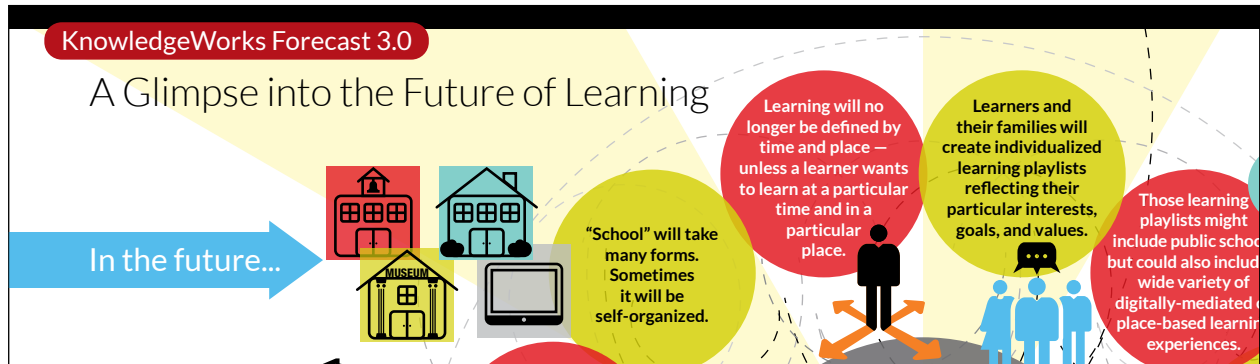


Glimpses of the Future of Education

By Katherine Prince, Senior Director, Strategic Foresight, KnowledgeWorks



A detail of a KnowledgeWorks infographic on the future of learning. For the complete infographic go to knowledgeworks.org/strategic-foresight.

Since 2005, KnowledgeWorks has studied the trends shaping our world and has worked with education leaders around the United States to develop visions and strategies for using those trends to create ideal outcomes for learners. Our third full forecast, [Recombinant Education: Regenerating the Learning Ecosystem](#), published in October 2012, forecasts a decade of deep disruption for education of the scope that Amazon brought to retail and that iTunes brought to the music industry.

Such profound change reflects the continuing reverberations of the digital revolution and the social and cultural changes that have accompanied it. We have already seen teaching and learning become unbundled from traditional education institutions. Next we expect to see learning agents, learners and other stakeholders put together a wide array of innovations—along with long-established solutions—in multiple ways to create a resilient and learner-centered

learning ecosystem in which many right solutions intersect and adapt to meet learners' needs.

Given such a disruptive 10-year forecast, those of us who care about learning have a tremendous opportunity not just to create more great learning experiences for kids but also to create breakthroughs around some of the intractable problems that have plagued education despite many people's best efforts. We have the opportunity—and also, I believe, the responsibility—to redesign the whole system, transforming our current public education system and its many intersecting nodes from the current industrial-era design into a new design consistent with the emerging participatory economy.

Two Potential Futures

Our forecast suggests that the learning ecosystem is going to diversify, and indeed has already started to do so. At the American Alliance of Museums' convening on the future of education

in September, I had the pleasure of sharing two plausible scenarios for how the future may take shape. We could find ourselves living in:

- a vibrant learning grid in which all of us who care about learning create a flexible and radically personalized learning ecosystem that meets the needs of all learners, or
- a fractured landscape in which only those 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.

While all the attendees at the Building the Future of Education convening preferred the prospect of our children and grandchildren living in a vibrant learning grid to a fractured landscape, only a few of them found this future to be more likely to come about, absent our intervention.

How Equitable Will the Future Be?

A critical uncertainty is whether the richness of the new, expanded learning ecosystem will be available to all learners. The heart of the distinction between the scenarios outlined here is whether we make equity a critical design variable as we create the future of learning or whether we let those with relatively few means fall even farther behind. Put another way, are we going to allow for widening gaps and learning deserts that correlate all too closely with low-income communities, or are we going to re-imagine how learning

Vibrant Learning Grid	Fractured Landscape
learning organization(s)	many choices, little guidance
unbounded learning	widening gaps
learning playlists	learning profits
radical personalization	continuing marginalization
learning analytics	autoimmune responses
new learning agent roles	educator burnout
new learning landscapes	community patchworks
DIY credentialing	uncertain pathways

flows across and supports all communities and create rich learning landscapes that are accessible to all?

We face a decade of tremendous opportunity that will also demand hard decisions. To create a vibrant learning grid, we must reconfigure entrenched systemic structures, many of which benefit the adults who work in the education system more than they benefit young people, and truly design for all learners. The future of learning will not be equitable unless we decide that it must be.

Creating Our Desired Future

As my colleagues and I wrote in *Recombinant Education*, “The future is not a fixed point. It is ours to create.” KnowledgeWorks engages education stakeholders around the country in strategic foresight because we see the importance and urgency of steering future trends toward the positive outcomes for all learners.

That focus—on bringing the best of future possibilities to all learners—will make the critical difference between taking the path toward a vibrant learning grid instead of a fractured landscape. Creating a vibrant learning grid that is accessible to all learners will take distributed and concerted effort. It will require pursuing sustained systemic transformation from multiple vantage points,

some of which sit within today's K-12 public education system and some of which extend far beyond its boundaries. Museums, libraries and other cultural institutions and community-based learning providers promise to serve as exciting nodes within the expanded learning ecosystem and have much to offer in enriching public educators' visions of what is possible for learners.

In the vibrant learning grid scenario, 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. In the fractured landscape scenario, museums and other cultural institutions could help fill gaps left by the public education system, providing alternatives for at least some learners who might otherwise have access to few good opportunities.

In either scenario, museums and other cultural institutions should see themselves not just as critical stakeholders in creating the future of learning, but as agents of change that could steward the charge of equity and advocate for interest-driven collaborative learning as a key feature of the expanded learning ecosystem.

Scenario 1: A Vibrant Learning Grid

What if learning adapted to each child instead of expecting each child to adapt to school?

As highlighted in the [infographic](#) that accompanies the full KnowledgeWorks forecast, it looks possible to channel the trends shaping learning over the next 10 years to create a flexible and radically personalized learning ecosystem that meets the needs of all learners. Some potential characteristics of such a "vibrant learning grid" are listed below, along with current examples that serve as signals, or early indicators, of a move in this direction.

Learning Organization(s): Reflecting our changing relationships with formal institutions and the rise of social production, the ways in which we organize learning will diversify, with "school" taking many forms.

Signal: [Quest to Learn](#), a New York City public charter school teaching grades 6 through 12, organizes its entire approach around gaming and systems thinking. We also see a significant rise in the percentage of learners engaging in homeschooling, free schooling, unschooling, democratic schooling and other self-organized approaches to learning that reject or redefine learners' relationships with formal institutions.

Unbounded Learning: Learning will no longer be defined by time and place—unless a learner wants to learn at a particular time and in a particular place.

Signal: [Boston Day and Evening Academy](#) shows how it is possible to remove constraints around learning for at-risk students and to make new design decisions appropriate to a particular situation. Its population of over-age and under-credited learners are organized into cohorts every 11 weeks based on their levels of mastery.

Learning “Playlists”: Learners and their families will create individualized learning playlists reflecting their particular interests, goals and values. Those playlists might include public schools but could also include a wide variety of digitally mediated or place-based learning experiences, including learning experiences at museums.

Signal: The [LessonPaths](#) website suggests learning playlists in relation to specific learning objectives, such as understanding what it would take to climb Mt. Everest or mastering a particular English language arts or math standard.

Radical Personalization: Whatever learning experience(s) a learner chooses, radical personalization will become the norm, with learning approaches and supports tailored to each learner. It will be enabled by quick-cycling formative assessments that help learners and learning agents understand what is happening with learning and tailor appropriate next steps and supports.

Signal: [School of One](#) focuses on middle school math instruction, using a learning algorithm to serve up daily lesson plans for each student based on his or her previous accomplishments and preferred learning modalities along with teachers’ availability and preferred instructional formats.

Learning Analytics: Digital tools will use rich data to provide insight into learning and suggest strategies for success. Such data could go far beyond academic performance to include social and emotional factors.

Signal: [Leadership Public Schools](#), a consortium of high-poverty schools in the East San Francisco Bay Area, developed [ExitTicket](#), a free app that shows each student how close he or she is to having mastered the day’s learning objectives and shows the teacher a classroom dashboard

reflecting all students’ performance. This feedback enables teachers to adjust instruction the next day and helps students know where to probe deeper.

New Learning Agent Roles: Educators’ jobs will diversify as many new learning agent roles emerge to support learning. Learning agent careers may diversify in ways that not only provide richer support for learning but also offer more satisfying careers reflecting learning agents’ strengths.

Signal: In 2010 the [Center for Teaching Quality](#) coined the term “teacherpreneur” to describe its vision for hybrid roles that enable teachers who want to develop their leadership to stay in the classroom part of the time while being trained and paid as change agents who might specialize in any number of areas, such as policy, peer mentoring or community partnerships. Each school year, it supports a cohort of six teacherpreneurs and teachers in residence in bringing this vision to life.

New Learning Landscapes: Geographic and virtual communities will take ownership of learning in new ways, blending it with other kinds of activity. Learning will become part of a seamless community infrastructure across which learners can move as their needs and interests evolve.

Signal: [Inside Out Community Arts](#), a theater-arts and media-based education program operating throughout Los Angeles County, engages middle and high school students in a free, research-based, after-school curriculum. Having started as a violence prevention program, it brings the expertise of arts professionals into the school district via its artist leaders, who are trained in youth development, and brings students’ productions into the community through free public presentations of their work.

DIY Credentialing: Diverse forms of credentials, certificates and reputation markers will reflect the many ways in which people learn and demonstrate mastery.

Signal: The University of Wisconsin is developing a **Flexible Option** that will allow learners to demonstrate degree equivalency without having to take any classes from the university (except for a few majors requiring practical lab experience). It is leading the way in separating the delivery of instruction from its credentialing.



Left: Hannah Brown, a student at a Big Picture Learning school in San Diego, at a robotics internship where she tests circuit boards used to automate the flight paths of hobby drones. Photo: Vanessa Carr



Right: Students engage in embodied learning experiences at Elizabeth Forward Middle School outside of Pittsburgh. Photo: Ben Filio

Scenario 2: A Fractured Landscape

What if only those with means had access to a rich array of learning experiences beyond traditional public schools?

It seems equally plausible—and perhaps more likely—that future trends will result in an even more fractured educational landscape in which only those 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. Some potential characteristics of such a “fractured landscape” are listed below, along with current examples that serve as signals, or early indicators, of a move in this direction.

Many Choices, Little Guidance: Learners without strong support at home have trouble navigating the vast array of learning options.

Signal: [New Hampshire Virtual Academy](#) requires parents to assume a “learning coach” role. With students who enroll in the school full time, spending an average of four to six hours on schoolwork each day, parents are advised to plan for 80 percent direct participation in the early grades, 50 percent in middle school and 10 percent in high school. It seems challenging for even a well-educated and highly motivated parent to carry out this learning coach role while working full time.

Widening Gaps: If today's public education system fails to respond constructively to disruption, other organizations will create alternative value webs that might not be accessible to all.

Signal: Cities around the country continue to [close neighborhood schools](#) (for example, Chicago closed 50 schools during 2012–13; see more detail on this trend elsewhere in this white paper). Low-performing schools prove far too persistent despite the intense attention and investment of the education reform movement. Yet education innovations continue to proliferate, either in formal institutional settings or in the hands of learners and parents who are fed up with institutional options.

Learning Profits: As learning diversifies and new stakeholders enter the learning ecosystem, student learning takes second place to profit.

Signal: As noted in a [Huffington Post article](#), between 2001 and 2009, “the number of students enrolled at for-profit colleges more than tripled, increasing from fewer than 500,000 students to more than 1.8 million. About 10 percent of college students nationwide are enrolled at for-profit colleges, yet the sector takes in more than a quarter of federal student aid dollars and is responsible for nearly half of student loan defaults.”

Continuing Marginalization: To the extent that automation correlates with lower cost, children in low-income communities will get less support from live learning agents.

Signal: [Projo](#), a 2-foot-tall robot, has been developed by Sandra Okita of Teachers College, Columbia University, to serve as a personalized learning partner. Projo “learns” along with a student, failing at his or her knowledge edge in an effort to assist the student's learning by making the student the teacher. Okita is finding that students engage more fully with Projo than with similar activities on a computer because they can personify the robot.

Autoimmune Reactions: Fear-based reactions to change limit the development of shared infrastructure and keep attention focused on limited accountability measures.

Signal: During times of systemic change, any system is prone to engage in “[autoimmune responses](#)” whereby “brittle hierarchies continue to act in ways that seem institutionally rational but which further destabilize weak, inflexible systems.” With the profound disruption that education faces, the public education system in particular risks engaging in such reactions. For example, the move to implement statewide teacher evaluation systems that are tied to high-stakes testing systems could serve to limit creativity and learning rather than to ensure that every learner has appropriate support from highly qualified teachers.

Educator Burnout: Educator attrition rates and stress levels continue to rise as accountability demands constrain creativity and tie pay to performance.

Signal: The 2012 MetLife [Survey of the American Teacher](#) found that teacher satisfaction has declined to its lowest point in 25 years: teacher satisfaction has now dropped 23 percentage

points since 2008. The survey also found that stress levels among teachers and principals are on the rise and that, while about half (51 percent) of the teachers responding to the survey want to combine classroom teaching with other roles or responsibilities in their school or district, most (69 percent) are not at all interested in becoming a principal.

Community Patchworks: Access to high-quality, community-based learning experiences depends on where a child lives, not what he or she needs and is interested in.

Signal: The Free Library of Philadelphia is building off the success of Chicago's YOUMedia project by [creating multimedia learning labs](#) for middle and high school students; so far, 24 libraries and museums are engaged in establishing creative spaces for young people in Philadelphia. Funding for this endeavor comes from grants from the John D. and Catherine T. MacArthur Foundation and the Institute of Museum and Library Services. But what happens in communities without such funding and without an inventive lead organization?

Uncertain Pathways: Amid new and varied credentials and continuously changing demands, identifying essential knowledge and skills will be increasingly complex. Even for highly skilled workers, full-time employment is on the decline as global "[talent clouds](#)" increasingly broker short-term employment to meet specific needs.

Signal: The [Lumina Foundation](#) is focusing its efforts to improve education on achieving 60 percent higher education attainment nationwide by 2025. In doing so, Lumina is advocating for a redesigned higher education that cultivates the systemic conditions necessary to prepare the American population for such an employment climate while also correcting the current trend toward "separate and unequal degree pathways" that correlate all too well along racial and ethnic lines. Those conditions include creating new models of student financial support, creating new higher education business and finance models, and creating new systems of quality credentials.



Katherine Prince is senior director, strategic foresight, of KnowledgeWorks. In leading KnowledgeWorks' examination of trends shaping the future of learning, Prince supports education stakeholders around the country in creating transformative visions for learning and strategies for bringing those visions to life.

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