-Steiner, S. Scribner, & E. Souberman, Eds. & Trans.). Harvard University Press.

Instructional Coherence and Culture	Aligning people, practices, and values into a shared learning environment	Curriculum alignment, pedagogy, assessment coherence, shared leadership, and culture-building
Complex and Specialized Learning Needs	Applying deep professional judgment in high-stakes, sensitive, or specialized situations	Specialized instruction, mental health support, advanced content expertise, and ethical decision-making

What follows does not seek to expand the responsibilities of already overextended educators. It clarifies the forms of expertise students need to learn deeply and persist over time. Each subsection defines a core domain of expertise, explains why it remains uniquely human as technology evolves, and examines how policy decisions enable or constrain its enactment. Examples from our partnerships illustrate what it looks like when educator roles are intentionally designed around these capabilities.

Learning Progression

Deciding when and how learning advances based on evidence, context, and readiness.

Educators determine when and how learning advances. This work involves interpreting evidence of learning, identifying patterns in student thinking, adjusting pacing, and deciding when a learner is ready to move forward or requires additional support. These decisions shape how learning unfolds and provide direction for both the educator and the student.

> *AI can organize information, surface patterns in student work, and suggest aligned resources. These functions strengthen the inputs available for decision-making. Educators interpret those signals in context, weigh competing priorities, and determine how learning should progress based on their knowledge of the learner and the learning environment.*

Many systems anchor learning to fixed schedules, seat-time requirements, and age-based pacing. These structures limit the ability to adjust progression in response to evidence. Systems that allow flexibility in pacing, credit attainment, instructional delivery, and assessment create the conditions required for educators to determine when and how learning should advance.

Signal from the Field: Building 21
Building 21 is a network of competency-based high schools utilizing a nationally recognized Competency Framework that serves as the backbone for all instructional decisions. In this model, the educator's role shifts from "delivering content" to facilitating a mastery-based journey, where they use detailed performance level descriptors (continua) to interpret evidence of learning and decide when a student is ready to advance. This expertise is anchored by a daily advisory program where each student is paired with an adult mentor who monitors their 1:1 learning plans and helps them navigate a personalized path toward graduation. To enable this,

B21 has moved away from traditional age-based pacing toward flexible scheduling and credit-earning policies that validate mastery—documented through Beacon Learning, a student-facing LMS designed to make learning visible and navigable for both the student and the educator.

Growth and Skill Development

Supporting improvement through feedback, reflection, and iterative practice.

Educators drive growth through cycles of feedback, reflection, and iterative practice. This work involves helping learners understand their progress, identify areas for improvement, and develop strategies that support continued growth. It also includes supporting educators in refining their own practice over time. These processes shape how individuals build skill, confidence, and agency in learning.

> *AI can generate feedback, suggest next steps, and provide examples aligned to specific needs. These capabilities expand access to timely and differentiated inputs. Educators determine how feedback is framed, when to intervene, and how to support learners in acting on it, drawing on their understanding of motivation, context, and readiness.*

Policy structures often limit this expertise by isolating educators and prioritizing evaluation over development. Time for collaboration is constrained, coaching roles remain underdeveloped, and accountability systems emphasize performance metrics without supporting improvement processes. Policies that allocate time for collaboration, invest in coaching and mentorship, and align accountability with growth create the conditions required for this expertise to operate consistently over time.

Signal from the Field: Lindsay Unified School District
Lindsay Unified School District organizes its system around performance-based progression, where improvement is continuous and visible. Educators support students in reflecting on their learning, revising their work, and advancing based on demonstrated growth. The district also invests in a teacher residency program that develops new educators through guided practice alongside experienced mentors, aligning system design with the continuous improvement processes that growth requires. The residency enhances educator expertise and develops teachers specifically for their performance-based model.

Learner Development and Continuity

Holding sustained responsibility for a learner's academic, social, and personal growth.

Educators sustain learning by maintaining consistent relationships with students over time. This work involves understanding each learner's strengths, needs, and experiences, supporting identity development, and remaining accountable for progress across academic, social, and developmental domains. These relationships provide stability and direction as students navigate learning environments.

> *AI can track engagement, surface patterns in behavior or performance, and support communication. These functions strengthen how educators understand and respond to learners. Responsibility for sustained development remains with adults who build trust, maintain relationships, and make decisions in the learner's best interest over time.*

Many systems fragment this expertise through high student-to-adult ratios, rigid schedules, and staffing models that prioritize subject coverage over continuity. Frequent transitions between educators limit the ability to build sustained relationships. Policies that support advisory systems, reduce caseloads, and recognize mentoring as a core instructional responsibility create the conditions required for this expertise to operate effectively.

Signal from the Field: Da Vinci Connect TK-8
Da Vinci Connect TK-8 utilizes a hybrid model where consistent advisor relationships anchor a student's experience across both on-campus and home-based learning environments. In this model, the educator's role is to support the co-design of "home learning" led by families while facilitating interdisciplinary, project-based work during on-campus days. This continuity of support is made possible by flexible scheduling and attendance policies—such as the use of weekly learning logs instead of traditional seat-time tracking—which validate the learning and development that occurs in distributed settings beyond the school building.

Community and Civic Context

Connecting learning to lived experience, opportunity, and purpose beyond school.

Educators connect learning to lived experience, community, and future pathways. This work involves building partnerships, designing experiences beyond the classroom, and helping learners apply knowledge in meaningful contexts. These decisions shape how students understand the relevance of their learning and their role within a broader community.

> *AI can surface information about careers, simulate scenarios, and support exploration of real-world applications. These capabilities expand access to information and possibilities. Educators and system partners establish relationships, navigate local context, and ensure that learning experiences remain relevant, equitable, and connected to real opportunities.*

Policy often treats community-based learning as supplemental rather than integral to instruction. Credentialing requirements, funding models, and accountability systems limit who can contribute to learning and how that learning is recognized. Policies that support partnerships, expand definitions of instructional time, and allow for alternative credit pathways create the conditions required for this expertise to operate at scale.

Signal from the Field: Enumclaw School District
In partnership with the Muckleshoot Indian Tribe, the Enumclaw School District has implemented a model where learning is deeply rooted in cultural heritage and community-based exploration. In this model, the educator's role shifts to that of a community broker—navigating cultural dimensions and brokering partnerships with local elders to ensure learning is equitable and relevant. This connection to a student's lived experience is institutionalized through district policies, such as Policy 2415, which establish performance-based graduation pathways. These policies allow students to earn mastery-based equivalency credits for community participation, effectively transforming what was once "enrichment" into core instructional progress that validates a student's purpose beyond the school walls.

Instructional Coherence and Culture

Aligning people, practices, and values into a shared learning environment.

Educators and leaders create coherence by aligning curriculum, pedagogy, assessment, and collaboration around shared goals. This work involves coordinating across roles, establishing common expectations, and building a culture that supports consistent learning experiences. These decisions shape how students experience learning across classrooms and over time.

> *AI can support coordination by organizing information, tracking progress, and increasing visibility into instructional practices. These functions strengthen alignment across systems. Educators and leaders determine what coherence looks like, set shared priorities, and make decisions about how learning environments should function.*

Policy structures often emphasize compliance with discrete requirements rather than alignment across the system. Accountability measures prioritize short-term outcomes, limiting investment in long-term coherence. Policies that support shared leadership, interdisciplinary collaboration, and continuous improvement create the conditions required for coherence and culture to be sustained.

Signal from the Field: Mountain View High School
Mountain View High School utilizes a Freshman Seminar model and smaller academies to create "schools within a school" that prioritize instructional coherence and a strong sense of community. This approach shifts the educator's role toward teaming and interdisciplinary coordination, where a shared cohort of adults aligns their curriculum, pedagogy, and assessment around a small group of students. By "tucking" students into these smaller cohorts, the model ensures that adult collaboration is centered on shared goals and values rather than siloed

subject areas. This coherence is supported by professional development and leadership structures that prioritize long-term community-building over short-term compliance, allowing for frequent, timely feedback and deep relationship-building that anchors the freshman transition.

Complex and Specialized Learning Needs

Applying deep professional judgment in high-stakes, sensitive, or specialized situations.

Educators and specialists apply deep professional judgment in complex, high-stakes situations. This work includes addressing advanced academic needs, supporting mental health, and making decisions that carry ethical and professional weight. These decisions require expertise informed by training, experience, and accountability.

> *AI can organize information, identify potential supports, and suggest interventions. These capabilities expand access to relevant knowledge. Educators and specialists interpret that information, assume responsibility for outcomes, and make decisions that affect student wellbeing, safety, and long-term success.*

Policy structures often limit access to specialized expertise through rigid staffing models, siloed funding, and credentialing constraints. These conditions make it difficult to integrate specialized roles into learning environments. Policies that support role differentiation, flexible staffing, and coordinated funding create the conditions required for students to access the expertise they need.

Signal from the Field: Novi Virtual
Novi Virtual, a K-12 program within the Novi Community School District, utilizes a whole-child development approach to support students who require high-stakes interventions, including those experiencing chronic absenteeism, school avoidance, or behavioral challenges. This model shifts the educator's role toward applying deep professional judgment in sensitive situations, using restorative practices and social-emotional learning (SEL) to anchor individual student support. To ensure students have access to the depth of expertise they need, the program utilizes a cooperative contract model—a policy "unlock" that allows Novi to partner with other counties and districts to provide specialized virtual options and flexible as-needed instructional support. By leveraging empathy interviews and continuous feedback loops, the district has moved beyond uniform staffing formulas to build learning teams that can differentiate and respond to the emotional and professional weight of specialized learner needs.

Moving from Replacement to Redesign

The narrative that artificial intelligence will replace teachers reflects how education systems have defined the educator role. When teaching is organized around task execution, substitution appears logical. When educators exercise professional judgment, build sustained relationships, and take responsibility for learning over time, a different challenge comes into focus: education systems must design roles that enable this expertise to operate.

The expertise students rely on is already visible across schools and systems. Educators interpret learning, support growth, maintain continuity, connect learning to context, build coherence, and respond to complex needs. These forms of expertise do not emerge on their own. System and policy decisions determine whether educators can distribute, support, and sustain this work within their roles.

Artificial intelligence is already shaping how this work unfolds. It can strengthen the inputs that inform decision-making, expand access to information, and support coordination across systems. However, it cannot determine what learning requires or how it should progress. Educators make those decisions. **The critical question is whether education systems will design roles that allow human expertise to guide the use of AI, or continue to organize teaching in ways that make replacement appear inevitable.**