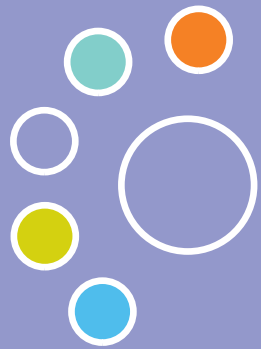


# Innovating Toward a Vibrant Learning Ecosystem:

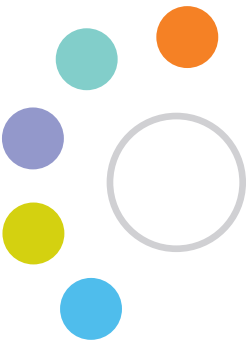
## Ten Pathways for Transforming Learning

Katherine Prince  
Senior Director, Strategic Foresight, KnowledgeWorks



## An Expanding Learning Ecosystem

KnowledgeWorks' forecast on the future of learning, **Recombinant Education**, highlights how we are moving from our outmoded industrial-era education system to an increasingly diverse learning ecosystem. With teaching and learning becoming unbundled from traditional education institutions, learners, families, and learning agents — the many adults who might support learning in traditional and new settings and ways — will be able to put together learning resources, supports, and experiences in the right combination for each young person. In ten years, the U.S. K-12 education system as we know it today might no longer dominate the education landscape but might instead form one node in a distributed learning ecosystem across which learners move freely according to their needs, interests, and goals.



## A Vision for a Vibrant Learning Ecosystem

It looks possible to create a flexible and radically personalized learning ecosystem that meets the needs of all learners and has the adaptability to keep evolving with our rapidly changing world. In this vibrant learning ecosystem, all learners would be able to move seamlessly across many kinds of learning experiences and providers, with learning agents from a variety of backgrounds supporting them in customizing and carrying out their learning journeys. Some learning environments would be part of the public education system, while others might be online or in other kinds of blended or place-based settings. Learners would be able to move across settings to create individualized learning playlists reflecting their particular needs, interests, and goals.

This diverse learning ecosystem would operate seamlessly across age groups and levels of mastery, supporting meaningful personalized learning that enabled every student to thrive in college, career, and civic life. To be vibrant, the learning ecosystem would need to be equitable and rigorous, would involve the full community in supporting every learner, and would have the capacity to continue innovating and adapting to changing conditions. KnowledgeWorks' infographic, **"A Glimpse into the Future of Learning,"** illustrates more fully how the trends shaping the future of learning could add up to a future in which learning adapted to each child instead of each child's trying to adapt to school.

## Innovation Pathways toward a Vibrant Learning Ecosystem

Bringing this vision to life requires stepping back from today's reality to pursue large-scale systemic transformation. The innovation pathways framework presented here identifies key systemic levers of transformation that together promise to create a learning ecosystem that is vibrant for all learners. This innovation pathways framework is designed to help education stakeholders — including those who are stewarding the current education system and those who are working in other kinds of learning environments or innovating on the fringes of the current learning landscape — become active agents of change in creating the future. While any given education stakeholder might contribute to only one or a few of the innovation pathways, the sector needs to advance along all of them in order to realize the best of future possibilities.

## The Innovation Pathways Framework: Ten Levers of Transformation

The ten levers of transformation included in the innovation pathways framework fall into two categories: transforming the core of learning and transforming supporting systemic structures. The innovation pathways in the first category pertain most directly to learners' day-to-day learning experiences, while those in the second category represent enabling conditions that must be present to ensure that the learning ecosystem meets the needs of all learners.

On the following pages, each of these innovation pathways is explained further, with a description articulating what the pathway might look like if education stakeholders do create a vibrant learning ecosystem and with strategies suggesting how the sector might move from today's reality toward that vision. The strategies within each innovation pathway reflect a continuum that would progress over time. They serve as starting points to prompt further thinking and action planning around how to pursue transformative systems change.





## 1. Learning Cultures

**Cultivate new personalized learning cultures**

Multiple, high-quality approaches to personalized learning support each learner in pursuing the right combinations of learning experiences and supports, enabling many possibilities for how, when, and what people learn and addressing their non-academic needs. These approaches go beyond simply pacing learning to each individual; they cultivate inquiry, creativity, play, and other attributes that support people in following their interests in meaningful collaborative contexts. Some learning cultures extend beyond formal learning environments to include, or facilitate connections with, community-based or informal learning experiences.

- Draw upon cognitive science to inform the design and support of learning experiences.
- Foster new learning cultures that support learners as whole people and make space for individual interests.
- Develop new approaches to personalized learning in multiple contexts.
- Develop new ways of addressing learners' non-academic needs.
- Extend the field's shared understanding of critical knowledge, skills, and dispositions.
- Place increasing emphasis on interest-driven collaborative learning, with possible variation in learning outcomes.
- Spread effective approaches and learning cultures.



## 2. Learning Structures

**Enable the development of diverse learning structures**

A wide range of learning structures enables learners and their families to create individualized learning playlists reflecting their particular interests, goals, and values. Learning structures include place-based schools, which operate as learning centers. They also include many other kinds of learning experiences, platforms, and relationships. Some learning structures are created or mediated by organizations or by learning agents working in diverse roles, while others are self-organized by learners and their families. A correspondingly broad range of management and governance structures provide appropriate levels of management and oversight.

- Enable learners to begin customizing their learning journeys.
- Develop and extend new learning platforms.
- Produce high-quality learning resources for use in many settings.
- Create robust learning experiences in new and non-traditional settings.
- Diversify and redefine the value propositions of traditional schools and other established providers.
- Create new connections across learning providers and platforms.
- Develop new forms of infrastructure that help learners move across learning structures.
- Diversify management and governance to reflect the many kinds of structures supporting learning.



## 3. Human Capital

**Develop human capital for personalized learning ecosystems**

A diverse set of learning agent roles and activities support rich, relevant, and authentic learning in multiple settings and help ensure that all students have access to high-quality personalized learning. Learning agent preparation, development, and compensation systems reflect individuals' varied contributions and professional needs, including those of adults who contribute to learning in part-time or micro ways. They address the direct support of instruction as well as the management and leadership of learning organizations and experiences.

- Begin differentiating adults' roles within the current education system.
- Begin expanding adults' roles in other kinds of learning environments, such as museums and libraries.
- Develop new learning agent roles appropriate to many learning environments and structures, including new platforms and non-traditional settings.
- Develop ways for learning agents to collaborate across learning environments and specialties.
- Diversify educator compensation systems to reflect the full range of learning agent roles and responsibilities.
- Develop new learning agent preparation and development systems appropriate to diverse learning agent roles.



## 4. Data Infrastructure

**Develop a new, learner-focused data infrastructure**

A new, learner-focused data infrastructure follows each person across many kinds of learning experiences and across his or her lifetime. This data infrastructure makes it easy for learners to customize their learning journeys and to move across boundaries, focusing on what they need and want to learn versus what provider offers it. The new data infrastructure also supports learning agents in using data about the whole person to guide choices and inform instruction.

- Connect existing data systems around individual learners.
- Address data-related issues, such as privacy and security.
- Build stakeholders' capacity to understand and use learning-related data effectively.
- Develop new, learner-focused data systems.
- Develop increasingly sophisticated learning analytics for use within and across learning environments.
- Enable learners and their families to own and manage their learning-related data.
- Differentiate educator roles such that some learning agents specialize in helping others use data effectively.



## 5. Assessment and Credentialing

**Enable new forms of assessment and alternative credentialing**

High-quality performance-based assessments provide learners and learning agents with meaningful feedback about learning, thoughtfully informing both the delivery of instruction and the choice of learning experiences. Diverse forms of credentials, certificates, and reputation markers reflect the many ways in which people learn and demonstrate mastery. They also reflect appropriate connections to the world of work and economic development.

- Develop meaningful assessments for learning in multiple environments.
- Shift assessment systems toward demonstration of mastery.
- Broaden the conversation about what and how we assess learning.
- Extend the use of badging, stackable certificates, and other new ways of certifying mastery.
- Build acceptance of mastery-based diplomas and degrees as well as of alternative credentials.
- Foster linkages between learning environments and work and economic development contexts.
- Enable learning providers beyond K-12 schools and higher education institutions to award credentials.
- Diversify assessment and credentialing systems to reflect the entire learning ecosystem.



## 6. Funding

### Establish equitable funding structures

Flexible funding structures that emphasize the flow of learning over organizational administration enable learners to access the learning experiences and supports that meet their needs and facilitate easy movement across boundaries. In addition to providing learners with equitable access to their optimal learning experiences, these funding structures support people in having the equipment and other resources that they need to carry out those learning experiences effectively and in meeting their non-academic needs that impact learning.

- Begin providing schools and districts with greater flexibility about how they allocate funding.
- Provide learners and their families with more options for funding the learning experiences that work best for them.
- Develop or establish systems to extend public education funding to community-based learning experiences.
- Redirect some education funding to support education stakeholders in carrying out transformational visions for learning.
- Develop new ways of funding learners' access to equipment and other learning-related resources.
- Develop new ways of funding non-academic support.
- Reorient education funding to center on learners instead of institutions.



## 7. Quality Assurance

### Establish new quality assurance frameworks

Quality assurance frameworks appropriate to diverse learning environments help ensure the quality of learning agents and experiences, help monitor the distribution of resources for equity, and help integrate all levels of the learning ecosystem. In so doing, these quality assurance frameworks focus on learning agents' and learning providers' performance and assist stakeholders across the learning ecosystem in understanding what approaches best support learning in various circumstances.

- Focus accountability systems on a broader view of student outcomes and teacher performance.
- Shift the focus of current accountability systems from inputs to outputs.
- Begin extending current accountability systems to help ensure quality across a more distributed learning ecosystem.
- Encourage the development of new mechanisms for understanding learners' experiences and providers' performance.
- Deepen the sector's understanding of what learning approaches and supports best serve learners in particular circumstances.
- Continue to develop quality assurance frameworks appropriate to diverse learning environments.
- Align federal and state accountability systems to the expanding learning ecosystem.



## 8. Community Ownership

### Foster community-wide ownership of learning

Geographic and virtual communities take ownership of learning in new ways, blending it with other kinds of activity. They foster rich learning landscapes that span many kinds of local resources and make appropriate connections across the globe, helping learners access resources that are not available locally. In addition to developing deep partnerships that turn many kinds of community resources into learning resources, communities play a key role in monitoring both learning agents' contributions and learners' success.

- Grow the collective impact movement around current educational outcomes.
- Surface and map communities' learning assets.
- Connect communities' learning resources across sectors and across many types of providers.
- Extend the collective impact movement to address a broader range of educational outcomes reflecting diverse learning environments.
- Develop new community-based platforms for learning.
- Develop new learning agent roles that broker learning opportunities and support learning across community landscapes.



## 9. Leadership and Policy

### Foster courageous leadership and policymaking

Policymakers and other leaders across the learning ecosystem show courageous leadership in making bold decisions that open the world to children. As a result, policies spanning boundaries across, and encouraging innovation within, many kinds of learning environments support learners and learning agents in pursuing meaningful personalized learning. Like the learning ecosystem that they enable, education-related policies are flexible and nimble, supporting ongoing change as the ecosystem continues to evolve.

- Support policymakers and other leaders in developing transformational visions for learning.
- Orient policy and other education decision making around the needs of learners rather than the needs of adults and the maintenance of institutions.
- Connect policy across the current educational silos and across the sectors that contribute to the learning ecosystem.
- Use policy to incent and support innovation and to remove barriers to meaningful personalized learning.
- Establish effective mechanisms for adapting policies as the learning ecosystem continues to evolve.



## 10. Public Will

### Cultivate public will and understanding for transformation

The national conversation around what education should aim to accomplish and what it might look like coalesces around a transformational vision for an expanded learning ecosystem that enables meaningful personalized learning for all students. As people's mental models of education and school shift to reflect current and future needs, a new wave of social innovation helps address resource constraints and other challenges.

- Develop clear visions for an expanded learning ecosystem that enables meaningful personalized learning for all students.
- Develop effective ways of communicating transformational visions for learning.
- Engage broad stakeholder groups in creating and extending transformational visions for learning.
- Explore and implement strategies for delivering those visions.
- Demonstrate the value propositions of new approaches to learning.
- Build momentum to continue finding new solutions and spreading effective approaches.
- Foster cultures of continuous improvement that enable the learning ecosystem to continue to evolve.

## Leading Transformative System Change

These ten innovation pathways reflect the need for profound system transformation. Education stakeholders have a tremendous opportunity to reinvent learning for a new era and to create new systemic structures that can help all learners succeed. As education adapts to the same kinds of changes that have disrupted other knowledge-based industries such as journalism and publishing, we have the opportunity to think anew about how to design learning to support all learners in preparing for college, career, and life.

This design work involves taking a fresh look at learning environments, developing new ways to support learning, situating learning in new contexts, and reconfiguring the systemic structures that can enable or inhibit education stakeholders' ability to make best use of future possibilities. Looking even more broadly, we have the opportunity — and also, we believe, the responsibility — to redesign the whole system of learning, transforming our current public education system and its many intersecting nodes into a new design that is consistent with the emerging participatory economy.

## Designing for Individuals, Not Institutions

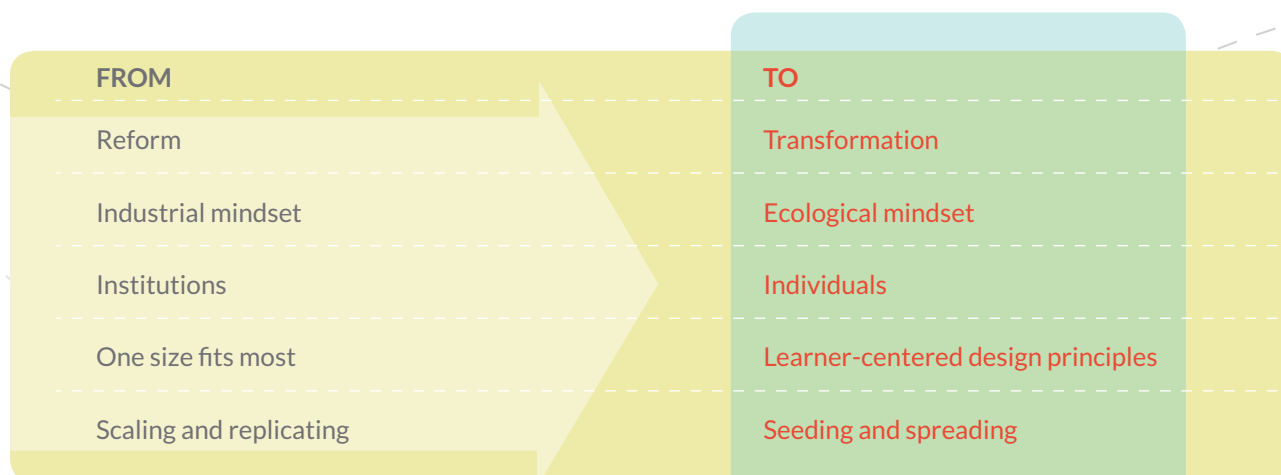
If we do not design intentionally for a vibrant learning ecosystem, we risk creating a fractured landscape in which only learners whose families have the time, money, and resources to customize or supplement their learning journeys have access to learning that adapts to and meets their needs. Working systemically to address the ten levers of transformation reflected in this innovation pathways framework promises to avert that negative scenario and create a rigorous and equitable learning ecosystem that is far more distributed and flexible than today's education system.

The hard and sometimes daunting work of education transformation involves shifting the paradigm from an industrial mindset in which one size fits most and successful innovations can be replicated to an ecological mindset in which learner-centered design principles guide the spread of transformative innovations and adaptations. It involves reorienting education around the needs of individuals instead of the administrative convenience and inertia of institutions. It involves putting learning first and regulation second. It involves challenging assumptions about how education can and must work, retaining existing

practices that promise to help learners navigate the emerging future, and creating new solutions that promise to make the expanding learning ecosystem vibrant for everyone.

In the world that is emerging, we will be able to seed, cultivate, and spread transformation, but we will not be able to engineer it. Thinking fundamentally differently about the question of scale will be one way to keep the emerging learning ecosystem vibrant as the world around it continues to evolve. Leading in fundamentally new ways — including alongside learners and their families — will be another way to steward the disintermediation of education toward a future in which all learners have access to the best of future possibilities.

We can be active agents of change in transforming learning using the strategies offered here and many others that education stakeholders will devise as the learning ecosystem continues to expand and evolve. I hope that we will create a vibrant learning ecosystem instead of letting the landscape fracture and leaving even more learners behind than the education system does today.



## About KnowledgeWorks

---

KnowledgeWorks is an Ohio-based non-profit social enterprise that works to foster meaningful personalized learning that enables every student to thrive in college, career, and civic life. KnowledgeWorks works on the ground with schools and communities through a portfolio of innovative education approaches, helps state and federal leaders establish the policy conditions necessary to prepare all students for success, and provides national thought leadership around the future of learning.

To learn more about our strategic foresight work, see [knowledgeworks.org/strategic-foresight](https://knowledgeworks.org/strategic-foresight).

## About the Author

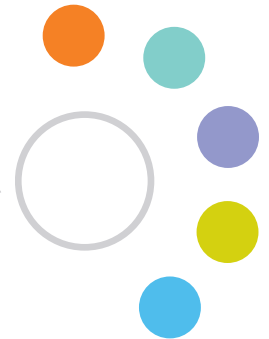
---

Katherine Prince, Senior Director of Strategic Foresight, leads KnowledgeWorks' exploration of the future of learning. Since 2007, she has helped a wide range of education stakeholders around the country use insights about the future to plan for transformational change today and has written about what future trends could mean for the education system.

## Acknowledgements

---

The innovation pathways framework was developed in collaboration with my KnowledgeWorks colleagues Catherine Allshouse, Debbie Howard, Pranav Kothari, and Meredith Meyer. Thanks to KnowledgeWorks colleagues Nancy Arnold, Debbie Howard, Jesse Moyer, Jason Swanson, and Matt Williams for reviewing this paper.





© 2014 Creative Commons  
License Attribution Share Alike 4.0  
International, KnowledgeWorks.  
Some rights reserved.  
To view a copy of this license, visit  
<http://www.creativecommons.org>.

We can be  
active agents  
of change in  
transforming  
learning.