

Building the Future of Education

MUSEUMS AND THE LEARNING ECOSYSTEM



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Building the Future of Education: Museums and the Learning Ecosystem

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Foreword

By Michael Robbins, Senior Advisor for Nonprofit Partnerships, U.S. Department of Education

I recently joined my 6-year-old niece for a museum visit. As she combed through exhibits, she discovered a drawer on a display wall, pulled it out and gleefully exclaimed, “OOOOHH! More information!”

Wouldn't it be great if we heard this each day in classrooms across the nation? Museums can help us get there.

Dedicated teachers and school leaders are advancing education success across the United States—turning around low-performing schools, implementing

world-class curriculum standards and demonstrating that students can succeed in the classroom regardless of challenges they might face outside school. But schools can't and shouldn't go it alone.

Our students need more opportunities for inquiry-based learning that inspires curiosity and fuels their passions. Our parents need to be better supported as co-learners and learning coaches with their children. Learning needs to better connect students to their communities, culture and history. We need more professionally

*Children learn soldering in MAKESHOP at the Children's Museum of Pittsburgh.
Photo: Ben Filio*



trained teachers of all kinds who have the expertise and dedication to make all of these things work together. Where can we find all these things? Museums!

How can museums and schools collaborate to create this new future for education?

Invest in the capacity to manage partnerships. Museum administrators (like school principals) have endless to-do lists and can't be expected to be the day-to-day leads on managing external partnerships. Dedicate full-time staff to develop and sustain successful partnerships, and have them work across schools and museums.

Strengthen family engagement. Develop resources for parents and students to connect the dots between learning in school and museum environments. Study guides and sample assignments that bridge school curriculum to museum assets are more than just education resources—they are tools for parents to advocate for more and better education experiences that blur the lines between school-based and community-based learning.

Build learning networks across community institutions. When museums join together and with other community-based learning organizations (such as

libraries and after-school programs) they can offer a broader range of experiences for students and build school partnerships with greater scale and impact. One such example is the Hive Learning Networks (hivelearningnetwork.org) operating in New York, Chicago and Pittsburgh.

Leverage digital learning and collaborative technology. The digital learning revolution is more than trading textbooks for tablets—it is an opportunity to accelerate collaboration among schools, families and community organizations to propel student engagement and learning. Museums can be community hubs that help expand Internet access and digital literacy. Internet-based resources and collaboration tools can facilitate learning projects involving teachers, students and museum staff. Digital tools such as badges (openbadges.org) recognize and document student learning, and can even be used to grant school credit for learning that happens in museums.

Students know that schools are only one node in their broader network of learning, and our education structures should reflect this reality. Working together, schools and museums can design learning experiences that are engineered from the student perspective and create a better future for education.

As the senior advisor for nonprofit partnerships at the U.S. Department of Education, **Michael Robbins** works to strengthen partnerships among schools, families and community organizations to propel student outcomes and turn around the nation's lowest-performing schools. He supports the White House Office of Faith-based and Neighborhood Partnerships, an office within the Domestic Policy Council that forms partnerships between the federal government and faith-based and neighborhood organizations to more effectively serve Americans in need. Robbins focuses on how digital learning transforms collaborations among schools, parents, communities and youth to boost student engagement and learning.



About This Convening

By Elizabeth Merritt, Founding Director, Center for the Future of Museums, American Alliance of Museums, and Paula Gangopadhyay, Chief Learning Officer, The Henry Ford



In September 2013, over four dozen educational policy experts, practitioners, funders, education innovators, reformers, student activists and others shaping the conversation about U.S. education converged on the National Building Museum in Washington, DC. Their goal: to launch a national dialogue about the future of education and how leaders from the worlds of education and museums can work together to integrate the nation's educational assets into a vibrant learning grid.

They came at the invitation of the American Alliance of Museums' Center for the Future of Museums (CFM), and The Henry Ford, in response to forecasts from CFM and other futures organizations that America is on the cusp of transformational change in the educational system. The current structure has been destabilized by rising dissatisfaction with the formal educational system, the proliferation of nontraditional forms of primary education and funding crises at state and local levels. Simultaneously new

*3D printing at the Pittsburgh Mini Maker Faire.
Photo: Ben Filio*

horizons are being opened by technological advances in communications, content sharing and cultural expectations regarding access, authority and personalization. A new era is beginning, characterized by new learning economies based on diverse methods of sharing and using educational resources.

The CFM and The Henry Ford see this transition as an opportunity to ensure museum resources are used to their fullest advantage in 21st-century education. What role can museums play in this new era? How can they help their communities understand and navigate the coming changes? Can museums help forge a common vision of a preferred future for education and play a leadership role in its creation?

For a day and a half, convening participants grappled with how to start a national dialogue on the future of learning and expand the educational impact of museums. The first day set the stage with short presentations. CFM's Elizabeth Merritt and KnowledgeWorks' Katherine Prince presented forecasts on educational change and potential scenarios of the future. Paula Gangopadhyay, from The Henry Ford, led panels of educators and innovators presenting examples of museums and other educational innovators exploring ways to structure new learning platforms. The Smithsonian's Michael Edson and Laura

White from Ashoka wrapped up the day with a look at the challenges and rewards of scaling up such experiments to meet the needs of American students. The morning of the second day, attendees assembled into small groups to brainstorm next steps. We challenged them to address: What can we do at the national, state, city and neighborhood level to shape the future of education? How can we integrate museums into a network of learning resources?

This white paper summarizes the content and shares some of the ideas coming out of the convening. The staff and leadership of the Alliance and The Henry Ford hope this report will inspire you to become involved in this process as well: building bridges among museums, schools and other learning resources, including libraries, archives, makerspaces, learning labs and others. As you read the contributions of those who presented at the convening, think about your assumptions, hopes and dreams for the learning landscape, and decide what actions you will take to build a bright future.

Our deepest thanks to the Robert & Toni Bader Charitable Foundation, whose support made this convening possible, and to the National Building Museum for serving as our gracious host.

Yours from the future,

Elizabeth Merritt
*Founding Director
Center for the Future of Museums
American Alliance of Museums*

Paula Gangopadhyay
*Chief Learning Officer, The Henry Ford
Member, National Museum and Library
Services Board*

Setting the Stage

By Elizabeth Merritt, Founding Director, Center for the Future of Museums, American Alliance of Museums

Forecasting a New Era of Education

Museums are educational powerhouses.

Did you know:

- Museums spend more than **\$2 billion a year** on education. The typical museum devotes three-quarters of its education budget specifically to K-12 students.
- Museums receive more than **55 million visits** every year from students in school groups.
- Museums create educational programs in math, science, art, literacy, language arts, history, civics and government, economics and financial literacy, geography and social studies, often tailored to the needs of state and local curriculum standards.
- Each year, museums provide more than **18 million instructional hours** for educational programs such as guided tours for students, staff visits to schools, school outreach through science

*Children explore the Carnegie Museum of Natural History in Pittsburgh.
Photo: Joey Kennedy*



vans and other traveling exhibits, and professional development for teachers.

You'd think, given these stats, people would consider museums as kin to schools, colleges and universities. Yet museum people find themselves having to explain, over and over, that museums are fundamentally educational institutions, with learning embedded at the heart of our missions.

Maybe in the future we won't have to explain. I say that because it looks like the U.S. is headed into a century in which museums, as experts in immersive, experiential, self-directed, hands-on learning, will be sailing in the educational mainstream, rather than eddying at the fringe.

I'm a professional museum futurist, and one major goal of futures studies is to observe and interpret the pattern and pace of change that will shape our future. Typically any area of endeavor (e.g., transportation, medicine, manufacturing) is characterized by "eras" that start and end with transformative, innovative change. Within an era, people riff on that era's "dominant technology," which might be a physical invention, a philosophy or an organizational paradigm. Change comes slowly at first, then in a great soaring arc of progress as people discover ways to capitalize on

Youth Radio.



the new paradigm. Eventually this growth peters out, as the innovation that fueled the era becomes obsolete, no longer suited to the needs of a changing world. An era ends when the next great innovation takes off, leaving the old dominant technology gasping in the dust.

We see signs that the U.S. is nearing the end of an era in formal learning characterized by teachers, physical classrooms, age-cohorts and a core curriculum—what some people call the era of [industrial-age learning](#). The signals presaging this transformation include the rapid increase in nontraditional forms of primary education such as homeschooling; near [record dissatisfaction](#) with the existing K–12 education system; funding crises for schools at the state and local levels; growing gender imbalance in higher education; and proliferation of digital content and digital delivery platforms designed to transform the nature of classroom learning.

There are strong indicators, which we will explore throughout this report, that the next era of education will be characterized by self-directed, experiential, social and distributed learning that is designed to foster the 21st-century skills of critical thinking, synthesis of information, innovation, creativity, teamwork and collaboration. In such a future, museums can play a critical role, both as resources for learners, and as teachers of teachers, sharing what they have learned from their last century of education.

The disruptive shift between eras is a time of challenge and opportunity: challenges to the existing power structure and to those prospering under the old paradigm; opportunities for new players to emerge and for previously underserved groups to come into their own. A fundamental shift in

the paradigm underlying America's educational system would rock the foundations of our society, holding out the promise of redressing long-standing inequities that stratify our society and hobble economic mobility. Right now—this decade—is our window of opportunity to influence the direction we take in coming decades. We need to envision the potential futures that could arise from the ashes of the old era as it flames out, choose the future we want to live in and take action to make it real.

Drivers of Change: Forces Shaping the Future of Education

To understand our options—potential bright and dark futures that might come to pass—we need to understand the forces influencing our path forward. So our convening started with an exploration of these drivers of change.

Three major forces shape the path we take into the future:

- *Trends* exert their influence steadily over time, as something becomes more or less common and has a greater or lesser effect on the world.
- *Events*, occurring at a specific place and time, can reinforce, accelerate a trend or work against it.
- *Choices* are the actions individuals and organizations take to consciously shape the world.

Here are several examples of trends exerting a significant influence on the world of education, assembled in collaboration with my co-presenter, Katherine Prince of KnowledgeWorks:

Inside-Out Urban Schools: The rise of after-school, summer and other expanded learning opportunities creates learning outside the traditional school building and

school time. These opportunities are built around the [growing evidence](#) that anywhere, anytime learning can reinforce and extend formal learning, resonate with learners who don't thrive in the traditional classroom and prevent the "summer slide" that is particularly damaging to low-income students. Notable examples:

- The [Providence After School Alliance](#) operates the AfterZone for middle schoolers, and the Hub for high school students—citywide systems that serve over 2,000 young people with experiential, community-based, after-school learning programs.
- [Learning Labs in Libraries and Museums](#) are being created throughout the country with the support of the Institute of Museum and Library Services and the MacArthur Foundation. The labs engage middle and high school youth in mentor-led, interest-based, youth-centered, collaborative learning using digital and traditional media, at sites that include the New York Hall of Science; Oregon Museum of Science and Industry; Da Vinci Science Center in Allentown, Pennsylvania; and Museum of Fine Arts, Houston.

The End of the Neighborhood School:

communities have long been fiercely protective of the schools in their own back yards, valuing the way these schools keep their children close to home, in their own neighborhood, with the support of their peers. Now the economic crisis and state and local funding crunches are driving [a wave of school closures and consolidations](#) in New York City, Philadelphia, Detroit, Chicago, Washington and elsewhere in the nation. This may increase the willingness of parents, already unhappy with school performance or school options, to opt out of the public school system and into

independent charter schools, private schools, homeschooling or [unschooling](#).

The Decline of FTE: Traditional schools are designed to prepare students for traditional jobs—which are increasingly rare. We are seeing the decline of full-time, long-term employment and the rise of the “[gig economy](#)”—one in which more and more people are freelancers, piecing together bits of work. Online services like [oDesk](#), [TaskRabbit](#) and [Gigwalk](#) facilitate matching workers with employers more quickly and efficiently than the old fashioned temp agency, providing tools for anyone to patch together an income from diverse bits of work. If, in the future, more of our children [grow up to be TaskRabbits](#), that may affect the kind of education, training and real-world experience they need to succeed in the odd-job workforce.

Mind-reading technology: The development of technology that can tap into human brains will tell us what is really going on in there—both conscious and subconscious responses. Teachers are already deploying tools, such as Khan Academy’s [learning analytics](#), that give them real-time feedback on where students are stumbling and what kind of help they need. NeuroFocus has already deployed [portable, wireless electroencephalogram \(EEG\) scanners](#) for market research. As the hardware becomes even smaller and less intrusive, how long before it is harnessed to track learners’ attentiveness, concentration and mood?

If trends are like rivers, slowly carving channels through the sands of time, disruptive events are like storms, leaving their imprint on the landscape in a single stroke. The past few years have been crowded with events that, in a few decades, we may believe have left a significant mark on the future.

In 2011 the HASTAC/MacArthur Foundation Digital Media and Learning Competition, supported by the Mozilla Foundation as well as the Bill & Melinda Gates Foundation, announced [Badges for Lifelong Learning](#), providing 30 development grants for platforms and projects related to “digital badges”—an assessment and credentialing mechanism housed and managed online. In our rapidly evolving educational environment, digital badging has emerged as an alternative credentialing system that enables learners to assemble their own curriculum from a wide variety of resources—some online, some face-to-face—and get credit for what they know and what they’ve achieved. In a [2011 speech](#), Secretary of Education Arne Duncan identified digital badging as an important emerging educational technology that “has the potential to propel a quantum leap forward in educational reform.” The HASTAC/MacArthur competition jumpstarted the development of open-source resources capable of supporting this quantum leap.

In 2013, former New York Schools Chancellor Joel Klein [helped launch Amplify](#), a free Massive Open Online Course (MOOC) offering AP credit for computer science, adopted by 3,000 schools, with the goal of increasing the number of women and minorities represented in computer sciences. MOOCs are another game-changer for education, enabling thousands or tens of thousands of students at a time to access the best instructors and instructional content, at little or low cost. While the majority of MOOCs are aimed at college-level and adult learners, Amplify demonstrates that MOOCs are moving into K–12 learning as well.

Both digital badges and MOOCs are disruptive in part because they provide alternatives to the status quo. If a student is not doing well on traditional tests, that may not matter so much if their digital backpack is filled with evidence of successfully completed projects and real-world accomplishments. If a given school district is not providing high-quality STEM training or has cut arts education, MOOCs may provide a way for students to supplement those gaps. But what if a school fails entirely? One of the most interesting events of 2013 is something that didn't, in the end, actually happen, but the mere fact that it almost happened sheds light on this question. In spring 2013, the Buena Vista School District in Michigan fired all of its teachers and closed its schools because it had run out of money. About 400 students were faced with the prospect of a truncated school year. Rather than accepting early closure, parents and teachers banded together to propose the [Buena Vista Skills Camp](#) as a voluntary substitute for school, focusing on math and reading, with instructors receiving an hourly wage. While many people questioned whether a skills camp would constitute a "proper education" or an "adequate substitute" for school, it was clearly preferable to no school at all. In the end, a compromise was negotiated and the school reopened for the remainder of the school

year. Such a camp could set a precedent for restructuring the relationships among schools, teachers and students.

Sometimes an event can take the form of a statement or report recognizing and validating the importance of a trend. In 2012 the National Governors Association [released a report](#) documenting that 36 states have disconnected "seat time" (time spent in the classroom) from the awarding of educational credit. States are waiving seat time many different ways (by basing credits on mastery of material, allowing for individual seat-time waivers, basing credit on performance-based assessments, etc.) and for individuals with many different needs (students who have fallen behind, students who excel, students who don't do well in traditional academic environments, etc.). As states formally validate learning that takes place outside the classroom, this paves the way to educational networks that encompass a range of place-based experiences (including museums), as well as online resources.

In the next section of this report, Katherine Prince paints a picture of two very different potential futures that could be created by these trends and events.



Elizabeth Merritt is founding director of the Center for the Future of Museums, an initiative of the American Alliance of Museums. Before launching CFM in 2008, she led the Excellence programs at the Alliance (accreditation, Museum Assessment Program, peer review, research). Before joining the Alliance, she was the director of collections and research at Cincinnati Museum Center. She believes her most educational K–12 experience was her volunteer work at the Cleveland Museum of Natural History, which laid the groundwork for her career in museums and public speaking.

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 tagoras.com.

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 grand-children 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 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.

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

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.

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Even for
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needs.”
”

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.



Time for a Perfect Storm!

By Paula Gangopadhyay, Chief Learning Officer, The Henry Ford

Various trends, forecasts, events and successful innovations as shared by Elizabeth Merritt and Katherine Prince underscore the fact that major transformative changes are occurring rapidly in the learning arena. In the United States, K–12 education has faced harsh criticism in recent decades, especially compared with its counterparts in countries such as Finland, Singapore, Australia, China and South Korea. Yet if we look at the issue from a glass-half-full perspective, the environment and resources for adoption and adaptation of transformative changes in American education have never been more conducive than they are now. I truly believe that it is the time for a perfect storm—the perfect opportunity for museums and other nontraditional educational institutions and catalytic players to gather speed and power with stronger, tighter collaborations to bring about a tsunami of transformative improvement in education and make it more focused on learning.

This section of the report focuses on the role of museums in the learning ecosystem. Colleagues from museums and formal education further shed light on this topic and talk about their game-changing work. Though some of us are trying to “walk the walk” and have not yet found the answers to all of our challenges, we are witnessing positive change. We firmly believe that with insights and participation from other



stakeholders, we can change education for the better.

All great innovators are dreamers who explore uncharted territories. But they also are realists who put action plans together, experiment with ideas, are tenacious, learn from failures and, in the end, launch innovations that can change our lives forever. They also embrace and respond to unintended consequences that emerge in the process of innovation. They think about the “what ifs” and “why nots.”

Henry Ford’s passion for collecting artifacts was inspired by his deeply held wish to make education “functional” and his belief in students’ ability to “learn by doing.” He realized his dream in 1929 by starting the Edison Institute, an innovative school, and Greenfield Village in Dearborn, Michigan,

Formal and informal education should make more room for creativity and innovation in their offerings.

Photo: Gary Malerba

“ Museums need to be recognized as real-world contextual experts in the education sector. It’s time to make the implicit more explicit. ”

long before it became the multi-site destination we know today as The Henry Ford. One of today’s education innovators, 2013 TED Prize winner Sugata Mitra, is working on realizing his radical “School in a Cloud” concept with similar passion and commitment. These examples from the past and present tell us that innovators in education have the power to make radical and long-lasting impact.

The National Innovation Initiative and Council on Competitiveness back in 2004 talked about “thriving in the world of challenge and change.” The importance of “thriving” is as applicable today—and actually more feasible—with the explosion of communication and technology innovations. Innovation still remains key to determining this country’s success.

Critical Questions for Reflection Today:

- How can museums ride this perfect storm of rapid transformation and innovation in education and learning and carve a different role for themselves?
- How can we move from being considered just an optional resource in education to playing a more central role in influencing how learners learn and contribute in the 21st century?

If education is on the cusp of transformation, so are museums. I believe museums can gain much more traction and visibility by focusing on three core strategies:

Be proactive: Catalytic leaders are proactive. If museums want to play a significant role in the transformation of learning, we must prove our leadership value.

One huge leadership opportunity lies in directing the power of the learner. Imagine

a world of education where teachers teach less, yet students learn more! That is the definition of 21st-century teaching and learning. We need to recognize the innate power and proclivities of this generation—the iGeneration—and change how we teach. The central issue is that children are not engaged. Tamar Lewin’s August 8, 2009, *New York Times* article, “In a Digital Future, Textbooks Are History,” quotes Sheryl R. Abshire: “Kids are wired differently these days. They are digitally nimble. They multitask, transpose and extrapolate. And they think of knowledge as infinite. They don’t engage in textbooks that are finite, linear and rote. Teachers need digital resources to find those documents, those blogs, those wikis that get them beyond the plain vanilla curriculum in the textbooks.” We cannot prepare students to succeed in today’s world if we don’t change our learning environments, our teaching methodologies, our juxtaposing examples, our tools of engagement and lastly our mindsets.

I want to share the story of Caine to demonstrate what can happen if we empower learners to learn in their own defined ways.

Caine is a 10-year-old California boy whose innate entrepreneurial spirit and desire for self-directed learning allowed him to build a cardboard game arcade in his father’s used auto parts garage. A short documentary film on Caine’s arcade, made by Nirvan Mullick and posted on YouTube, garnered millions of views on Facebook, spurred a national movement and a global challenge, and led to the inception of the Imagination Foundation with the goal of inspiring many more Caines. As a poster child for the 21st-century learner, Caine shows us how we need to change our teaching methods and learning environments.

If we want to change education and learning, we need to acknowledge and respect today's youth as "knowledge creators" versus "knowledge recipients" and redefine the role of teachers as facilitators of learning. We also need to focus more on learning versus education, which is perceived as K-12 in-school experiences, and recognize that learning can happen anytime, anywhere, and at any pace. So a related paradigm that needs to shift to bring about the desired change is that learning cannot be shoehorned—or in my word, "chunk-atized"—into 9 a.m.–3 p.m. (in-school) and 3 p.m.–9 p.m. (out-of-school) blocks.

Be relevant: Today more than ever, everyone in formal education is advocating for and welcoming contextual interdisciplinary learning. Rigor is no longer just related to mastery of content. Rigor now is all about adaptation and application of content in real-world scenarios. This is also at the core of the changes advocated by the standards movement with the new Common Core State Standards and Next Generation Science Standards.

The shift to relevance offers a great opportunity for museums to contribute unique content and multidimensional problem-solving methodologies. I use the Four A's of Learning model to design relevant learning experiences: **A**cquisition, **A**ssociation, **A**pplication and **A**ssimilation of knowledge. Museums have the distinct advantage of offering all four A's. Collections-based museums can do that with their "artifactual" stories, and science and children's museums, zoos, nature centers and aquariums can do that with their unique methods of exploration, engagement and play.

To make education relevant, more and more forward-thinking schools are opting for the "blended" and "flipped" classroom models where students are encouraged to use resources outside the classroom and learn in a self-directed manner. But the content has to be high quality and authentic. More and more museums should grab this opportunity, get their collections digitized and launch innovative partnerships with area schools where they become accepted and direct "digital content partners" to activate the new classroom models versus providing these assets as optional resources. This is more of an outcome-oriented approach than an output-oriented approach. Museums can also play a transformative role in teacher preparation and professional development.

Be "top of the mind" in education:

The education sector and after-school providers have always considered museums and libraries eager community partners. Museums spend a significant percentage of their budgets on developing and offering supplemental resources. But if we have been such well-wishing partners in education for decades, why are there still relatively so few museum voices in the current education reform dialogues? Often when I am at state and national education debates and dialogues, educators have asked me, "So ... you are from a museum? What brings you to this conference?" Have we thought about why teachers, who are so pressured to increase student engagement and achievement, aren't talking to policy makers and other stakeholders about the tremendous value museums bring to the table? It is for this reason that I invited two student leaders and the 2012 Teacher of the Year to join the conversation and tell us firsthand what their needs are and how museums can work toward becoming integral partners in education.

“
Learning is
a seamless
continuum,
and museums
should be
accepted as
unique
'learning
activators'
in that
continuum.
”

“ Museums need to push the boundaries and become stakeholders instead of just partners. It is time for museums to become drivers of educational change. ”

These individuals have already begun their revolutionary work. Maybe museums can join hands with them and lead with a shared vision.

To become “top of the mind” in education, a radical paradigm shift needs to happen in the learning landscape, in which we are able to question and change the accepted architecture of formal education—preschools, K–12 schools and post-secondary institutions like colleges and universities. Museums have the potential to become the fourth element of that architecture in the 21st century or the common denominator as centers for lifelong learning.

Education Reform Inhibitors to Be Reckoned With

To be successful with any systemic change, one has to be cognizant of critical factors that can compromise the effort, process and results. Many of these factors restrict the rate of education reform and innovative ideas. If museums want to be a catalyst in education, it is important for them to be empathetic to sensitive issues such as:

Ever-evolving standards in education:

In an attempt to rise to meet international standards and testing of student achievement, new standards have come and gone, yet the desired outcomes have not materialized. The U.S. curriculum is still an inch deep but a mile wide, with little or no room for creativity and innovation.

This-too-shall-pass syndrome: With the rapid influx of third-party “problem fixers” in education, many of whom are transient in nature or dependent on short-term funding, front-line practitioners—educators—have developed apathy for solutions that are

forced on them. This has translated into a “this-too-shall-pass syndrome,” which unfortunately makes valuable solutions, models and partnerships go untapped or underutilized.

Pull-versus-push syndrome: Most reform initiatives are mandated as top-down “push” methods, which leave educators without a feeling of ownership to activate change. The common result is “push back.” The “pull” method empowers educators and serves as a shot in the arm in which they become champions of change and we remain the catalysts.

It’s ironic that even though everyone is talking about innovation being the most desirable 21st-century skill, educators and students are still held captive in the least innovative teaching and learning environments. Most museums are eager to align their educational offerings with the ever-evolving standards rather than advocate for change in the curriculum itself. It is time to ask: Is more really more, or should we make room in the existing curriculum for creativity and innovation? If this change happens, museums will fit into the education and learning equation seamlessly.

Communities of Innovative Practice and Voices from Education

So are all of these strategies a thing of the future or more aspirational? I would like to share a few examples of visionary leadership in which organizations and individuals have made the choice to push traditional boundaries and define a different leadership role for themselves, and are having an impact on education.

The Henry Ford’s Innovation Education Incubator is a national initiative that aims to empower teachers to teach innovation using stories and collections of American innovators designed to help youth think and act like innovators.

The Remake Learning initiative, led by The Grable Foundation, is galvanizing an entire city to solve problems creatively and inspiring a generation of lifelong learners in the Pittsburgh area.

The Boston Children Museum’s Race to the Top—Early Learning Challenge Grant initiative, in partnership with the Massachusetts Department of Education, is mentoring museums and libraries across the state to develop skills and proficiencies for early learners.

Big Picture Learning works with over 200 innovative schools across the nation and world, where museum assets and experiential learning are included as core elements of the curriculum.

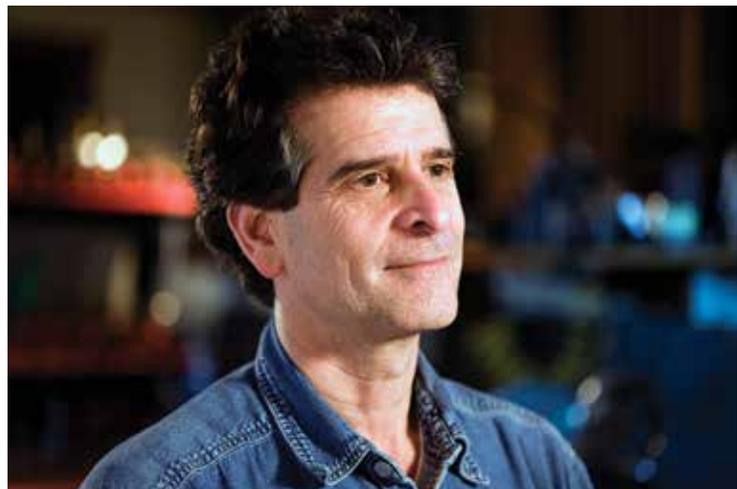
Author and activist **Nikhil Goyal**’s book *One Size Does Not Fit All* and his revolutionizing leadership voice are challenging the test-based model of education and asking for radical changes to better suit learners’ needs.

Erik Martin’s personal life experiences from middle school led him to conceptualize a National Student Bill of Rights.

Rebecca Mieliwocki became the 2012 National Teacher of the Year from among 3.2 million teachers in the U.S., and in her role visited educational systems in 30 states and eight foreign countries. She concluded that the most amazing things

are happening in American schools, and that other countries still look up to our system for producing confident, articulate, creative thinkers.

All of these examples show that we can steer the new learning revolution toward what we all desire: more power to the learner; holistic and real-world knowledge to learn from, apply and adapt; a new cadre of innovators and entrepreneurs; and a strong economic future for the U.S., where self-directed learners not only learn in new ways but also teach and enlighten us in new ways.



Dean Kamen, an innovator most known for the Segway and initiator of the First Robotics competition, tells the amazing story of how empathy and his desire to meet a real-world need for his brother, who was at Harvard Medical School, led him to develop tiny needles for babies with cancer, which then led him to develop the insulin pump used to treat diabetes for millions of people. Dean’s story gives us hope that small innovations and grassroots movements can be scaled up to cater to the needs of millions. That’s what American education needs today.

Dean Kamen talks about how empathy inspired some of his innovations.

Time to Harness the Power of the Whole

Hundreds of museums, libraries and nontraditional learning spaces are developing innovative models and exemplary partnerships to impact learning. They are well known and respected in their communities. But on the national map, these efforts still seem fragmented, even though they have powerful elements that can benefit all. Lack of a system of information distribution amounts to museums reinventing the wheel over and over until the “aha” moment when someone connects those of us doing similar work.

Museums have to become a force to be reckoned with so our collective wisdom can steer the ship of learning. The good news is that, even though it may seem like an indomitable task, there are ways we can streamline our efforts. But we cannot do it alone. I leave you with the following quote, which I found appropriate to the work we have gathered here to initiate and sustain:

“Coming together is the beginning,
Working together is progress,
Staying together is success!”

—Henry Ford

Paula Gangopadhyay is the chief learning officer for The Henry Ford, which includes the Henry Ford Museum, Greenfield Village, Benson Ford Research Center, Ford Rouge Factory Tour, IMAX and Henry Ford Academy. She brings more than 19 years of experience from the cultural, education, policy and business sectors. She is heavily involved in several state and national professional organizations and serves as a thought-leader and speaker on innovation-related dialogues and forums. President Barack Obama appointed Gangopadhyay as a member of the National Museum and Library Services Board in 2012 for a four-year term.



■ Igniting a Learning Revolution with The Henry Ford's Innovation Education Incubator

By Paula Gangopadhyay, Chief Learning Officer, The Henry Ford

The Henry Ford includes Henry Ford Museum, Greenfield Village, an IMAX® theater, the Benson Ford Research Center, the Ford Rouge Factory Tour and a public charter high school, Henry Ford Academy. It is America's largest indoor-outdoor history destination, with more than 1,500 full- and part-time employees, 600 volunteers and an annual attendance in excess of 1.5 million people, including over 200,000 school group visitors.

At the outset of 2008 and in the midst of an economic downturn, The Henry Ford made a strategic decision to become a catalyst and make a positive impact on American education. With its collection of 26 million artifacts that tell the story of American innovation, ingenuity and resourcefulness, The Henry Ford felt uniquely positioned to unlock the potential of one of the world's greatest collections of content, stories and experiences about American innovation and to address the issue of the nation losing its global competitive edge.

The institution adopted a 10-year strategic plan to better fulfill its mission of inspiring people to learn from America's traditions of ingenuity, resourcefulness and innovation to shape a better future. The Henry Ford also adopted a new vision to "be a nationally recognized destination and force for fueling the spirit of American innovation and inspiring a can-do culture."

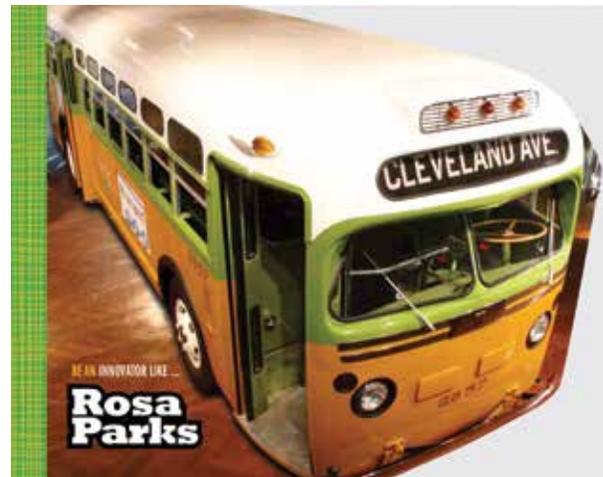
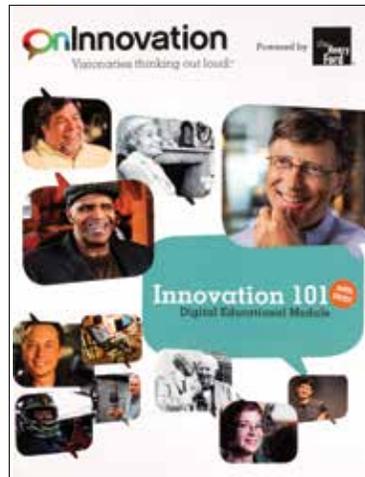


Brian Zevotek and Mark Rogers, 2013 PBS-THF Teacher Innovator winners, learn how to teach innovation at The Henry Ford's Innovation Immersion workshop.

In close collaboration with education partners, The Henry Ford used the "co-creation" approach and launched over 220 new and paradigm-changing educational curricula and resources aimed at changing how teachers teach and students learn. The new resources not only support national and state standards in social studies but also in STEM, 21st-century skills, English language arts, and career and technical education. They are aligned with Common Core State Standards and are now being



Innovation curricula offer educators tools to develop innovative mindsets in K–12 youth.



aligned with the Next Generation Science Standards. The common strands running through the new curricula are innovation and creativity, which The Henry Ford is encouraging teachers to make room for in the curriculum.

In 2010, The Henry Ford launched OnInnovation.com, a dynamic educational website with oral history interviews with some of today's leading innovators, including Bill Gates, Steve Wozniak, Dean Kamen, Will Allen and others. The institution also added unique content in the form of curator interviews about legendary innovators like Henry Ford, Thomas Edison, George Washington Carver and Rosa Parks.

To offer an explicit digital tool to K–12 educators, The Henry Ford created a game-changing digital curriculum, **Innovation 101**, which is designed to inspire the next generation of innovators and thinkers with stories of today's innovators, told in their own words and juxtaposed with stories of legendary innovators. The curriculum seamlessly integrates 21st-century skills development in the methodology of instruction. Each lesson allows learners to reflect on real-life stories of innovators, to think creatively and

critically, to communicate and collaborate, and to develop a problem-solving mindset that they can apply in any scenario.

The Henry Ford conducted a pilot testing of the innovation curricula through the **Innovation Education Incubator (IEI)** initiative. Forty teachers, representing public, private and parochial schools across the nation, tested the material with over 1,000 students. A third-party evaluation conducted by the national research firm Moore and Associates highlighted the following:

- The Innovation 101 materials could be integrated in several subject areas, including English language arts, health and fitness, entrepreneurship, history, technology, social studies and visual arts.
- Teachers felt these materials were an important curriculum support tool.
- Most teachers reported that there were no other materials like this available.
- Virtually all of the teachers indicated the Innovation 101 module promoted critical thinking and creativity and helped introduce students to the concept of innovation.

- Students felt the materials helped them “a lot” to learn new things, change how they thought about things and learn things they will need in the future.

With the success of the pilot testing and the enthusiastic adoption by educators, The Henry Ford has now commenced a major next-phase effort to increase the distribution and ongoing evaluation of its curricula to make a large-scale educational impact. The Henry Ford was invited to make a “commitment to action” at the Clinton Global Initiative, America and through the **Innovation Learning Accelerator** plans to:

- train and empower 5,000 innovative teacher-leaders to teach innovation with The Henry Ford’s innovation curricula
- ignite 125,000 students to “think and act” like innovators
- continue to gather qualitative and quantitative evidence that The Henry Ford’s innovation curricula and teaching and learning tools are effective, compelling and inspiring for teachers and students.

The Henry Ford is pursuing this project to give every child in America access to the critical ideas, content and problem-solving skills that will enable him or her to be the innovator or STEM practitioner of tomorrow and to help create substantive change in the American education system for a better work force.

The Henry Ford’s carefully designed efforts around teaching innovation showcase an example of how a traditional museum made the national education agenda its top institutional priority, redefined a vision to become a force for change in education, realigned its resources to augment and deploy its assets in new and innovative ways, and is now scaling up its efforts for national impact.



High school students from Henry Ford Academy, Dearborn, Michigan, listen to interviews of famous innovators and learn about traits of innovators and processes of innovation. Photo: Rudy Ruzicska

■ A City-Level Approach to Remake Learning

By Gregg Behr, Executive Director, The Grable Foundation

How do we prepare our children for a future we can't even imagine? Today we live in a world where our children can video chat with loved ones across the globe, where robots perform cutting-edge surgical techniques and where 3D printers "print" food. It's fair to say the future, thanks to technology, will be beyond our wildest dreams.

So how do we prepare our future citizens to live, work and play in the cities and communities of the future? What tools will they need? What competencies? What information? And how do we, the adults in their lives, the leaders of their communities—mere mortals who grew up back in the day before e-vites, e-books, and e-commerce—prepare them?

In my hometown of Pittsburgh—known for innovations in industry and children's media, thanks in part to [Fred Rogers](#)—an educational revolution is taking place. And it wouldn't be possible without leadership from all sectors of our region, including museums.

Here in Pittsburgh, new pioneers—gamers, roboticists, technologists and designers—are working alongside educators in and out of schools to inspire and provoke creativity and curiosity among children and youth.

And we're doing it in a new way: through a deliberate network of citywide partnerships that knit together the expertise of hundreds of educators, artists and innovators. This hub of learning innovation is one of the first of its kind in the nation.

With leadership from our Kids+Creativity Network, led by [the Sprout Fund](#), hundreds of [people](#), [projects](#) and [organizations](#) are working together to remake learning in the greater Pittsburgh region. They represent schools, museums, libraries, afterschool programs, community centers, higher education institutions, the private sector and the philanthropic community. We're also lucky enough to work closely with the [Allegheny Intermediate Unit \(AIU\)](#), part of the local school government structure in Pennsylvania. The AIU is leading the charge for imagination and innovation within our schools by providing crucial professional development support. We also work with the [Pittsburgh Technology Council \(PTC\)](#) to support and connect our region's creative entrepreneurs.

Together the Sprout Fund, the AIU and the PTC—supported by R&D in local higher education—are working across disciplines to forge partnerships with the goal of creating a thriving ecosystem that will support kids' learning where and however it can happen for years to come.

Although we can't predict the future, we understand that to meet the challenges of tomorrow, what takes place in traditional brick and mortar classrooms, time-honored exhibit halls and typical out-of-school spaces needs to change. We need to move from an industrial-era approach of one educator imparting information to many students, to one that allows students to place inquiry at the center of their own learning and be nurtured by caring adults and mentors.

We know that kids spend only 14 percent of their time in school. And we understand that learning doesn't start and stop at the school door. In Pittsburgh we're focusing on principles of connected learning that link academic achievement, social networks and personal interests with smart mentors to spur young people to learn anytime, anywhere.

Hands-on, self-directed exploration is so important to kids' understanding of their world and their place in it. To this end, in Pittsburgh we're focused on expanding opportunities for kids to engage in digital platforms, "maker" culture and learning that is STEAM focused (science, technology, engineering, art and math). We are ensuring that kids can use new digital tools along with traditional hands-on learning to develop key skills and global competencies of the future, such as critical and systems thinking, collaboration, facing adversity and diversity, and finding solutions to problems on their own.

Museums are a key part of this work in our region.

For example, educators at the [Children's Museum of Pittsburgh's MAKESHOP](#) have created a rich informal learning

environment for children to make "stuff" alongside artists and technologists. It's a place for hands-on, project-based learning. Kids can sew, tinker with woodworking and create circuitry, as well as work on computer programming, stop-motion animation and laser cutting.

Community partnerships have been an important part of MAKESHOP's work. In addition to hosting field trips and professional development for educators, they work regularly with a Head Start classroom in the museum. They've also taken MAKESHOP on the road to regional schools and parks, and have plans to establish satellite sites at [West Liberty University](#) and the [Wheeling Children's Museum](#).

"You can't flunk at a museum," the museum's executive director, Jane Werner, [said recently](#). Werner sees museums as labs that can inspire the next generation of artists, scientists, engineers and their teachers. Werner always reminds me that museums can work at the edges of educational innovation and help inspire more formal learning spaces to grow and change in new ways.

To that end, also in Pittsburgh, the [Carnegie Museum of Natural History](#) will soon

The Children's Museum of Pittsburgh's MAKESHOP is a space for children and families to make, play and design using "real stuff"—materials, tools, processes and ideas. Photo: Anthony Musmanno



be home to one of four local classroom simulators, an immersive learning environment where visitors have to work together to solve complex problems. The simulator—part video game, part classroom—is equipped with embedded iPads for each visitor to control, and is specifically designed to build kids' interest in STEAM subjects and to help hone teamwork, critical thinking and problem-solving skills.

Another example of innovation, this time in the classroom, is the great work going on at the Elizabeth Forward School District. There, students can bring algebra and other abstract concepts to life in [SMALLab](#), a Wii-like mat with projectors and motion-sensing cameras. Students can physically move molecules together to watch their reaction or map a graph by pacing out the points on a mat. [The district has transformed the school's library](#) into a digital space for teens modeled on the cutting-edge [YOUmedia spaces](#). In these new spaces, classes are tackling project-based learning, as they did recently in creating apps for the Andy Warhol Museum and murals for their own school buildings. Across town, students in Avonworth High School are working with artists from five museums—the Warhol Museum, the Carnegie Museum of Art, the Mattress

Factory, the Pittsburgh Glass Center and the ToonSeum—to design, create and manage their own [exhibition spaces](#).

As future citizens of the global world, today's students must learn how to learn. They must learn to develop their own interests, find creative solutions to problems, experiment, fail and start over with new ideas. No one organization should or can shoulder that responsibility alone. Organizations in Pittsburgh recognize that today's youth are navigating technological, cultural and scientific innovations that demand fresh thinking on our part about how we prepare them for futures we can't yet imagine.

The citywide networks of learning that we've established here in Pittsburgh are cementing those opportunities. We can't wait to see what's next.

In his eighth year as executive director of The Grable Foundation, **Gregg Behr** manages a grantmaking portfolio advancing high-quality early childhood education, improved teaching and learning in public schools, and robust out-of-school time support. From 2002–2006, Behr served as president of The Forbes Funds, a Pittsburgh-based foundation that supports nonprofit capacity-building, research and leadership development. Nationally, Behr is a trustee for [GreatNonprofits.org](#) and Grantmakers for Education. He is a former board chair of Grantmakers for Effective Organizations.



■ Empowering Statewide Museums and Libraries as Integral Educational Partners

By Jeri Robinson, Vice President, Early Childhood Initiatives, Boston Children's Museum

Founded in 1913, Boston Children's Museum just celebrated its 100th anniversary. The "children" of 1913 were neighborhood youth between the ages of 8 and 18. In the first year of operation, 65,000 children—individually and in school and community groups—attended, all for free. BCM's goal at that time was to train children to observe accurately and think logically as a way to make them better citizens. Outreach programs focused on serving low-income and immigrant children.

While many of our original goals and values remain the same, the demographics of our audience and admission fees have drastically changed. Our audience consists mainly of families with children between the ages of birth and 10, with the majority being children under the age of 5. Now all visitors over the age of 2 pay a \$14 admission fee. An array of affordable options include \$1 Friday nights, \$2 Electronic Benefit Transfer (EBT) cardholder admission, sponsored visits and library passes. Last year we hosted

*Looking through a magnifying glass at the Boston Children's Museum.
Photo: © Paul Specht*





Boston Children's Museum celebrates cultural diversity and creative play in Boston neighborhoods. Photo: © Megan Dickerson

over 550,000 visitors, including 65,000 children under the age of 3.

Education, families and children have changed over the past century, and so must museums, if they want to remain relevant. BCM has had a robust early childhood program for a number of years and has been very engaged with the Boston community regarding school readiness initiatives. In 2012 BCM partnered with the Massachusetts Department of Early Education and Care (MA EEC) and submitted a proposal, based on our school readiness work in the Boston area, to share those ideas and to provide materials and training to museums and libraries across the commonwealth as part of the Massachusetts submission to the Race to the Top—Early Learning Challenge grant. The grant was funded, and we were off to spread our work statewide and, most important, to meet and collaborate with many museum and library colleagues.

The recent report from the Institute of Museum and Library Services (IMLS), *Growing Young Minds: How Museums and Libraries Create Lifelong Learners*, begins by saying, "Libraries and museums can

play a stronger role in early learning for all children. The experiences, resources and interactions provided by libraries and museums build brains and fuel a love of learning." BCM's Race to the Top—Early Learning Challenge Grant—Museums and Libraries Partnership for Parent, Family and Community Engagement (M/L Project) is building brains and fueling a love of learning. While we originally planned to collaborate with 17 institutions, as of September 2013 we are working with over 300 museum and library educators across the commonwealth.

We are grateful for the volunteer advisory participation of Shelley Quezada from the Massachusetts Board of Library Commissioners (MBLC) and the Massachusetts Library System (MLS). The vast M/L Project is currently working with 56 public libraries including the five libraries currently funded by the Department of Early Education and Care to hold the early childhood collections of the state.

We are also working with 67 Coordinated Family and Community Engagement (CFCE) specialists who are contracted by the MA EEC and work in communities across the entire commonwealth. Many CFCEs already had strong working relationships with their local museums and libraries, and welcomed the opportunity to expand on their relationships and collaborate.

In the western parts of Massachusetts, where museums and libraries are scarcer, the CFCEs have become the way to distribute the kits and train the trainers so that they can go out and deliver these resources to smaller libraries whose limited hours and staffing prevented them from participating.

What We Have Learned from Our Partners:

Museums already offer educational and engaging activities and programming every day. The challenge is that not everyone can afford museum admission prices. While BCM admission is \$14 per person, alternatives to regular admission are growing. By subsidizing admission at certain times of day or by honoring EBT and WIC cards, many museums are working to become affordable to all. Still, resources are constantly needed to help subsidize admission fees or travel assistance and pay for necessary staff.

Many CFCEs are collaborating with their local library. CFCEs often fill in the gaps when libraries don't have staff for story hour or special programs. CFCEs bring family engagement activities to the library.

More ways to reach families are needed. The United Way is experimenting with a new online "Resource Locator" that could help families locate museums, libraries and other family-friendly institutions. We also need a commitment to intentional outreach programs that invite families into museums and libraries for the first time.

Unexpected Connections and Happenings: Seeds in the Greenhouse

The foundation of our Race to the Top work is our relationships. Over the past two years, we have found new partners with common goals and worked together towards some new outcomes. We like to think of our grant as a "greenhouse" where we can plant seedlings and see if they grow.

BCM received the IMLS National Medal for Museum and Library Services and participated in the researching and publishing of *Growing Young Minds*. The full report features BCM's Race to the Top, lending credibility to our work.

Much of our work needs to take place out in our communities, listening, observing and responding to issues facing schools and families, and determining how we can be of service. To do this we need to look at our internal culture. Who is on our team? How do we reflect our community? What is our responsibility? If we want different outcomes, then we need to be sure our inputs are the best they can be.

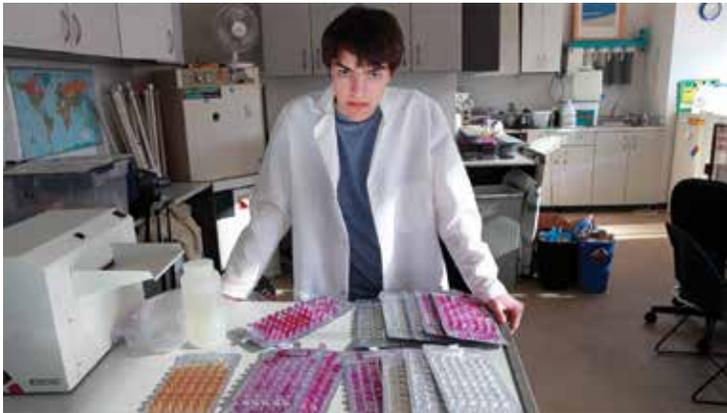
As we begin our 101st year, BCM is working to re-envision who we are in our community, not just in our education department, but throughout our institution.



Jeri Robinson is vice president, early childhood initiatives at Boston Children's Museum (BCM). She has more than 40 years of experience in teaching and consulting in the fields of early childhood and museum education. Robinson received her B.S., M.S. Ed. and an honorary doctorate in education from Wheelock College, and serves on numerous boards dealing with family, community, multicultural and early childhood education issues.

■ Taking It National and Global: A Value-Driven, Project-Based Learning and Innovative Credit-Earning Model

By Elliot Washor, Co-founder and Co-director, Big Picture Learning



*Noah Thoron, a student at a Big Picture Learning school in San Diego at his internship at San Diego CoastKeeper. He designed an auto sampler that tests rivers and streams during the rainy season.
Photo: Vanessa Carr*

“One of the most remarkable things about us is also one of the easiest to overlook: each time we collide with the real, we deepen our understanding of the world and become more fully a part of it. While we’re wrestling with a difficult task, we may be motivated by an anticipation of the ends of our labor, but it’s the work itself—the means—that makes us who we are.”

—Nicholas Carr

Schools must provide students with opportunities to learn and work on projects that are nested in the real world of museums, businesses, organizations and communities. Such projects are not prepackaged around simple problems, but reflect the dynamic complexity of those settings.

The world outside of schools provides abundant settings and contexts in which students can “collide with the real” and

apply what they know. It is through such applications that students understand the messiness and uncertainty of making things work in the real world. Such opportunities allow students to develop tacit understandings and heuristics. There are few substitutes for the learning that results from delivering a product or service that others value.

Over the years, museums have shown in a variety of ways that they are very good at getting students to deepen the learning process. When young people take day trips to museums with their families and friends, they explore their vast resources. Some of these students linger and become an explainer of exhibits or just spend loads of time wandering through the place. There is also a sector of students who get involved in after-school programs that museums offer around exhibits and themes. All of this allows students to interact on their own terms with the world outside of their homes, computers and schools.

Some students attend one-day museum events where they are inspired and then do some work back at school with museum-provided kits, or go online and continue a project. But even the best work coming from museums or schools can be better and deeper. We at Big Picture believe that if both places started at the outset with the student’s interests—allowing enough

sustained time to really go deep—then we would have very different outcomes. Students need to develop relationships with objects and with adults who spend their lives studying and presenting their work in a world full of problems and uncertainty. This builds the kind of social capital that lasts a lifetime. Museums and schools typically teach with way too much certainty to engage students over any length of time, or in ways that matter to them and hold deep meaning.

In our Big Picture schools, every student is engaged with objects and adults around their mutual interests. Students leave the school building and do projects with adult mentors in their work places. Teachers credit students' work as authentic, deep and sustained learning. Our students are at museums all over the country, from Newark and New York to San Diego, Los Angeles and Oakland. Whether they are in maker-spaces, developing exhibits in the natural history section of a museum, conducting experiments on chamber music or studying mollusks, their work looks different, deeper and better than any work that a museum or a school can do alone or in distant collaboration on or off line.

Schools must take down the walls that separate the learning that students do (and could do) in school, from the learning they

do (and could do) outside. The learning in both settings and contexts must be seamlessly integrated. We call such learning “leaving to learn.”

Recently Richard Elmore quipped, “It is a great time to be learning, especially if you are out of school.” We get his point. It is not difficult for schools and museums to work together to ensure that learning is connected both in school and out of school. What it takes is an innovative approach to develop deep learning where, as Carr suggests, the means are not cut off from the ends.

At the conference, I started my talk with an image of a Möbius strip. One way to make a Möbius strip is to start with a two-dimensional piece of cashier's tape, add a half twist to it and apply glue or tape the ends. This brings the strip into the three-dimensional world. We have to do the same thing with our schools and museums. When schools and museums put the ends together, we engage students through their interests in deep and sustained ways. They are credited for work that matters to them, their school, the museum and their community. Instead of doing the same thing we have always done, we need to forge those connections to create a new ecosystem for each and every student.



Elliot Washor, Ed.D., is the co-founder and co-director of Big Picture Learning—a nonprofit transforming education one student at a time—and the co-founder of The Met Center in Providence, Rhode Island. He is also the co-author of *Leaving to Learn: How Out-Of-School Learning Increases Student Engagement and Reduces Dropout Rates*.

Needs-Based Systemic Change in the Learning Ecosystem: Students, Teachers and Museums

■ One Size Does Not Fit All

By Nikhil Goyal, Activist and Author, *Reclaiming Our Freedom to Learn* (forthcoming)

“
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from within
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but from
outside.”

In the summer of 2010, I went on a family trip to India. Looking at the school system there, I was really intrigued by some of the experiences students were having and noticed a lot of parallels between the Indian and the American systems. At the same time, I was reading a book by Tony Wagner entitled *The Global Achievement Gap*, which opened my eyes to a lot of the problems I was noticing in my own school.

After I came back from India, I moved from Bethpage, New York, to Syosset, New York—going from a middle-class school district to one that’s very wealthy and competitive, where a lot of kids are admitted into Ivy League institutions. Once I got into that school, it was a disaster. Many of the problems that I had been reading about were unfolding before my eyes. Kids were stressed out, very competitive, cheating and uninterested in anything beyond getting into college. I wondered: Is this just happening to me? Or are other kids experiencing the same thing? I went around the country and started to talk to students. I conducted research and interviews with people in education: teachers, students, administrators and entrepreneurs.

Based on this research, I wrote a book, which was published in 2012. I realized that the biggest change in education is

not necessarily going to come from within the system but from outside. Educational reformer Ivan Illich, in his book *Deschooling Society*, says that he wanted to move away from schooling, which he believed was damaging the minds of young people, and towards a self-directed, community-based approach. Interestingly that was back in the 1970s when we did not have the Internet and a lot of the other resources we have now that can propagate change. Today I see the biggest changes in education happening in makerspaces, hacker-spaces, libraries, museums and informal learning spaces.

A few years ago in San Francisco, for example, there was something called “100 Days of Spring.” Two activists converted an old boutique shop into a learning environment for people of various ages, backgrounds and skills. On a bulletin board, people would post, “I can teach pottery, sewing and computer programming, and these are the hours I’m available,” all free to people who wanted to learn those things. They had an extraordinary exchange of skills and knowledge for a brief period of time. Unfortunately it closed down, but there have been many other similar spaces, such as the [Brooklyn Brainery](#) and [\[freespace\]](#) in San Francisco, that embody a very egalitarian notion of learning. In these

environments, it doesn't matter whether you've graduated from Harvard or whether you are a college dropout. What matters is what you bring to the table, and what you want to learn and what you're really interested in.

This harkens back to 17th-century English coffeehouses, where people came almost every day to learn the latest gossip and news about what was going on in the town. These coffeehouses were extraordinary places for innovation, collaboration and, most important, the mingling of people with different ideas and from different fields. In today's society, we are so detached from one another that most of us don't even know our next-door neighbors. Most of us don't talk to people in our community or neighborhood unless there's an absolute need to do so. There's huge potential for cities and communities to address this detachment, and I think museums, libraries, makerspaces and community centers are going to be a part of the solution.

Imagine if school were noncompulsory, and we created the city as the school itself. What if we opened the floodgates and said to children, "You can learn however you want to, wherever you want to, with whomever you want to, and we're not going to put

rules or guidelines on you. It's just like real life." John Holt likes to say that learning is just like living, and there shouldn't be any separation between the two.

I think that the biggest potential for changing the educational system is when people push from the boundaries, from outside to the inside, making sure that places like museums, libraries and makerspaces become instrumental parts of this change. A lot of people are opting out of formal institutions (for example, I decided not to go to college right out of high school), and a lot of people are starting to question the value of higher education and college. People are questioning the traditional norms of society and seeking out places of egalitarian spirit where it doesn't matter what credentials you have—what matters is the knowledge you bring to the table. We're seeing that communities, cities and people want to collaborate with one another. We want to know our neighbors, we want to know people in our communities, we don't want to be detached in our homes and in our schools. I think it's time to understand that this change doesn't necessarily happen in formal institutions. It's going to happen when we realize, as Holt did, that learning is just like living.

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At age 18, **Nikhil Goyal** is an activist and author of the forthcoming book, *Reclaiming Our Freedom to Learn*. He is currently working on the City as the School experiment and a Student Bill of Rights. He has appeared as a commentator on MSNBC and Fox and has written for the *New York Times*, MSNBC, NPR and *Forbes*. An international speaker, Goyal has spoken at Google, The Atlantic, Fast Company, NBC, MIT, Stanford University, Barnard College, SXSW and others. He lives in New York.

■ A Student Bill of Rights

By Erik Martin, Game Designer and Student Leader

“
We should
reward schools
and institutions
that show
progress
towards a
learner-centric
style of
educating.”

I am a student. As a student, I will admit I have gotten a little tired of being left out of the education reform movement and conversation—a movement meant to empower my generation and those following. For that reason, I want to applaud the American Alliance of Museums' commitment to engaging student voices in this process. AAM is doing what many other groups are failing to do: engaging my generation and recognizing that we are the ones who are most subject to coming change. Furthermore we will be the eventual inheritors of the system, and will judge how effective change really was. If we want meaningful education reform now, those pushing education reforms must start listening to students more seriously.

Certainly it isn't only AAM that is listening to student voices; many of the organizations that were present at the Future of Education convening held in September are doing their part to listen to students as well. Other students and I are thankful for those groups, and hopeful that others will follow suit.

First, though, I want to share a bit of my own story, because I believe it highlights many of the fundamental flaws within our current education system. In the later part of my 8th grade year in middle school, I found myself grappling with severe anorexia nervosa, largely as a result of an education system that felt more like a cage than a haven. The feelings of helplessness and depression I faced in school were not unique to me,

and say what you will about the millennial generation, the fact remains that according to the National Institute of Mental Health, we are the most depressed generation in U.S. history. Mental illness is a complex beast, and I won't try to capture all of its factors here, but I would hypothesize that school plays a major role when whole generations are concerned.

It seems likely that the more we standardize, structure, belittle and pressure students to do what they're told, a feeling of depression is only a natural reaction. Under the immense stress of high-stakes testing, and the low expectation for teachers to be creative in their classrooms, students increasingly bear a misguided burden. Raising a school's test scores does not raise the student's ability to succeed in today's modern world. We have become fixated on filling in bubble sheets when we should be fostering creativity, critical thinking, teamwork and each individual's passions. This is about more than just education reform; it is about correcting mistakes that are harming children and their futures. That might be a strident statement to make, but I feel it is an important one to recognize.

I do not mean to paint a doom-and-gloom picture, however. I think positive change in the system is not so hard to create, but we do need to be strategic if it is to be large-scale change (which it must eventually be). In many ways, what we face is a challenge of value: schools are often stretched thin on

resources, and entirely redesigning how an institution allows students to learn can seem like an extravagance rather than a priority. What's more, the funding mechanisms for most schools in the U.S. revolve around standardized test performance, so achieving higher scores to receive more funds takes precedence over serious reform. I believe that if we change this dynamic, even a little, we can shift the goals of our education institutions. We should reward schools and institutions that show progress towards a learner-centric style of educating.

This shift in value for rewarding innovation also extends to the museum community. Museums that actively extend their institutional borders to merge with the traditional education space should share the opportunity to benefit from doing so. It would be a symbiotic relationship: schools that innovate by providing students experiential learning opportunities outside of the classroom (like at museums) would be rewarded and highlighted, and the museums, libraries and other actors would also benefit from providing new educational outlets.

Many, if not most, people want to see a shift in education towards a learner-focused system. But wanting change and changing are two very distinct things—especially when we talk at the institutional level. Ideas,

as they say, are cheap. What we need most of all is pragmatic incentive to change. We need to shift where the system dictates money should go, even if it is only a small shift at first. Admittedly I am discussing more “cheap” ideas here, but for my part, small as it is, I am working to solidify some of these ideas.

Currently I am organizing students across the United States to form a cohesive task force called “We the Students.” We are working on a National Student Bill of Rights, informed by what I hope will be thousands of fellow students and kids to clearly define the rights learners should have in the education system we desire. We will then transform this document into the foundation for a new certification process for schools, museums, libraries, etc., that shifts where value is placed in our system to where it should be: helping all children fulfill their passions and be the masters of their education.

I am optimistic about the future of education. Maybe that is because I'm young and naive, but I do see signs of improvement. I implore everyone to reach out to students as we work forward for change. Together we can build something better, one school, museum and library brick at a time.

“
I implore everyone to reach out to students as we work forward for change. Together we can build something better, one school, museum and library brick at a time.”



Erik Martin is a game designer and a sophomore at the University of Maryland. He currently works as a consultant with the international development agency FHI 360 to create games that promote peace and civil society, co-leads the ScienceOnlineTeen unconference in New York City and is developing the National Student Bill of Rights initiative. He has worked for the Federation of American Scientists and the U.S. Department of Energy, and served as a page in the U.S. House of Representatives and the Maryland General Assembly. Most important of all, when he has the time, he co-leads the online guild Vanguard Gaming.

Lessons from a National Education Leader's Journey

By Rebecca Mieliwocki, 2012 National Teacher of the Year; Teacher, Luther Burbank Middle School

“
The average
American
teacher feels
pretty glum,
battered and
beaten up.
We walk
around with
our heads
hung low
because we
feel so
lousy that we're
not number
one.”

I want to start by telling you about Mr. Callison, and about Adam Braunstein, my nemesis. When I was in 6th grade in Napa, California, we were out on the playground during recess and Adam Braunstein called me a name. It must've been a really bad name—I've blocked it out completely at this point—because I fled back into the classroom and fell weeping into the arms of Mr. Callison, demanding that he do something about the insult. I was hysterical, saying, “He called me a name, you have to punish him!” I was wailing and crying and rending my garments, and he said, “Why don't you do something about it?” I thought, “Oh, he's giving me permission to beat him up. If you want me to beat him up, I'll beat him up! You want me to hit him in the knees?” But he said, “Not at all, not that at all. Why don't we take this to the class and solve this constructively?”

On the fly, from out of right field, here came a student asking the teacher to solve a problem for her, and he put it right back on my shoulders and said, “Let's help you solve it for yourself.” We had this cool class setup called the Game of Life where we all lived in “neighborhoods” in the classroom. We each held jobs, earned income; basically we were playing at being grownups. Mr. Callison said, “We will create a courtroom, and you will sue Adam for defamation of character and you will argue your case in front of the court of your peers. If you win you can fine him

and the jury will determine how much he has to pay you.” So we moved the desks all around, and I had to quickly come up with my arguments and Adam had to come up with his defense.

There I was, standing there, just minutes later, making a case for why Adam Braunstein was a horrible human being. In the middle of making this case, I had a kind of out-of-body experience—which is really weird because when you're 11 and in 6th grade, you're trying to figure out your body and how to be in it, much less have an out-of-body experience. There I was hovering over myself, going, “This is so cool, I like this, I like talking to them about big ideas and this is good. I wonder if I could do this for a living?” I tell this vignette when I'm giving speeches to five or 10 thousand people and I step away from the podium and go, “Look where I am now!” Because when I was 11 years old, out of nowhere, a teacher gave a young girl a chance to argue for herself and to engage in a classroom activity that was not standards based, would not be tested and on which the teacher himself wouldn't be evaluated.

In that exact moment, I discovered what I wanted to do with the whole rest of my life. It's been 34 years since then, and I'm so thankful for that moment when Mr. Callison saw what I could do to become the person I was meant to be. That's what he did: shoved

aside convention and created an opportunity for a student. I think all the students in that classroom were changed by that moment because it was out of the ordinary, but it was highly personalized to me.

I was recognized as the National Teacher of the Year because I sought to become an educator like Mr. Callison, to give kids the space and the quiet for them to discover what they are supposed to be when they grow up. I had to push back against the pressure in the classroom to get good test scores and against everybody else's need to get something out of my kids. I had to push back against what society felt was right for students to know—which is really to choose “C” on multiple choice tests—and instead say, “What do you want to know? What do you need to learn?” I had to become the biggest learner in the classroom. That's what I spent my time doing—being a seeker, looking deep within each kid to hear what is a really quiet cry (even though they're 11, they're really loud) about what's important. What matters? What am I into? What do I need? And then, what can you give me to optimize that? How can you set them clearly, carefully and with as much tenderness and fiduciary responsibility as possible on that path?

I think that's why I was selected as National Teacher of the Year by the Council of Chief State School Officers (CCSSO) in 2012. I know I'm not the best teacher—there are 3.2 million of us! I'm not even the best teacher in my building and I'm pretty sure about that because I've stolen all of the best ideas from my favorite teachers, anyway. (Thank you, Mr. Callison.) CCSSO takes the National Teacher of the Year out of the classroom and they send you everywhere. I swear I was in airports more than anywhere else. I went to eight nations—Russia,

Japan, China, Singapore, Australia, the Netherlands, Guam, Saipan—to look at their educational systems. I also went to 30 U.S. states, visiting classrooms and colleges to see what's going on. They sent me overseas to generate some context for the conversations about international competitiveness and global comparisons.

I'm so glad that they did that, because here's how I started out: I went to China and Singapore to find out what their secret for education is, because they always best us on these international rankings. The average American teacher feels pretty glum, battered and beaten up about that. We walk around with our heads hung low because we feel so lousy that we're not number one. So I thought, “I'm going to go there, I'm going to be quiet and listen, I'm going to observe everything and I'm going to discover what the 'secret sauce' is, I'm going to bring that back and share it with every teacher I meet this year and everyone that I happen to interact with for the rest of my career.” And before I left, people said to me, “Rebecca, they're testing factories. You're going to see them just teaching kids how to ace tests and get into great colleges.” And I said, “No, no, no, right away that's way too simplistic of an answer.” Things are usually more complicated than that. I went with a really open mind to look for the greener grass.

But I saw exactly what people told me I'd see: rote instruction, kids going to school from sunup to sundown, academics [from morning until night](#). I didn't see enrichment: art, music, dance, field trips—the things that round out a human being and put them in touch with their humanity. I did not see happy kids, I did not see happy teachers. When I said to my hosts (because I was still impressed by their accomplishment and embarrassed about ours), “It must

just feel so good to be number one! Congratulations. I'm so excited to be here and honored to get to learn at your feet, you are the masters," I was quickly and loudly shushed everywhere I went, especially in Shanghai, at the number one and two schools in the world—shushed! Don't talk about that, they said. They said their ranking was a hollow victory.

They said: We know that our number one status does not mean that we are the best. It just means we can get kids into college, we can get them to pass tests, we can give them knowledge that they then can regurgitate to us, but we do not create kids like you create them in America. How do you do that? How do you create such innovative, creative and nimble thinkers? How are your kids so confident about trying and failing and trying again? How do your kids communicate like crazy, so much that you can't keep them from talking to each other?

Have you been in an American classroom lately? It's a noisy place; it's a beautiful, chaotic, stimulating array. It's wonderful, and in classrooms elsewhere in the world that just doesn't exist. They wanted to know how we foster that chaos. How did we do what we do? They were envious of all

of us in America, and that blew me away. Every single place I went, they wanted to know how we do what we do. That is the good news that I bring to you today from overseas. There are other things to emulate in other systems, but what we have here in this country is one thing that they don't have, and that's the ability to create incubational space where we say, What do you want to know? How do you want to learn it? How do we know that you've gotten it? When will we be done?

In the best schools, we let kids drive that conversation. In some of the greatest classrooms in this country, I saw that happening. Everywhere I went in this country, from California to Connecticut, from Orlando to Minnesota, I saw what I didn't see overseas: amazing creative things happening in classrooms, where teachers are pushing back against the pressures of testing and standardization and assessment, and saying instead, "Who do I have with me? What do they need to know? What do they want to know, and how do I facilitate and optimize that experience for them?" I went looking for the greener grass and found that our own grass is a spectacular, highly coveted and beautiful shade of green all its own.

Rebecca Mieliwocki is a 7th-grade English teacher with over 14 years of teaching experience at Luther Burbank Middle School in California. She holds a B.A. in speech communication from California Polytechnic State University and her professional clear credential in secondary English education from California State University Northridge. In 2012, Mieliwocki was honored as the National Teacher of the Year.

She is the 2005 California League of Middle Schools Educator of the Year for Southern California, a 2009 PTA Honorary Service award recipient and a Beginning Teacher Support and Assessment mentor, and has also served as a teacher expert for a CSUN College of Education Panel titled "The ABCs of IEPs."



The Challenge of Scaling Up

Museums in an Age of Scale

By Michael Edson, Director of Web and New Media Strategy, Office of the CIO, Smithsonian Institution

My message to the Future of Education convening was simple, even stark: if we want to take on the challenge of improving education in America, we've got to get big or get out. Half-measures won't cut it.

Every organization, every discipline, dreams. When we close our eyes, we picture ourselves practicing our craft at the peak of excellence: teaching, provoking, spreading joy, having profound impact in our communities. But even dreams have limits, based on our experience of what is possible. Dreams come in different types and sizes. Different scales.

Our industry, museums, forged our dreams in the 20th century when being successful meant having impressive buildings full of experts, big collections and visitors through the doors. That was our reality. There was no Internet yet, and we could imagine no other type of success. In that world, we dreamt about things like bigger, better buildings, rock-star curators, preeminent collections and more visitors.

The East Wing of the National Gallery of Art in Washington, DC, opened in 1978 with 4.6 million annual visits. It has roughly the same level of visitation today. Is that the fulfillment of a big dream? How you answer that question depends on what you think the mission of that institution is and how you think about scale, but either

way, zero percent audience growth and incremental improvements in facilities, collections and staffing over 35 years reveal a question about whether we are using the best dreams to shape and implement our missions.

The TED conference has served over a billion videos since 2006, the year they started a small experiment to put videos online. They tried it, it seemed to work, so they tried some more, and now they have delivered a billion videos. The TED team didn't do anything that a museum couldn't have done—no aspect of TED's strategy, tactics or operations requires huge teams or huge budgets, and even the TED motto, "Ideas worth spreading," is hauntingly museumesque. But their vision, their sense of their role—their responsibility, their *obligation*—in the world of the 21st century is clear, as is their understanding of scale.

The National Gallery of Art would have to operate for 217 years to have a billion visitors, but is a TED talk as good as a museum visit? Is any online experience as good? There's a lot of doubt among museum leaders that online experiences can be as authentic, as impactful, as a visit to a museum. But try Googling "TED talk made me cry" and then read [Art Museums and the Public](#), a 2001 report by the Smithsonian Institution Office of Policy and Analysis, which concludes:

One of the most striking results of this generation-worth of museum audience studies is that the explicit aims of exhibition planners are rarely achieved to any significant degree. In study after study ... researchers found that the central goals of the exhibition team (which are usually learning goals) were rarely met for more than half of the visitors, except in those cases where most visitors entered the museum already possessing the knowledge that the museum wanted to communicate.

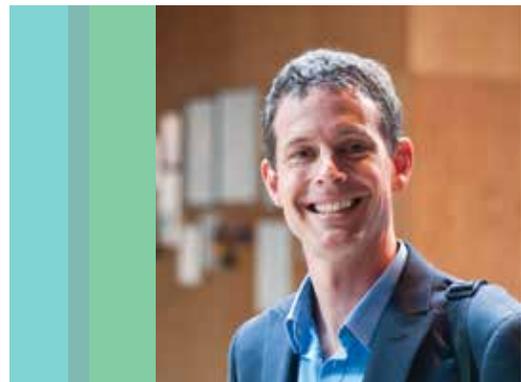
Art historian Beth Harris told me her own feelings about the reality of museum visits:

It isn't this amazing, contemplative, aesthetic, transcendent experience. It's jostling crowds, it's feeling hungry, it's being annoyed by the people you're with sometimes, it's feeling disappointed that you can't have the reaction that the museum wants you to have—that you don't have the knowledge and the background to get there. I mean, it's a whole range of complicated things.

Beth Harris, and her collaborator, art historian Steven Zucker, attended the Future of Education convening. Beth and Steven reach 200 students a semester through the traditional practice of teaching art history in their classrooms, but this semester they'll reach 2 million learners *from 200 countries* through their open educational resource, Smarthistory. The Khan Academy, a free, online educational website of which Smarthistory is a part, reaches 10 million learners a month. MIT's Open Courseware project served 100 million people in its first decade, and their goal is to reach 1 billion learners in the next 10 years.

Our dreams drive us forward. Museums accomplish wonderful things in society, but *a billion learners*—that's the kind of dream we need to have.

Michael Edson is the director of Web and new media strategy in the Smithsonian Institution's Office of the CIO. He has worked on numerous award-winning projects and has been involved in practically every aspect of technology and new media for museums. Edson helped create the Smithsonian's first blog, "Eye Level," and the first alternative reality game to take place in a museum, "Ghosts of a Chance." He is an O'Reilly Foo Camp veteran and serves on the Open Knowledge Foundation's Open GLAM advisory board. He was named a "Tech Titan: Person to Watch" by *Washingtonian* magazine.



■ Every Child a Changemaker

By Laura White, U.S. Changemaker Schools Manager, Ashoka

The world is changing faster than ever before. Our success—as individuals, institutions and a society—increasingly depends on our ability to be changemakers, equipped with the skills and mindset to see through problems to solutions.

Over 30 years, Ashoka has identified and supported 3,000 leading social entrepreneurs around the globe. These Ashoka Fellows are innovating new solutions to entrenched social problems, creating systemic change for the good of all in every area of need. Being at the center of this network provides us with a deep understanding of the key levers for bringing about structural social change in society, across industries and sectors, and a prime vantage point to spot key patterns and trends.

The most significant trend today is the shift away from a world where power was concentrated in the hands of an elite few, and success for everyone else depended on their ability to perform repetitive function work. As change accelerates in the world, everyone increasingly has a powerful role to play, and success depends on a new set of skills that allow one to collaborate and lead, see beyond silos to adopt new perspectives, problem-solve quickly and creatively, and drive change.

How do we prepare children and young people to thrive in this world? We must

rethink the experience of growing up and the substance and process of education to ensure young people are equipped with this new set of skills. Ashoka has learned from its Fellows that empathy is a foundational capacity that children must develop to prepare them to then master other critical skills of teamwork, leadership and change-making. With the guidance of these fellows, we have been searching for Changemaker Schools across the United States that cultivate students as empathic leaders who can work in teams to solve shared problems. However, schools are not the only institutions that must support these skills in students. In order for all children to master these changemaker skills, museums must play a critical role in transforming the youth years.

Fortunately, there are already innovative examples to look to in the museum ecosystem. Schools like Opal Charter School, chartered by the Portland Children's Museum, are modeling school-museum partnerships that enhance students' mastery of both changemaker skills and academic content. They are also sharing their knowledge with other schools through innovative efforts like the Museum Center for Learning. Museums like the Phillips Collection are partnering with schools to improve student learning through creative programming both inside and outside the museum's doors.

Our critical task now is to identify innovations that work and scale them to more museums, schools and learning communities around the country.

To promote the spread of empathy innovations, Ashoka has designed an “empathy roadmap” to evaluate and describe best practices at schools, museums and other institutions. To ensure every child becomes a changemaker, we must identify the creative programs and practices at museums that create a learning environment that inspires students, engages students in investigating the world’s biggest questions, and challenges students to reflect and act on their insights.

Join us in collecting these innovative ideas. Submit a museum practice or story to Ashoka’s Start Empathy Initiative by e-mailing me at empathy@ashoka.org, and it may be featured in our toolkit or on our Start Empathy blog. We also encourage you to tell us about innovative elementary schools that work with museums and other community partners to promote empathy and changemaker skills in students.

Laura White manages Ashoka’s Changemaker Schools Network, a community of outstanding elementary schools that cultivate their students as empathic and collaborative leaders. White has been dedicated to creating an “everyone a changemaker” world since high school, when she started an organization to provide free swimming lessons to low-income children with the support of Ashoka’s Youth Venture. As an undergraduate at Tulane University, White worked with the university’s Ashoka U team to start a social venture incubator, build the university’s minor in social innovation and incorporate social entrepreneurship into the introductory teacher certification class. She has researched changemaker education and is passionate about ensuring every child masters empathy—the most fundamental of changemaker skills.



A Call to Action

By Elizabeth Merritt (Center for the Future of Museums, American Alliance of Museums) and Paula Gangopadhyay (The Henry Ford), Co-conveners, Future of Education symposium

Participants at the convening unanimously preferred the optimistic scenario presented by KnowledgeWorks' Katherine Prince—a “vibrant learning grid”—to the depressing prospect of leaving our children and grandchildren to navigate a “fractured landscape” of education. Their challenge, on the second day of the gathering, was to generate ideas about how to guide our future towards this preferred vision.

In this summary, we present a selection of these ideas. These suggestions encompass practical, short-term steps needed to sustain this conversation about the future of education, as well as big, transformative ideas that would need considerable effort, energy and funding but could create radical change and redefine the role of museums in the learning ecosystem. We have grouped the ideas under the following headings:

Spreading the Word: compiling and sharing information needed to guide planning and decision making

Disrupting Conventional Dialogue: promoting ideas that disrupt conventional thinking about education and expand our conception of the educational landscape

Creating Systemic Change: implementing radical experiments that could increase the role museums play in education

We conclude with steps that convening participants and readers of this white paper can take, individually and organizationally, to scale-up the conversation about educational reform and drive change in the learning ecosystem.

Spreading the Word:

- Create a national database of museum resources that directly support educational goals and learning objectives.
- Maintain comprehensive documentation of how museums are serving education now.
- Identify existing, high-performing digital platforms (e.g., [Khan Academy](#), [Gooru](#)) that can aggregate and distribute museum educational content.
- Unite museums with the entire educational community using a “[Collective Impact Model](#)” approach and include their contributions in the metrics used to track student learning.

Disrupting Conventional Dialogue:

- Launch a national campaign to reenergize the notion of “museums” as educational resources (like the National Parks [Centennial campaign](#), or the [National Arts Education public awareness campaign](#)).

- Foster student activists at each level of learning—grade school, high school, university—empowered to incorporate out-of-school learning into their personal learning plans.
- Improve museums' communication pathways with local schools—for example, creating an intranet or school district “plug in.” This would enable museums to push their content on educational programming, collections options, etc., to teachers.

Creating Systemic Change:

- Recruit and support brokers in each community whose role is to connect local museums with local schools and alternate learning networks (such as homeschoolers), as well as to help museums integrate their resources into aggregation sites like Gooru, Learning Registry, [Reimagining Education](#) and Connected Educators.
- Foster educational systems in which students are encouraged to connect to adult mentors, including museum staff, with expertise related to each student's areas of interest. Capitalize on the role museums can play in fostering communities of interest-driven learners, and serving as connectors and brokers of information, resources and relationships.
- Establish a certification system for education that recognizes schools for their support of self-directed, experiential learning. Supported by an education policy that gives every student the right to access experiential learning provided by all kinds of institutions, schools could get certified in REECH (Rights to Experiential Educational Challenges), and organizations like

museums could get certified as PEECH (Providers of Experiential Educational Challenges). Working together, certified institutions would create networks of accessible, experiential educational opportunities.

- Create a national or state-based system in which personalized learning advisors help elementary and middle school students and families explore the variety of learning opportunities available to them—in school, online and community based—that they may not otherwise know about or have access to. This would help integrate museum programs, volunteer opportunities and internships into personal learning plans. This network could also match teachers with opportunities to participate in other learning environments.

Six Strategic Imperatives

The American Alliance of Museums, The Henry Ford and participants at this convening pledged to contribute to the following next steps, as appropriate to their organizations' missions and resources:

- Disseminate this white paper to foster discussion, generate more ideas and encourage individuals and organizations to take action.
- Strengthen the connections among convening participants, including the exchange of news and research.
- Expand the network of convening participants to include other stakeholders in museums, education, research and civic activism.
- Mobilize additional convenings, small and large, to gather more input, generate more options and recruit partners in our efforts to shape the

future of education.

- Find funding to prototype and test some of the ideas coming out of the convening.
- Distribute information to museums, schools and learners about exemplary and scalable communities of practice (e.g., Rethinking Learning, Big Picture Learning, Race to the Top—Early Learning Challenge, THF Innovation Education Incubator) to increase the impact of these existing initiatives.
- Organize a convening in your community or sector of practice to explore how museums can work with their communities to build the future of education.
- Contribute examples of innovative projects and partnerships that demonstrate how museums can contribute to the educational landscape.
- Identify potential funders to support prototyping and testing educational innovation.

How You Can Become Involved

- Distribute this white paper to museum professionals, educators, policy makers and funders. Host discussions of the content and its implications.

Please contact Paula Gangopadhyay (PaulaG@thehenryford.org) and Elizabeth Merritt (emerritt@aam-us.org) to let us know of your interest in taking any of these steps, or other actions, to help build the next era of education.

Additional trends identified by convening participants as important drivers of change:

- the **growing gap** between training provided by K–12 education and employment opportunities
- how decentralization/specialization options for learning are **creating a social divide as well as a digital divide** (disadvantaging students and parents not prepared to seek out or access nontraditional learning opportunities)
- **expanding access to high-speed Internet**, projected to be universal by mid-century
- rising trend of **fear of failure**, leading to avoidance of risk-taking in curricula, teaching and organization of schools
- increasing **personalization and customization of learning experiences**
- **schools as community centers** integrating all kinds of community services—academics, health and social services, youth and community development, and community engagement
- the rise of the **maker movement** fostering hands-on, experiential learning in community spaces and homes
- the increase in **student-driven activism** and push for choices regarding learning
- adoption of Common Core standards and testing
- the proliferation of **education-related technology** and its impact on teaching and learning

■ Dispatches from the Future of Education

A selection of recent articles, videos and news items illustrating the trends and events shaping the landscape of learning:

[Sugata Mitra: The child-driven education](#)

[Video]

TED talk

July 2010

Education scientist Sugata Mitra tackles one of the greatest problems of education—the best teachers and schools don't exist where they're needed most. In a series of real-life experiments from New Delhi to South Africa to Italy, he gave kids self-supervised access to the Web and saw results that could revolutionize how we think about teaching. Mitra's "Hole in the Wall" experiments have shown that, in the absence of supervision or formal teaching, children can teach themselves and each other if they're motivated by curiosity and peer interest.

[The future of the classroom](#)

CNN Money

January 10, 2013

Despite all the hoopla over gadgets and new software, the future of education really hinges on the shifting roles of teacher and student. "The main shift is away from what I'll call a teacher-in-classroom-centric model," explains Scott Benson, a program officer at the Bill & Melinda Gates Foundation. Instead, Benson says, students will learn at their own pace, using

software that adapts to their strengths and weaknesses. In other words: aided by emerging technology, the teacher-student relationship—and the classroom itself—will be remade. That is the coming education revolution.

[Museums at School](#)

ASCD

February 2013

When students design in-school museums, they enhance their knowledge and their creativity. Such projects can work in any school, with students of all ages. Students can successfully address many topics of importance to a school and community, anything from an intriguing facet of local history to alternative energy sources. Such projects provide opportunities for students to construct and showcase their knowledge as they call forth creativity.

[Children's museum turns focus to school readiness with science exhibit](#)

Poughkeepsie Journal

February 8, 2013

The Mid-Hudson Children's Museum is shifting its focus to kids preparing for school, and its new permanent exhibit, "Fun 2, 3, 4!" highlights that with stations on early science and math education. "This exhibit was chosen and brought to the museum specifically to support a new school-readiness initiative we have," says Lara Litchfield-Kimber, the museum's

executive director. "We're shifting a little bit more in terms of our content and really embracing the educational aspect of a children's museum."

[How Teachers Are Using Technology at Home and in Their Classrooms](#)

Pew Internet

February 28, 2013

A survey of teachers who instruct American middle and secondary school students finds that digital technologies have become central to their teaching and professionalization. At the same time, the Internet, mobile phones and social media have brought new challenges to teachers, and they report striking differences in access to the latest digital technologies between lower- and higher-income students and school districts. The full report, and the original survey questions, can be downloaded from the Pew Internet site.

[Will.i.am launches education scheme at Science Museum](#)

Attractions Management

March 12, 2013

A new scheme to engage disadvantaged youth with science and technology has been launched by international pop star [will.i.am](#), in collaboration with The Prince's Trust, at the Science Museum in London. Funded by a £500,000 donation from the Grammy-winning artist, the scheme will deliver workshops aimed to inspire 13–19-year-olds in science, technology, engineering and mathematics (STEM). It will be delivered by Science Museum outreach staff at the trust's xl clubs, which help young people struggling at school and at risk of exclusion.

[Platform showcases students' STEM skills to future employers and colleges](#)

Springwise

May 28, 2013

GradFly is a platform for young students to build an online portfolio of their science projects, in order to attract colleges and employers when they leave school. Young people taking science, technology, engineering and mathematics courses and participating in computing and robotics clubs at school can often mention these on CVs and application forms, but they don't really tell the full story behind the projects they've actually worked on. Much like Behance does for creative students, GradFly enables users to upload multimedia galleries of their previous high school or college initiatives to showcase their talents in one place. As well as benefiting from the support of a community of peers, GradFly also acts as a place for education institutions and companies to scout out interesting and groundbreaking work, which would otherwise be hidden behind school walls.

[Students Want, But Aren't Getting, 21st-Century-Skills Training](#)

Education Week

May 30, 2013

A new Gallup poll shows that young adults recognize the value of 21st-century skills, such as problem solving, global awareness and communication, but say they didn't get enough of an opportunity in high school or college to develop them. Those who did, however, reported higher job satisfaction.

[Museum education gets innovation recognition](#)

U-T San Diego

June 3, 2013

It seems like a uniquely San Diego notion: an aircraft carrier at the center of classroom innovation. Each year, nearly 50,000 students, parents and teachers take field trips to the USS Midway Museum to study math, physical sciences, social studies and

other subjects in a one-of-a-kind learning laboratory. Taught by a staff of a dozen educators, the students spend part of their time in specially designed classrooms on the massive ship in spaces that used to house a mess hall, bunk rooms and other military functions. The rest of their visit takes them out onto the flight deck and to other areas of the ship to find practical applications to the lessons.

[New middle school set to open in Museum District this fall](#)

Memorial Examiner

June 25, 2013

Houston's 6th graders will possibly have a new school to attend this fall. Houston A+ Challenge is establishing A+ Unlimited Potential, a tuition-free, open-application, private middle school in the Museum District. The school will have 40 6th graders the first year under the instruction of two learning coaches and is accepting applications through July 1. A+UP will take kids of all levels, demographics and socioeconomic status to create a microcosm that best reflects the city of Houston, says Cicely Benoit, one of the learning coaches.

[Why It's Time to Stop Talking And Start Acting to Make Change \[Video\]](#)

KQED Mind/Shift

July 5, 2013

Schools aren't good at innovation, said Grant Lichtman in a TEDx talk given to teachers in Denver. They are big, bureaucratic, risk averse and affected by politics more than smart education policy. Instead schools need to teach students to be self evolving, so they can adapt to change as it comes. That means schools need to become self-evolving institutions themselves, embracing change and preparing kids for their future, not looking back at the past. His challenge to all educators: stop talking about it; start doing it.

[\(Re\)Mapping the Learning Ecosystem](#)

World of Learning

July 6, 2013

A proposition: let's remap our understanding of our learning ecosystem to include the nation's more than 140,000 museums and libraries. These highly trusted institutions, representing almost every academic discipline and present in almost every community, are too often absent from our conversations about the future of learning. Yet many of them provide those meaningful, personalized and accessible lifelong learning experiences that fit the bill—often even better than the classroom—for what John Seely Brown and Douglas Thomas describe as “a new culture for learning,” one that cultivates “the imagination for a world of constant change.”

[Is Public Education on Its Death Bed? Should It Be? Seven Points of Argument, Leverage and Change](#)

Education Week

July 23, 2013

One could easily make the case that public education doesn't work well, is stuck in a previous century, is cumbersome and inequitable, and failing lots of kids. It deserves to die, because it's not doing its job consistently. The question is: What will replace it? One could also make a passionate case that a free, high-quality, fully public education for every child is one of America's best ideas—and that some things should not be subject to market pressures. If we've ever laid claim to being a great nation, it's certainly public education that built the framework for that greatness. The question is: How do we build on the values and pieces of the current system that work well?

[Youth Turn to Tech, “Interest-Driven” Arts Expression as Schools Trim Arts Education Budgets, Report Finds](#)

Philanthropy News Digest

July 25, 2013

As arts education budgets in districts across the country shrink, young people increasingly are exploring their creativity outside the traditional school environment, helped in part by new technologies that make it easier for them to create and share their art, a report from the Wallace Foundation finds. The report, *New Opportunities for Interest-Driven Arts Learning in a Digital Age* (104 pages, PDF), examines “interest-driven” arts learning—the exploration of creativity that emerges from children’s and teens’ own creative passions—and how new technologies such as animation, video game design and music composition software are expanding the possibilities for arts production.

[The Nature of the Future in Education](#)

Education Week

July 28, 2013

Education researcher Justin Reich takes a closer look at future-of-education scenarios developed by the Institute for the Future and concludes that “our social systems of education are extremely resistant to change, especially at the level where students and teachers interact. But the utility of futures thinking is not just about making predictions that are correct. It’s about expanding our imagination, giving us new visions of what learning spaces might look like, challenging educators to look outside the sector for inspiration and tools for change.”

[Redesigning education to prepare youngsters for changes ahead](#)

Southwest Michigan’s Second Wave

August 22, 2013

At the annual meeting for the Kalamazoo Community Foundation, Katherine Prince from KnowledgeWorks in Cincinnati presented the highlights of some of the changes her organization sees ahead and urged the community to design educational systems that would address those changes.

[School 2.0: Meet the technology experts, teachers and administrators who are changing the way kids and young adults learn](#)

USA Weekend

August 8, 2013

A profile of six innovators who offer a fresh perspective on how to re-energize learning, including Sandra Okita’s “peer learning” robot, Projo; Seth Andrew’s Democracy Prep charter schools; and Nichole Pinkard’s pioneering work on teens and social media, resulting in the creation of digital media labs in public libraries nationwide.

[How Video Games and Social Media Fuel Students’ Passion for Art](#)

KQED Mind/Shift

August 8, 2013

The trend of interest-driven art creation comes at a time when public schools are cutting art programming, and it offers a promising new way to reach and mold budding artists. “A lot of times we think we need to have programs that cultivate learning in the art form, but what we are finding is that through the continued production of art, and reflection on it, the kids are actually improving their skills over time,” says Kylie Pepler, assistant professor of learning sciences at Indiana University. She wrote a report for the Wallace Foundation called *New Opportunities for*

Interest-Driven Art in a Digital Age. The study finds that even without formal training, self-driven youth are developing the same habits of mind that they would under formal instruction—they just don't realize they're doing it. Their creation is spontaneous, self-taught and often quite good.

[School is a prison—and damaging our kids](#)
Salon

August 26, 2013

The unfortunate fact is that one of our most cherished institutions is, by its very nature, failing our children and our society. Longer school years aren't the answer. The problem is school itself. Compulsory teach-and-test simply doesn't work. It's no wonder that today, even the "best students" (maybe especially them) often report that they are "burned out" by the schooling process. Research has shown that people of all ages learn best when they are self-motivated, pursuing questions that are their own real questions and goals that are their own real-life goals. In such conditions, learning is usually joyful.

[Museum makes learning fun, helps stop the "summer slide"](#)

CBS News

September 2, 2013

The National Summer Learning Association (NSLA) says that if students don't consistently practice math and reading skills over the summer, they will start the school year at a loss. Many will have forgotten up to 2.6 months' worth of material, or 22 percent of what they learned the previous school year. The nonprofit's website cites studies from as back as far as 1906 showing that when students are given the same standardized tests at the beginning and the end of the summer, they score lower after

the long vacation. This story features one family's use of the exhibits at the National Museum of Mathematics to prevent the "summer slide."

[When Good is Not Good Enough](#)

Stanford Social Innovation Review
Fall 2013

Leaders of two of the most successful nonprofit organizations argue that the sector needs to shift its attention from modest goals that provide short-term relief to bold goals that, while harder to achieve, provide long-term solutions by tackling the root of social problems. This article is pertinent to the issues of "scale" raised by Laura White and Michael Edson at Building the Future of Education.

Program Participants

Museums and the Learning Ecosystem: Building the Future of Education
September 16 and 17, 2013

- Carylann Assante**, *Executive Director, Student and Youth Travel Association*
- Philip Auerswald**, *President and Founding Board Chair, National Center for Entrepreneurship and Innovation*
- Robert Bader**, *Robert & Toni Bader Charitable Foundation*
- Toni Bader**, *Robert & Toni Bader Charitable Foundation*
- Gregg Behr**, *Executive Director, The Grable Foundation*
- Jamie Bell**, *CAISE Project Director, Association of Science-Technology Centers*
- Henry Berman**, *Chief Executive Officer, Association of Small Foundations*
- Betsey Bowers**, *Deputy Director of Museum Education, Smithsonian Early Enrichment Center*
- Carole Charnow**, *President and Chief Executive Officer, Boston Children's Museum*
- Michael Edson**, *Director of Web and New Media Strategy, Office of the CIO, Smithsonian Institution*
- Sauna Edson**, *Astronomy Education Specialist, National Air and Space Museum*
- Karen Elinich**, *Director of Science Content & Learning Technologies, Franklin Institute*
- Michael Feder**, *Senior Program Officer, Board on Science Education, National Academy of Sciences*
- Anna Forgeron Hindley**, *Washington, DC Liaison, Museum Education Roundtable; Education Specialist, National Museum of African American History and Culture*
- Gordon Freeman**, *President, National Laboratory for Education Transformation*
- Laela French**, *Collections Manager, Lucas Cultural Arts Museum*
- Paula Gangopadhyay**, *Chief Learning Officer, The Henry Ford*
- Margaret Glass**, *Program Manager, Association of Science-Technology Centers*
- Nikhil Goyal**, *Activist and Author*
- Nancy Green**, *Executive Director, National Association for Gifted Children*
- Beth Harris**, *Dean of Art and History, Khan Academy*
- Susan Hildreth**, *Director, Institute of Museum and Library Services*
- Deborah Hurtt**, *Senior Program Officer, National Endowment for the Humanities*
- Scott Kratz**, *Vice President for Education, National Building Museum*
- Christine Kuan**, *Chief Curator and Director of Strategic Partnerships, Artsy*
- Jay Labov**, *Senior Advisor for Education and Communication, National Academy of Sciences*
- Janice Lachance**, *Chief Executive Officer, Special Libraries Association*
- John Laughner**, *Legislative and Communications Manager, Magnet Schools of America*
- Max Marmor**, *President, Samuel H. Kress Foundation*

Erik Martin, *Game Designer and Student Leader*

Rebecca Mieliwocki, *2012 National Teacher of the Year; Teacher, Luther Burbank Middle School*

Norma Miller, *Director, Global Workplace, Bill & Melinda Gates Foundation*

Katherine Prince, *Senior Director, Strategic Foresight, KnowledgeWorks*

Nathan Richie, *Chair, EdCom (Education) Professional Network, American Alliance of Museums;*
Director, Golden History Museums

Michael Robbins, *Senior Advisor for Nonprofit Partnerships, U.S. Department of Education*

Jeri Robinson, *Vice President, Early Childhood Initiatives, Boston Children's Museum*

Robert Russell, *Program Director, National Science Foundation*

Sara Schapiro, *Director of the League of Innovative Schools, Digital Promise*

Marsha Semmel, *Senior Advisor, Noyce Leadership Institute*

John Sirek, *Director, Civics Program, Robert R. McCormick Foundation*

Gerald Solomon, *Executive Director, Samueli Foundation; Chair, National STEM*
Funders Network

Carol B. Stapp, *Director, The George Washington University Museum Education Program*

Martin Storksdieck, *Director, Board on Science Education, National Academy of Sciences*

Samuel Taylor, *Director, Science & Engineering Ambassadors, National Academy of Sciences*

Troy Thrash, *President and Chief Executive Officer, Air Zoo*

Luba Vangelova, *Principal, Catalyst Communications LLC*

Elliot Washor, *Co-founder and Co-director, Big Picture Learning*

Laura White, *U.S. Changemaker Schools Manager, Ashoka*

Steven Zucker, *Dean of Art and History, Khan Academy*

American Alliance of Museums Staff

Ford W. Bell, *President*

Susan Breilkopf, *Director of Business Development*

Ben Kershaw, *Assistant Director, Congressional Relations*

Elizabeth Merritt, *Founding Director, Center for the Future of Museums*

Brent Mundt, *Vice President of Development*

Gail Ravnitzky Silberglied, *Vice President of Government Relations and Advocacy*



Students completing a quest to earn a "Collect & Classify" badge in the Smithsonian's Tree Hugger badge series. Courtesy of the Smithsonian Quests Program.

Help us keep an eye on the future of education.

This report and other Center for the Future of Museums activities are supported by American Alliance of Museums member dues and donations. If this report sparked your thinking and you would like to see this report prosper, please consider supporting the Alliance by joining or making a tax-deductible contribution. The Alliance is committed to helping museums succeed and making the case that museums are essential in our communities. We welcome your investment in our shared future.

Join or donate online at aam-us.org or by calling 866-226-2150.

Corporate and foundation support are also welcome. To learn more, contact Brent Mundt, vice president of development, at bmundt@aam-us.org or 202-289-9101.



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