Photo Credit: Brooklyn LAB

20 INVENTION OPPORTUNITIES in Learning & Development

GETTING SMART

eduInnovation

FEBRUARY 2021

Table of Contents

Community Agreement Opportunities

5 **#1 Building a Shared Reality:** improved access to facts, better preparation in digital literacy, better tagging of synthetic content, visual and logic tools for building shared reality.

7 **#2 Agreement Crafting:** process skills and tools for facilitating rapid community conversations yielding agreements for iterative development.

9 **#3 Early Learning & Development:** how whole child, whole family, whole community innovations are extending access to positive developmental experiences.

13 **#4 Broader Aims:** articulating a shared purpose of education that moves beyond narrow skill definitions/ metrics to success skills, wellbeing and contribution.

16 **#5 Equitable Foundation:** supporting equitable access to education with weighted and portable funding, thoughtful talent distribution, and intentional locations and enrollment policies.

18 **#6 Accountability 2.0:** Cumulating formative assessment of core competencies to reconceptualize quality assurance. Make accreditation a valuable part of the process.

Learning Design Opportunities

20 **#7 Learner Experience:** how to use learning science to craft engaging and effective learning sequences.

23 **#8 Measurement:** using comprehensive formative assessment and authentic demonstrations to inform and credential learning rather than narrow, late, uninformative tests.

25 **#9 Motivational Profiles:** identification and use of the factors that motivate persistence and achievement to design learning environments and experiences.

26 **#10 Portable Records:** learners, guardians, and teachers draw insights from comprehensive records drawn from multiple assessments; learners tell their story with portfolios and portable credentials, they allow access and receive offers from employers and postsecondary institutions.

28 **#11 Credentialing Capabilities:** how to credential demonstrated skills to unlock opportunity and reduce friction in talent transactions.

30 **#12 Competency-Based Progressions:** combining individual progress with effective use of cohorts and teams and what that means for grouping and scheduling students and staff.

32 **#13 Inclusive Learning:** tools and learning strategies that recognize and support learner variability and special needs.

System Design Opportunities

34 **#14 School as a Service:** flexible portable personalized learning services with community as classroom in a supportive ecosystem.

36 **#15 Flexible Shared Spaces:** how to enable the benefits of comprehensive systems in small safe secure and personalized environments.

37 **#16 Personalized and Localized Guidance:** relationship based advising informed by personal and local data. Add some Entrepreneurship.

40 **#17 Accelerated High Wage Pathways:** employer down learning, earn and learn ladders, dual enrollment with work experiences.

42 **#18 Wellness:** how to use quantified self capabilities to improve wellness, and nutritions supports into education.

44 **#19 Personalized talent development:** portable system of microcredentials and employment benefits.

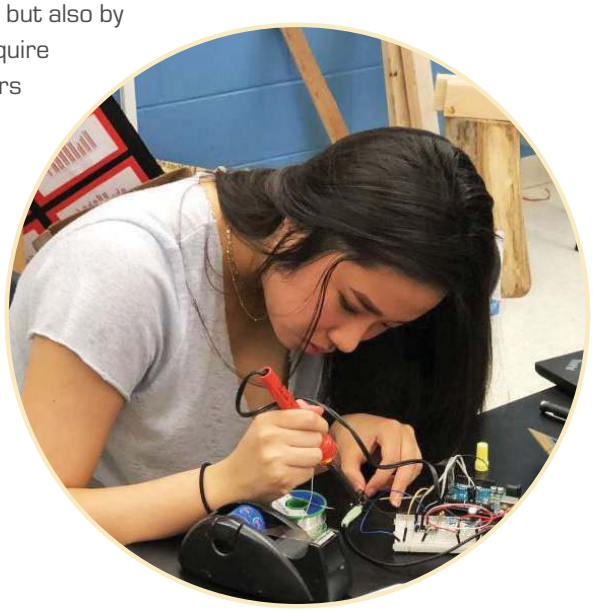
46 **#20 Tech stack:** integrated learning and administrative tools designed to support specific learning sequences.

An Opportunity to Invent The Future of Learning

Twelve months like no other—the events of the last year threw communities, economies and education systems into crisis. The collision of a pandemic, racial injustice, civic unrest and climate crisis accelerated trends and changed priorities.

The arrival of COVID-19 quickly shifted modalities for work and learning and changed use patterns for shared tools. It resulted in new capabilities and stretched perceptions of possibilities. It also revealed flaws, inequities and gaps, particularly in learning systems and tools. The rapid shift to remote learning in most areas accelerated edtech product roadmaps by several years.

Events of the last year surfaced the opportunity for new learning capabilities. However, most of these invention opportunities aren't just accelerated product features, they are new ways of provisioning public education—new agreements around new experiences and tools. These were driven not only by the effects of COVID-19 but also by long-overdue societal shifts. And their successful implementation will likely require public-private partnerships where communities, schools and edtech developers collaborate in new ways. Old barriers continue to thwart progress, but the current scenario has created an invention opportunity—a chance for educational entrepreneurs and investors to create new models that expand access to powerful learning.



Expanding the opportunity is the rise of artificial intelligence (AI) which is enabling teams to use smart tools to do what would have been computationally impossible months ago. Machine learning is quickly being incorporated into every system that supports learners and has the potential to extend access to personalized learning experiences, localized guidance and efficient supports.

On Invention, Innovation and Improvement

"In its purest sense, 'invention' can be defined as the creation of a product or introduction of a process for the first time. 'Innovation,' on the other hand, occurs if someone improves on or makes a significant contribution to an existing product, process or service," said **Andrew Wyckoff**, Director of the OECD's Directorate for Science, Technology and Innovation.

Using Wyckoff's definition, this report is an attempt to identify invention opportunities—new and different delivery methods and tools in learning and development. However, in many categories, examples include innovations and improvements.

Not all inventions improve quality and equity. Some pandemic delivery inventions (like hybrid schedules leveraging blended solutions) made the best of compound constraints and served some learners well while disadvantaging others. Some solutions like small group learning pods offered acceleration for a few but were out of reach for most. This report focuses on invention opportunities viable at scale in public systems.

This report outlines 20 invention opportunities in three sections:

- **Community Agreements:** six opportunities for new tools and new agreements to more equitably provision learning opportunities;
- **Learning Design:** seven opportunities to create more powerful, more equitable learning experiences; and
- **System Design:** seven opportunities to bring powerful learning to scale across public systems.

The list of 20 opportunities is more illustrative than exhaustive. The focus is on elementary and secondary education in the United States, but early learning and pathways to and through postsecondary education are also considered. The opportunities are not mutually exclusive; some are components that can be bundled into larger models. Together they suggest a significant opportunity for collective investment in learning and development.

Barriers to Invention

Invention is particularly challenging in U.S. K-12 education. There are at least six barriers:

- **Little R&D.** Despite growth in edtech venture investing in the last 10 years, there is very little research and development investment in education compared to other sectors—a failure shared by the public, private and philanthropic sectors given the foundational importance of learning and development to social and economic wellbeing. (Admittedly, it is difficult to empirically support the hypothesis that increased R&D in learning and development would broadly improve excellence and equity in public delivery systems—and thereby life outcomes—particularly for underserved populations.)
- **Weak link.** Compared to healthcare and biotech, education venture investing lacks connections to basic science. Most startups emerge from parent or teacher anecdotes rather than insights from science. Schools of education bear some responsibility here for limited collaboration with related sciences, inadequately incorporating the science of learning and development in teacher preparation programs, and for failing to pursue invention opportunities.
- **Limited demand.** There is weak demand for invention expressed from parents or educators. Most school leaders feel trapped in a bad policy context and an associated web of system obligations and employment agreements that make change hard to imagine. Other than their own experiences, most parents have limited ability to describe desirable new options and have few avenues for aggregating demand for something new and different.
- **Limited capacity.** Most schools are in systems with some capacity for improvement but little capacity to develop, test, and scale invention. States and their intermediate units have little or no capacity for invention.
- **Weak diffusion.** There is weak invention and innovation diffusion in education—a good idea won't cross the street from one school to another. There are weak incentives for adopting new and different practices and tools (and often disincentives) built into the policy web and employment systems.
- **Two-sided markets.** Many education inventions require development of both supply and demand—the development of a two-sided market (e.g., digital credentials require adoption by senders and receivers). Most transformational inventions require a combination of public, private, and philanthropic investment (at least two of the three).

The combination of low historical investment, weak capacity and limited expressed demand has dampened invention in US education.

Progress in Crisis

There are signs of progress. Over the last 10 years a web of invention intermediaries has developed. It is not yet robust but provides an emerging picture of the invention capacity that will supplement the decentralized American education system. Thematic and regional examples include:

- **Insights from the science:** **Turnaround for Children** and the **Learner Variability Project** from Digital Promise
- **New school models:** **NewSchools Venture Fund** and the **Walton Innovative Schools Program**
- **Talent development:** **4.0 Schools, LatinX Collaborative**
- **Ecosystem catalysts:** **LearnLaunch** in Boston, **LEANLAB** in Kansas City, **The Mind Trust** in Indianapolis, and **Education Forward DC**

Pandemic education resulted in rapid development of new learning models with some support from national and regional foundations. Venture investment in edtech, which has grown steadily for a decade, accelerated late in the pandemic with support for scalable solutions. There is widespread interest in leveraging some value from the new capabilities developed during the pandemic.

This exploration of new agreements, new practices, and new tools by Getting Smart and eduInnovation was supported by the Walton Family Foundation and the Bill & Melinda Gates Foundation. The findings and conclusions contained within this report are those of the authors and do not necessarily reflect the positions or policies of the foundations.

Community Agreements

INVENTION OPPORTUNITY #1: Building a Shared Reality

What if communities could agree on what's happening and what it means? This might seem like a pipedream in America's fractured digital media landscape and polarized political environment. In a November 2020 Reuters/Ipsos poll, **two-thirds of Republicans surveyed** had unfounded concerns about 'rigged' vote counting processes.

When everyone lives within their own framing of truth, a shared path forward isn't just complicated—it's all but impossible. Yet it's more important than ever to establish a shared reality in order to advance communities and countries.

If a mutual sense of the current situation and its meaning is critical for collective action, where does one get started?

Both the problem and the answer lie in the digital realm. The internet, which held a lot of promise for bringing people together, has also wrought deep divides. Targeted advertising and social media algorithms are creating a virtual construct of individual preferences and interests, reinforcing tribal logic models in the process. Throughout the crises of this past year, many of us have unintentionally and unwittingly become separated into echo chambers—some lacking evidence-based information or worse, propagating the spread of misinformation.

In order to build a shared reality, educators need improved access to facts, better preparation in digital literacy, better tagging of synthetic content, and the collective adoption of visual and logic tools such as predictive models.

Shared reality is the necessary first step of leadership—whether that's a school, a company or a country. It starts with the facts, but because those are open to interpretation, the shared reality is most likely to emerge within the identity of membership, such as citizenship of a city or stakeholder of a school system. You've got to invite people into a system to have a shot at a shared reality.

1. Expanding access to research and facts. Business models such as paywalls need to be reconfigured in order to ensure that everyone has access to facts. But facts alone won't bridge divides; increased trust in one another and stronger relationships will.

Getting to that point will take time and an acceptance that truth, while binary, represents an ongoing pursuit versus a destination already reached.

According to journalist **Jad Abumrad,** society needs to be begin thinking about the truth as a verb—a dynamic element—rather than a static noun. He realized that "hammering at a scientific truth when someone has suffered, that wasn't going to heal anything." It led to him reframing his job as leading "people to moments of struggle because the truth is no longer just a set of facts to be captured. It's become a process. It's gone from being a noun to being a verb. Increasingly in this confusing world, we need to be the bridge between those differences."

2. Preparing a digitally literate populace. Digital media provides a wealth of opportunities for young people to engage, create and learn. Yet in today's post-truth society, they must also be trained to navigate a landscape that isn't always what it seems.

With all the misinformation (incorrect information that is naively disseminated) and disinformation (information that is used to directly manipulate) that exists, teaching **critical consumption** must start in elementary school. Founding **Olin College** president Richard Miller **sees truth** as a discipline that can be learned, a constructive skepticism that results in opinions based on facts—not on the number of followers.

Ellen Carillo, professor of English at the University of Connecticut, believes teachers can help students **navigate a post-truth environment** by providing them with tools and experiences to understand and assess information. "Students must be given opportunities to practice evaluating information sources, differentiating between misinformation and disinformation, assessing bias and credibility, and parsing opinion from fact," she said. "All these skills are central to ethical and sound research but also to participating in a democracy."

Access to quality learning for the (soon to be) 8 billion of us depends on inventing combinations of **new tools and agreements** that will expand access to powerful learning and lives of opportunity.

3. Codifying artificially created resources. Deep fakes and new **synthetic content applications** are emerging challenges to building a shared reality. Technology is becoming so sophisticated that it is in some cases overriding a person's ability to differentiate reality from illusion, and policy lags behind technological developments. Avoiding the role of synthetic content in the present or future is an impossibility, but everyone should understand how to mitigate its impact and potential spread.

Nina Schick, author of Deep Fakes and the Infocalypse, is investigating the evolving issue, noting that "at its heart, **it's not a tech problem**. It's not that tech is inherently bad but it's an amplifier of human intention, and what I argue is that now because the information ecosystem has changed so quickly, we are facing an unprecedented crisis of bad information."

While it's an impossible development to reverse, Schick says the first step lies in understanding and putting a conceptual framework around how synthetic content is impacting systems and individuals. "It has to be a society-wide effort where civil society works with government and tech. And It needs to be a networked approach."

A combination of machine and human vetting will build dynamic fact bases with rigorous, open source editing more like Wikipedia than Twitter's public interest notices or tweet hiding.

4. Embracing visual and logic tools. There's no denying that complexity abounds in the modern world. The interrelated problems currently faced by humanity don't have simple solutions, and their early data sets haven't yielded conclusive answers. Nonetheless, it's hard to make progress without starting with a common fact base and a shared sense of reality.

This is where visual and logic tools, such as advanced mathematical models, can play an important role. Predicting dangerous weather patterns or the potential for disease spread can drive collective action—saving lives and reducing property damage in the process. It can also breed a level of responsiveness we've not previously seen. Knowing the likelihood of where stakeholders might end up can help shape policies and just-in-time planning by organizations that previously didn't have to be so agile. Because they model complex systems, these algorithms can take into consideration many variables that influence outcomes and show us a range of futures to be inhabited, both in the near- and long-term.

Shared realities will be based, in part, on the universal adoption of predictive models.

Shared reality opportunities include:

- Platforms that allow greater access to vetted research.
- Age-appropriate online digital literacy programs.
- A universally-accepted approach to codifying synthetic content.
- Systems that enable users to create algorithmic calculations.

2 INVENTION OPPORTUNITY #2: Agreement Crafting

Agreement Crafting: process skills and tools for facilitating rapid community conversations yielding agreements for iterative development.

What if tools could make it easier to frame issues, host conversations & craft agreements?

A shared understanding will enable stakeholders to identify and define existing constraints, obstacles, and opportunities. This sets the foundation. Yet before diving into a state of iterative development, communities and their educational counterparts—early learning organizations, K-12 schools and postsecondary institutions—must first shape agreements that establish priorities and processes to help them move forward.

How can academic and administrative leaders begin to facilitate rapid community conversations?

In lieu of the traditional strategic plan, many impact leaders are leaning into a distributed leadership model that shifts from rolling out long-range plans to supporting iterative solutions. They no longer seek to provide the answers, but rather serve as architects posing the questions. The focus is on public problem-solving via delegation and empowerment.

New Architecture: From Org Charts to Project and Decision Forecasting

Agility is a common feature in startups and organizations, especially those within the tech sector. In education, however, it is a rarity. As external conditions require it—from crisis situations to other persistent (and more predictable) constraints—organizations are moving toward managing environments with a different cadence. Rather than operating with a traditional organizational chart, they're establishing near- and long-term goals and sprinting through a series of projects.

Projects can be organized around important decisions, with teams including internal and external stakeholders; project leadership is a valuable way to distribute leadership across the organization.

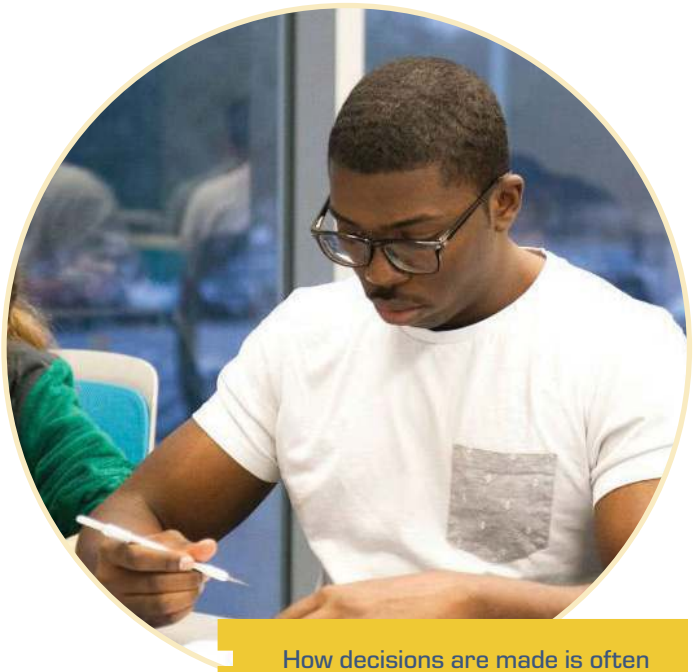
Then the work begins: hosting conversations and crafting agreements that move the community forward.

- Deciding who is involved in the process is a critical step to ensuring equity is central to the outcome.
- Improvement agreements might require a quick internal discussion.
- Innovation agreements (that involve more risk and investment) might necessitate a community-wide dialog.

Decision forecasting, framing issues, commissioning projects, hosting conversations, and crafting agreements in this facilitative approach might be the most important set of skills for which few leaders receive any training. (Proof point: The design thinking and meeting facilitation skills that learners receive at **One Stone** offer a solid foundation for next-gen leaders.)

Better Agreement Tools

Leaders (especially in public delivery systems) must be experts in framing issues, hosting conversations, and crafting agreements. How decisions are made is often as important as the decision. Yet few tools or templates for agreement crafting exist. Developing such tools with a community use case toward building a shared reality would be extremely helpful for the field.



How decisions are made is often as important as the decision. Yet few tools or templates for agreement crafting exist.

Distributed stakeholders need mediums in which to express their interests, and accurately convey the rationale for decisions in a transparent and meaningful way.

Currently, those leading impact organizations try to make effective use of messaging applications like Slack or social media platforms such as Facebook or Twitter but get mired in minutiae, swamped by divisive posts, or distracted by filtered news.

The big increase in texting and video conferencing among students, teachers, and parents that came with the pandemic might be useful supplements to the old town hall meeting. With integrations to **Survey Monkey, Signup Genius, SignUp,** and Google Drive (which includes Forms), communication tools such as **Remind** are becoming useful in agreement crafting.

Keeping track of the issues, parties, terms, investments, and timelines would be invaluable to organizations across the education ecosystem, helping them to create transparency and alignment while avoiding the need to reinvent the wheel every time a new agreement is required. School administrators and governing boards also would benefit from a database of agreements developed by other districts and networks to create better policies and more proactive employee agreements, and to better coordinate services—a **LegalZoom** for edleaders with templates and tips for making better agreements.

Agreement crafting opportunities include

- Better survey tools and preference voting systems.
- Secure video conferencing, text-based mediums, and cloud-based document sharing programs.
- Databases that memorialize agreements.
- Shareable public databases and/or databases with limited interoperability.

3 INVENTION OPPORTUNITY #3: Early Learning & Development

Early Learning & Development: how whole child, whole family, whole community innovations are extending access to positive developmental experiences

What if educators and technologists provided more holistic programming to support the country's littlest learners, both inside and outside of school?

While COVID-19 has meaningfully impacted both the K-12 and higher education systems in the U.S., the early years have arguably been even more challenged. Childcare supply has been decimated and parents of young children—especially those who work full-time—are struggling the most.

Learning and development is a **complex process influenced by many factors**. Naturally, it involves how students cognitively process information, but also by how they are feeling physically and emotionally, by their knowledge of themselves, and by interpersonal and intrapersonal skills and mindsets, according to the team at Transcend. Designing for equity also demands that schools and systems move from a narrow focus to one on the whole child.

Isabelle Hau believes that providing each and every child with a strong learning foundation from birth is one of the greatest opportunities to rebuild the nation. She has led the U.S. education initiative at **Omidyar Network** and its spinout, **Imaginable Futures**, and in 2019, authored the report **Big Ideas, Little Learners** on trends in early childhood.

She notes 10 invention opportunities in early learning and development that could reignite an equitable start in life and long-term economic mobility. The innovations highlighted below represent opportunities for high impact where new tools and new agreements can create a strong start for young learners.

WHOLE CHILD

1. Doubling down on social-emotional learning and trauma-informed care solutions. Social-emotional development has been shown to be a **key pillar of learning readiness** for the littlest learners. Under COVID-19, supporting emotional regulation is more critical than ever, as school systems confront new dangers, traumas and resource constraints that significantly impact those at the start of their educational journeys.

Innovators to watch: Social-emotional learning

Solidifying SEL as a core subject
Think Equal not only believes in social-emotional learning, but it also asserts that it should be taught as a core subject on par with early literacy or numeracy. In response to COVID-19, Think Equal developed free home kits evaluated by the Yale Center for Emotional Intelligence.

Providing on-demand SEL for kids
Better Kids has developed online games and offline hands-on activities for young children to learn social-emotional skills at home or in school.

Developing mindfulness to decrease burnout & build executive functioning
Inner Explorer offers five minutes a day of mindfulness, proven to reduce teacher stress and burnout while improving classroom climate and young learners' executive functioning.

In addition to social-emotional learning, innovations are emerging to scale trauma-informed care, critical to address the isolation effects and multi-faceted trauma triggered by requisite social distancing and the myriad staggering losses due to COVID-19.

Innovators to watch: trauma-informed care

Equipping parents with compassionate curriculum
ParentPowered offers a trauma-informed care curriculum for parents through text-based messages, where families learn about coping strategies to stress and access local resources.

Inequitable, Industrial–Era Learning

Narrow Focus

Learners engage in experiences focused primarily on the cognitive dimension of learning.

Inequitable, 21st–Century Learning

Whole-Child Focus

Learners engage in experiences that nurture the totality of cognitive, emotional, social, and physical factors that impact their learning, development, character and overall health and well being.

Bringing a proven therapeutic nursery model to the masses
The Lourie Center has been a leading trauma-informed care provider with its therapeutic nursery model for years and is now working on scaling the approach through project Echo.

Reinventing play in the midst of crisis. Play is **key to child development**. Yet play is challenged in the current moment, with more limited interactions with other children and lesser opportunities to wander outdoors.

Innovators to watch: incorporating play into a pandemic

Coaching parents and kids through DIY activities
Tinkergarten offers online classes where leaders are coaching parents and young children in small groups on activities to be practiced offline. Tinkergarten also offers a wide collection of free activities for families. Other interesting innovators include **Circle Time** and **BeanStalk**.

Bringing the outdoors indoors—or wherever learners might be
WideOpenSchool takes a different approach, by offering a wide range of free activities structured around a daily schedule, sourced from more than 75 collaborators such as **National Geographic**, **Khan Academy Kids**, **PBS Kids** and **GoNoodle**.

There are also exciting innovations in play through new types of quality toys geared for learning. **Lovevery** and **MontiKids** send home beautiful play kits designed to develop young children's brains. **Osmo** (acquired by **Byjus**) merges tactile exploration with innovative technology for active learning.

Robotics, voice-recognition, and AI are also converging to serve early development. **ROYBI Robot** is an AI-powered robot companion for kids seeking to develop language and STEM skills. **SayKids** has developed a plush friend that leverages voice recognition technology to teach children about literacy or empathy.

Elevating new and improved early literacy tools. Language is one of the most important predictors of child development, as demonstrated in **research compiled by the Overdeck Foundation**. Promising innovations in early literacy include:

Innovators to watch: early literacy and language acquisition

Closing the achievement gap for young readers
Khan Academy Kids is a free adaptive technology platform for children ages two to seven, nearing 200 million books read and 100 million social-emotional activities. A recent **study** shows it closes the achievement gap on pre-literacy skills for preschool-aged children from low-income families.

Supporting preschoolers and their parents, pro bono
UPSTART provides four-year-olds personalized lessons at no cost and engages with parents in daily 15-minute routines. UPSTART supports families with devices, broadband, and sometimes power. UPSTART delivers exceptional literacy results in persisting longitudinally.

Ensuring verbal language readiness with technology
LENA has developed a 'talk pedometer' technology that builds school readiness and strengthens families with parent group classes over 10-week sessions delivered virtually or in person.

Group-based engagement toward reading goals
Springboard also leverages a group model, where it engages teachers and parents to work toward reading goals including book walks, with exceptional attendance levels and increased reading.

Identifying obstacles rapidly and proactively
Promising innovations are detecting early risk for reading deficits and supporting young readers. For example, **EarlyBird** is a 20-minute, tablet-based game that assesses the child while they play.

Revisiting the importance of early numeracy and early computing skills. Children who are introduced to foundational quantitative skills early on have an advantage as they continue in their mathematical studies. Yet creating an age-appropriate experience for the pre-K set has been the aim of a few companies.

Innovators to watch: emerging pre-K coding and numeracy programs

Embracing everyday math
MathTalk brings math into the daily lives of parents/caregivers and children and includes an augmented reality app for young children to playfully explore math concepts.

Coding before achieving literacy
codeSpark allows pre-readers to learn foundational coding skills.

Reinventing media into delightful, diverse, and quality experiences. Young children are growing up with the media. Recent data pre-COVID-19 by **Common Sense Media** have shown that children birth-to-eight have 2.5 hours per day of screen time. The overall average has remained constant over the past decade. However, the use of media for young children in lower-income households continues to spike. **YouTube Kids** added some filtering and a few tools for parents, but there is a lot of addictive and developmentally inappropriate content on the platform, as reported by Common Sense Media's **Young Kids And YouTube: How Ads, Toys and Games Dominate Viewing**.

Innovators to watch: media and storytelling

Creating immersive story-based experiences
Encantos brings authentic and diverse stories to life via subscriptions, fusing physical and digital experiences through animated series, books, songs, apps, games and puzzles.

Encouraging reading through interactive apps
BEGiN supports "Love to Read" and "Learn to Read" through multiple apps, including Speakaboos and Homer (backed by demonstrated **literacy gains**).

Offering early learning that grows with the child
ABC Mouse celebrated its 10th anniversary and is one of the most downloaded early learning programs for kids aged 2-8. They continue to invest in quality and evidence.

Transforming kids' shows into lessons
Hellosaurus is a recently launched subscription mobile app that enables kids to experience their favorite TV shows as interactive lessons.

Calling for more/better dual language learning solutions. As the U.S. population further diversifies, one out of four young children is raised in a family that speaks a language other than English at home—and this number continues to grow. Despite the strong evidence on the benefits of bilingualism, there is a paucity of dual language learning solutions (especially evidence-based solutions) in the early years.

Innovators to watch: multicultural language learning

Promoting self-directed multilingual fluency
Genius Plaza is a multicultural platform that engages learners as agents of their own learning. Genius PreK offers a multilingual preschool curriculum that provides culturally relevant, age-appropriate resources and activities that adapt to every child.

Addressing SEL challenges early on
Ellevation helps school districts starting in pre-K meet the needs of English language learners with administrative and classroom collaboration tools.

WHOLE FAMILY

Quality adult-child interactions are more critical than ever in the current environment, as many **parents are keeping their children home**.

Encouraging family engagement through digital tools. New innovations advance family bonding–especially important with social distancing.

- **Caribu** is an app that lets families read and draw while spending time together in a real-time video call, ideal to foster relationships with socially distant loved ones such as grandparents.
- Digital tools are engaging parents through text messages. **Ready4K** is an evidence-based family engagement curriculum driving increased parental engagement and improved child literacy outcomes. **Chat2Learn**, **Vroom** and **BrightByText** offer similar solutions.

In parallel, solutions are emerging to allow modern parents to socialize with other parents.

- **Peanut** connects women across fertility and motherhood. Women can meet like-minded moms to share tips and support each other in parenting.
- **Centering Parenting** brings 6-8 parents and their infants together with their healthcare providers to foster a safe and supportive environment and lifelong bonds between families.
- **Guardians Collective** builds communities of parents to communicate about their learnings and share with others.

WHOLE COMMUNITY

At the whole community level, three areas of innovation merit highlight: family childcare, new models of culturally responsive pre-schools, and two-generation community models.

Reimagining (family) childcare. Multiple levels of innovations in childcare are currently underway, and in the present situation are much needed by working parents. **All Our Kin** provides coaching for in family childcare providers, while **brightwheel** equips those providers with tech solutions to be more efficient and increase communications with parents. **Wonderschool** connects parents to quality care providers on its platform. The **Winnie** app supports parents in finding local vetted childcare options.

Supporting new learning models that are culturally responsive. Some exciting new models are unapologetically centered around children of color.

- Founded by former Washington, D.C. Superintendent Kaya Henderson and Harvard's Roland Fryer, **Reconstruction** provides small group classes and K-12 curriculum with content anchored in Black identity.
- At the **Lakota Oyate Homeschool Co-op** in South Dakota, members of three tribes are experimenting with deep linguistic and cultural immersion in learning pods.
- **St. Louis Black Authors of Children's Literature's The Believe Project** is galvanizing schools, museums, libraries, radio stations, and hip-hop artists to mobilize the community around culturally relevant literacy instruction with a focus on young Black children.
- **Wildflower Montessori** is a network of microschools bringing quality Montessori education to all children through one-room schools.

Accelerating community-led two-generation models. Inspiring community-led two generations models across the country that all have an early childhood focus and are driving meaningful impact.

- **Harlem Children Zone** in New York City, New York, has long been an example of cradle to career community change, including its Baby College program. Under new **CEO Kwame Owusu-Kesse**, it is currently focused on five comprehensive pillars: infusing emergency cash in families; protecting the most vulnerable; bridging the digital divide; aiming for zero learning loss, and; mitigating the mental health crisis.
- **The Village Institute** in Aurora, Colorado, is a live/learn/work center for single-mother refugee families, bringing housing, language learning, childcare, job readiness workshops, and mental health services under one roof.
- **Cajon Valley USD** in San Diego County, California begins the two-generation process of imagining possible futures in kindergarten.
- At **I Dream Public Charter School** in Washington, D.C., the youngest learners have 'Dream Time' in their day to plan their learning through inquiry, and adult partnership with educators and elders around areas of interest and passion.
- **For Oak Cliff** serves the south Dallas community with two-generation supports in early childhood for young learners and GED training for parents.

Early learning and development opportunities include:

- Trauma-informed and SEL professional development for early learning educators.
- Culturally-responsive resources and teaching tools that introduce diverse narratives.
- Apps that encourage multigenerational interaction and play, including at a distance.
- Dual-language learning support programs and apps designed for pre-K/Kindergarten audiences and their parents.

4 INVENTION OPPORTUNITY #4: Broader Aims

Broader Aims: articulating a shared purpose of education that moves beyond narrow skill definitions/ metrics to success skills, wellbeing, and contribution.

What if success was defined by thriving, agency and problem finding/solving?

For many years in education, the response centered on letter grades and courses taken, and later, learning outcomes. It's a question that has been considered at length, by hundreds of thousands of school leaders and teachers, across decades, cultures and continents.

But that's not the full answer. The one piece that's been missing in large part, outside of siloed pockets of specialty programs and schools, has been a focus on the development of the whole child.

Educational innovation historically has not been rooted in the science of human development. The invention opportunity (with a little unexpected emergency flexibility) involves articulating a new relevant shared mission and learner goals that prioritize success skills, wellbeing and contribution.

What if student learning goals reflected the skills and dispositions most important to citizenship and contribution? A new structure—and indeed an invention opportunity—could prioritize success skills, wellbeing, and difference making.

During this global crisis, turning D's and F's into C's (for curiosity) and A's (for agency) requires teachers to focus on both individual factors and context around individual learners.

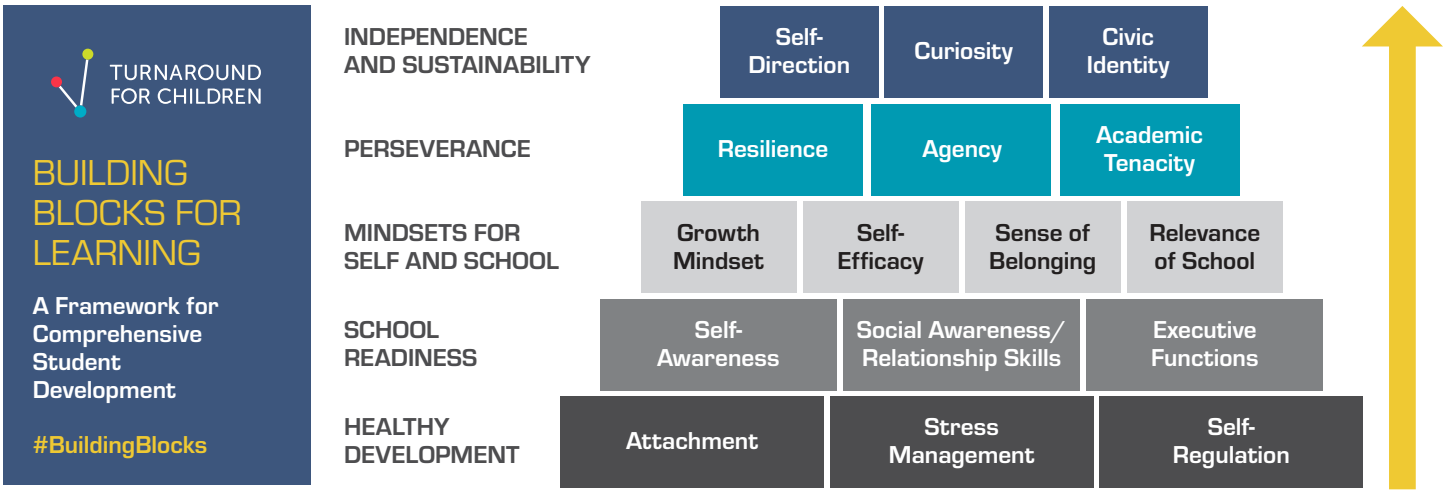
It might be the right time to consider a simpler set of student-centered learning goals like **agency, collaboration, and real-world problem solving**, which could provide a much-needed sense of priority and freedom to support learners where they are. (See student development graphic below for inspiration.)

To offer this kind of whole child support to students, schools and communities must provide whole teacher support—as there are many teachers who are trying to teach their own kids while they are educating others.

What could that support look like, when delivered compassionately at a distance and at scale? What gaps might exist in the market that allow for thoughtful models and accessible technologies to be created that better serve educators, who are coping with massive change and enormous demands on their time?

Trust and relationships must take center stage. As communities consider new learning goals, it is important to consider the protective factors around students, such as family support, connection to culture, routines, and consistency in school.

Dr. Pam Cantor has been studying trauma and child development for the past two decades, tackling topics such as **how stress impacts the developing brain** and students' ability to learn, and understanding how a healthy whole child and a curious, engaged learner actually come about. These areas of focus could not be more timely in light of recent chaotic events around the world, from the pandemic and extreme weather to rampant unemployment and rapidly shifting learning modalities.



Building Blocks from TurnaroundUSA.org

An ability to mitigate stress is pivotal. "The thing that's less talked about is the understanding that the social context–the relational context of children's experience drives their cognitive development," Cantor explained. "This has to be hugely important for educators to understand. And it cuts against a movement in the education literature where I think there had been for a long time this idea that cognitive development was a separate thing."

The human connection cannot be understated—especially with regard to child development.

"When we talk about a skill like reading and if we look at a PET scan as a child is reading, the parts that will light up are sight, hearing, the prefrontal cortex (processing), and the amygdala (emotions)," she added. "Wiring between them is causing that. A child reading and a child being read to is an experience that drives a complex skill. It's really critical for people to understand how profound social activation of cognitive development is."

People are essentially interlocking systems of biological mechanisms. These can be driven to healthy developmental places or places of disease when things go wrong. By acknowledging and understanding this, it's possible to take complex processes like learning or trauma and turn them back to a healthy course.

Schools Adopting New Learning Goals

The crisis could be an opportune time for philanthropic organizations and edtech companies to support schools in contributing to their communities. Research has shown that **difference making** can enable young people to build agency, exert leadership and practice problem-solving.

Here is a bird's-eye view of what's happening across the country with regard to new learning goals:

- Thousands of schools have adopted new learning goals expressed as a **Portrait of a Graduate** including fostering critical thinking, communication, collaboration, creativity, and other 21st-century skills young people need to thrive in this complex, rapidly changing world.
- Schools in the **EL Education** network share a character framework grounded in purpose, agency and belonging. At the heart of developing effective learners and ethical people is learning to contribute to a better world.
- **XQ Learner Goals** encourage young people to become "original thinkers for an uncertain world" (sense makers and generative, creative problem solvers), "generous collaborators for tough problems" (inquisitive world citizens and self-aware team members) and "learners for life."
- **Summit Public Schools** has a broader definition of success and a comprehensive outcome framework based on **Turnaround's Building Blocks** for Learning (discussed in this **post on curiosity**).
- **CZI**, which shares the Summit platform through a **network of 400 schools** has a framework for whole child development based on six domains: academic development, cognitive development, identity development, social-emotional development, mental health, and physical health. (An outcome framework based on these six dimensions is forthcoming.)

New Learning Priorities for Difference Making

LEADERSHIP

Effectiveness:
self-knowledge and management, good decision making

Agency:
capacity to act on the world

Global Citizenship:
activate global goals with cultural competence

EQUITY:
Seeing what should not be and envisioning what could be to create a more inclusive world.

PROBLEM-SOLVING

Entrepreneurial Mindset:
spotting opportunity and delivering impact

Collaboration:
social awareness, relationship skills, enabling others

Design Thinking
creative problem-solving using a design thinking process

Difference Making at the Heart of Learning by Tom Vander Ark and Emily Liebtag

These outcome frameworks may be adopted as student learning goals or a graduate profile, but bringing them to life requires translating them into grade span expectations and embedding them into culture, curriculum and communication.

Broader aims opportunities include:

- Outcomes frameworks that support holistic graduate profiles.
- Platforms that connect real-world needs to student learning.
- Digital support programs to engender trust and belonging in school or campus communities.

5 INVENTION OPPORTUNITY #5: Equitable foundation

Equitable foundation: supporting equitable access to education with weighted and portable funding, thoughtful talent distribution, and intentional locations and enrollment policies.

What if education resource allocation reflected collective challenge rather than community wealth?

The unattributable but ubiquitous quote about zip code determining a child's quality of education remains unfortunately true. Those with means and kids to be educated often make decisions about where to live based on the quality of a local school district or charter options. Those without often must accept the status quo for their area. Meanwhile, America continues to be the only developed country where students from rich families get more education funding than students from low-income families. Where one lives and accordingly, what one can afford in terms of living expenses still largely dictates much about the learning experiences that can be expected for today's generation or those yet to come.

Providing equitable resources for all learners is more political than technical in nature, but complicated, nonetheless. Solutions will require a **shared problem definition** and well-crafted **community agreements** at both state and local levels.

Is it possible to unravel a system seemingly built for inequity? Eight opportunities exist for the creation of new resource allocation systems that better serve students and communities:

1. Weighted Funding. Advocating for financial support that is weighted on risk factors and academic gaps is the first step. This would provide more time and support for those learners who need it in a personalized and competency-based system. Some states (such as Washington) have taken steps to equalize funding, but even with the addition of federal funding, it doesn't push enough support to high need learners. Despite unweighted and inequitable inputs, school districts can and should weight more of their resource allocation (and avoid inequitable staffing like 30 learners in algebra versus 12 in AP calculus).

Advocating for financial support that is weighted on risk factors and academic gaps is the first step.

2. Special Needs. For students with disabilities, weights have often been assigned to the specific disability categories. This is actually a problematic practice, as "there is great diversity within these categories along with decades-old preconceived notions of the challenges these students face," said **Karla Phillips-Krivickas**, KnowledgeWorks. "Funding for these students should reflect the services and supports that they need to succeed."

3. Flexibility. Lots of well-intentioned federal and state programs come with special administrative and reporting requirements. Requiring burdensome bureaucratic measures squanders valuable time and attention that could be redirected at solving real problems. Ultimately, such requirements make it hard to provide integrated experiences and services that individual students need.

4. Staffing. Talent is yet another way most low-income learners and schools are disadvantaged. A combination of agreements drives the most talented and experienced teachers to the most affluent schools and to the least challenging assignments within schools. As a result, funding inequities within districts can be even greater than those across districts. Learners who need it most should have the benefit of studying with great teachers.

5. Portability. Why examine this from the perspective of a four-walled classroom, or even as a collective? Byron Sanders, CEO of **Big Thought**, said, "Portable funding that follows the youth into nontraditional learning spaces would not only help these organizations that offer critical skill development, but it legitimizes the space in ways that ups the currency value for all stakeholders. It also puts the power in the young person's hands." Imagine a dynamically provisioned learning wallet for each learner, for example, that reflects their needs and could support opportunities in and out of school.

6. Facilities. School buildings are another vestige of privilege. They are primarily funded by a levy on local property and, as a result, reflect local wealth. States could equalize funding with a weighted match. Another solution is to **separate facilities from operations** and provide weighted funding to all public schools that includes money for rent.

7. Connectivity. Closing the digital divide is a crucial aspect of equity in 21st-century learning. Yet internet access was a **challenge** for all school districts during spring 2020 school closures; in some districts, over 30% of students had no internet access at home. With weighted funding, more schools could provide take-home mobile devices to learners and, where community solutions don't exist, support last-mile Wi-Fi solutions (hot spots, community Wi-Fi locations). **CRPE** notes ways rural districts, in particular, devised innovative approaches to help put materials and instruction in the hands of students—but those workarounds shouldn't be considered strategies for the long term.

8. Incentives. State allocations could test performance incentives, but there's not much evidence they work in education. A few performance-based funding schemes have proven successful (including the way **Florida Virtual** is paid for course completions). The small **pay for success** pilots in higher education have had mixed results.

Equitable foundation opportunities include:

- New funding models that promote an equitable K-12 education independent of local wealth.
- Tailored supports that speak to the nuanced needs of special ed students.
- Initiatives to close the digital divide through device sponsorship, creative Wi-Fi offerings and community workarounds.
- Incentive programs that take into account factors other than salary or monetary bonuses.

6 INVENTION OPPORTUNITY #6: Accountability 2.0

Accountability 2.0: Cumulating formative assessment of core competencies to reconceptualize quality assurance. Make accreditation a valuable part of the process.

What if students were motivated to not only meet, but to exceed their learning goals?

The U.S. education system is rife with problems of its own making. The elementary, secondary, and tertiary levels have largely sustained a status quo, without the deep introspection needed to solve complex issues. Serving and supporting a highly diverse population in its progression toward achieving meaningful work and lifelong learning is an admittedly significant challenge.

Yet while other countries were streamlining governance, building teacher capacity, and improving curricula, the U.S. tried accountability as its improvement strategy. An emphasis on test-based accountability assumed that publicizing and penalizing poor performance on narrow measures of year-end proficiency would drive improvement. It didn't work and came with unintended consequences: narrowed focus, fear-based culture, and stifled innovation (all while systems were incorporating new tools that created new opportunities).

It's time to ditch the weeklong and year-end tests. Instead, schools and institutions need an accountability system that 1) uses new broader measures of learner growth embedded in the learning process and 2) is accompanied by improved talent development, equitable funding, student and family supports, and school improvement networks.

In **Most Likely to Succeed**, Tony Wagner outlined five components of what he calls Accountability 2.0. They serve as a useful opportunity framework.

1. Don't fix accountability; reconceptualize it. The United States' No Child Left Behind Act was a bad build on the antiquated 1893 public education. There are more promising options than focusing on year-end exams. For example, updating the mission of the school, focusing on competencies that matter in work and life, building new measurement systems that support the growth of individual learners (more than the end-of-year grade level proficiency), and taking advantage of all the feedback that learners now receive in a digital learning environment are ideas of merit.

In addition to a new design, the type of schools that this generation of children deserves won't magically materialize from Accountability 2.0—it's just one piece of the puzzle.

2. Focus on core competencies for work, learning, and citizenship. Wagner suggests a focus on "helping students develop the skill and the will to ask new questions, solve new problems, create new knowledge." He sees a tripod of content knowledge, skill, and will as the foundation of 21st-century learning. Of the three, Wagner believes that "will, or motivation, is the most important, and the one damaged most by our schools today."

Wagner has suggested a brilliant key design question for any proposed change: "Will this 'improvement' likely increase or diminish student motivation for learning, and how will we know?" What's easy to measure isn't necessarily what's most important to learn.

For more equitable life outcomes, **Christensen Institute's** Julia Freeland Fisher thinks educators should intentionally help youth develop and measure their social capital (relationships and networks).

3. Forging a new consensus on the purpose of education. The old mission of public education was binary in nature: college or career prep. The new mission (subject to a conversation with community stakeholders) is whole learner development—youth equipped for lifelong learning and contribution.

The ability to process and analyze big data has major implications across the education landscape. In her latest book, Long Life Learning: Preparing for Jobs that Don't Even Exist Yet, author and education advisor Michelle Weise shares one of the **many benefits of AI in education:** that this powerful emergent technology can discover and name competencies that were previously hidden. With this support, it's possible to better envision pathways forward for all learners that are highly personalized and likely much more beneficial.

The pandemic has also made clear the vital role that schools can and should play particularly in underserved communities. Community schools can be a focal point for technology connections, coordinated wellness, and family support services in times of crisis and prosperity.

4. Testing and evaluating. There are three big opportunities in testing and evaluation. First and short term, there are tests that better measure important skills, including **PISA** and the **College and Work Readiness Assessment Plus** and, like the National Assessment of Educational Progress, could be given to a sample of students (which would save millions that could be plowed back into teacher capacity development).

The second significant long-term opportunity: leveraging the increase in formative feedback that many learners receive with the shift to digital learning. For example, receiving feedback on 30 different writing samples is more illustrative than a review on a short year-end test essay, and could provide much richer information about a learner's individual growth and application. Multiple and frequent forms of feedback could be collected in a comprehensive learner profile, reducing and eventually eliminating the need for additional testing to verify progress and proficiency.

Wagner suggests a competency-based system that invites redesign on two fundamental dimensions, "Do we want their learning to be shallow or deep? And do we want their primary focus to be subject content or critical skills?"

Finally, most developed countries use periodic inspection as part of their accountability system. In America, most states require accreditation. Yet it's infrequent, bureaucratic, and opaque. New accountability systems could incorporate an updated accreditation process which includes streamlined reviews of learner profiles and school inspections that result in candid and transparent observations of school quality.

As states update accreditation and incorporate it into the accountability system, they could align it with an updated charter school reauthorization process so that all schools in the state reported on and were reviewed against the same broad outcome framework.

5. Transforming the diploma into a certificate of mastery. A transcript that summarizes a portfolio of evidence would help high school graduates tell their story better than the current list of courses they passed and their grade point average. More than 300 of the best high schools in the world have joined forces in the **Mastery Transcript Consortium** to help graduates describe their competencies and accomplishments more fully than a list of classes they passed.

Thirty years ago, **the Report** of the Commission on the Skills of the American Workforce, recommended concluding high school with a Certificate of Mastery. Its core concepts remain innovative and important: initial credentialing of important life and work skills (around what is now 10th grade) and demonstrated achievement on a pathway to postsecondary success (high wage employment, further education, or a combination) as a high school diploma.

Comprehensive learner records that yield valid and reliable measures of growth and proficiency and more frequent and transparent accreditation visits will bring students, schools and communities into a more progressive and supportive future.

Accountability 2.0 opportunities include:

- Programs that help youth nurture personal networks and measure their social capital.
- AI-enabled apps that illuminate multiple career paths based on students' interests.
- Reworking the standardized testing process to focus on better tests and smaller sample sizes.
- A new accreditation process with streamlined reviews of learner profiles and school visits.

Learning Design

INVENTION OPPORTUNITY #7: Learner Experience

Learner experience: how to use learning science to craft engaging and effective learning sequences

"None of us can know what a child can become unless we design the environments/context to reveal it."

~ Dr. Pamela Cantor

What if tools guided by learning science helped craft engaging and effective learning experiences and sequences?

The pandemic has laid bare the inequity and inadequacy of the patchwork American system of education, making it clear that learner experience (LX)—how learning science is employed in an effort to craft engaging and effective learning sequences—is an invention opportunity. It is as big as a whole new learning system and as small and focused as a project next week **crafted with purpose** and connected to **place**. Beyond the topics and tasks of the curriculum, it involves the supports, the culture, and how learners interact with their learning environment.

To address it, the **Science of Learning and Development Alliance** (SoLD) was formed in 2016, convening learning science superstars Linda Darling Hammond, Pam Cantor, Karen Pittman, Todd Rose, and David Osher to compile insights and solutions to the persistent inequity and underperformance in the U.S. education system. In the first of a trilogy of papers, SoLD outlined how **How Children Learn and Develop in Context** via the interconnectedness of multiple contexts and the integration of cognitive, social, emotional, and affective processes in development and learning.

The LX opportunity is complicated and multifaceted in that it is highly individualized; however, 12 strategies stand out. The following suggest supportive learning environments and sustained relationships; the opportunity involves creating smarter systems. Developers of educational technologies and supporters of new instructional models should note that the last three factors highlight the learners' increasingly active role. They can be co-constructing learning pathways themselves as well as providing peer support and mentoring younger learners.

12 Science-Based Learning Design Principles

Recognize Individuality Multiple pathways to healthy development, learning, academic success, and resilience. Individuals vary in how they learn, behave, and develop. LX design should respect each person's autonomy and individuality.	**Anticipate Malleability** Human brains have the remarkable ability to change from experience–it's the biological opportunity for growth no matter what the developmental beginnings.	**Understand Context** Develop a deeper understanding of the whole child in context. Distinguish motivational issues from learning strategy problems and identify their causal factor.	**Build Relationships** Strong attachments and positive, long-term relationships are key to learning and development. They occur in safe learning communities where students feel they belong and are known.
Set Priorities Focus on foundational skills and belonging, self-efficacy, and a growth mindset.	**Build on Prior Learning** Students are not "blank slates"—they are active agents who bring to school prior knowledge and experiences. Learning starts by meeting students where they are.	**Engaging Tasks** Learning should foster active student engagement. Well-designed, interdisciplinary projects can balance what students already know with what they need and want to know.	**Quality Feedback** Instructional design should provide the right amount of challenge, rigor, support, feedback, and formative assessment to drive and accelerate the developmental range and performance of individual students.
Risk Factors All children are vulnerable. Adversity, through the biological process of stress, exerts profound effects on development, behavior, learning, and health. Buffering risk factors, emphasizing assets from relationships, and a sense of belonging foster resilience and accelerates healthy development and learning.	**Explore Motivation** A complex mix of beliefs, values, interests, goals, drives, needs, reinforcements, and identities influences choices, persistence, and effort. The perceived utility of a task and the intrinsic and extrinsic motivations are unique for each learner.	**Metacognition** Becoming aware of one's own thinking and learning depends on foundational self-regulation and executive function skills. Metacognition skills help learners evaluate their own learning and engage in self-direction.	**Unique Pathways** There are multiple pathways to healthy development, learning, academic success, and resilience. A "constructive web" of supports can engage learners as an active agent in their own learning to set scaffolding, sequencing, and pacing.

Better Tasks and Tools

Four examples of well-developed LX systems supported by innovative tools include:

- The 200 **New Tech Network** schools support team-taught integrated projects with authoring tools and a library of tasks that can be adopted or adapted.
- **Purdue Polytechnic High** in Indianapolis, which combines individual skill sprints with **community-connected projects**.
- **One Stone** in Boise merges **purposeful explorations** with design labs and community-connected projects.
- The 200 global **Acton Academy** affiliates create environments where learners become self-directed aided by peer support and mentoring.

In the aggregate, each of these systems combines affective, cognitive, social, and emotional processes with curricular content to promote academic growth. Each of the extended challenges seeks "the right amount of challenge, rigor, support, feedback, and formative assessment to drive and accelerate the developmental range and performance of individual students."

The **Learner Variability Navigator** system from Digital Promise also helps curriculum designers and edtech vendors design tasks and tools to reach each learner. It's a whole-child research framework for practitioners and edtech product developers. Vendors can earn **certification** as a research-based product.

Learner experience opportunities include:

- Student support initiatives that act as a buffer for challenging personal circumstances.
- Developmentally appropriate programs and tech tools that promote metacognition.
- Bite-sized professional development options that introduce educators to designing a holistic learner experience.
- Frameworks that more easily assess and build upon prior learning.

8 INVENTION OPPORTUNITY #8: Measurement

Measurement: What if learners benefited from smart measurement systems rather than dumb tests?

In the same way the business world has shifted to focus on customer experience informed by big data, the future of education is learner experience informed by measurement. Instead of planned assessments, the advanced model for measurement embraces embedded checks, adaptive adjustments, gathered observations, reflections, and system diagnostics. This process can produce useful profiles that truly help learners tell a more holistic story.

The 13 building blocks outlined below build on an outline of **next-generation assessment** by David Conley, an author, educator and strategist, describing how measurement systems will incorporate numerous small measures embedded in and associated with learning experiences rather than big inauthentic end-of-year tests.

The Role of Measurement in the Learner's Journey

1. Learner growth: The purpose of measurement is to inform learner growth. Program administration and system accountability come second. As Conley has said, "Students are actors, not objects."

2. Continuum: Measurement views growth on a novice-expert continuum versus being fixated on age cohort proficiency targets measured by year-end standardized tests.

3. Embedded: Most measurement is embedded in or a reflection on learning experiences. Feedback is often immediate, always informative and can be quantitative or qualitative.

4. Application: Evaluation focuses on the practical application of knowledge and skills, not rote memorization of facts and formulas. Sometimes the stakes are high when a mastery judgment is involved (for a certification or move to the next level) but measurement remains authentic and fair.

5. Ownership: Measurement promotes student agency in their learning, helping them to identify interests and develop self-knowledge. It is as much about building success skills as academic progress with feedback that helps learners determine the next steps.

6. Actionable: Measurement isn't about categorization; it produces actionable information. It helps learners understand their own scholarship and promotes goal setting and persistence.

7. Insight: Measurement is an ongoing effort to provide a deeper understanding of the application of knowledge in context. Because expertise is context and domain-dependent, important skills are applied to different problems in different settings to demonstrate transferability. This informs educators of what was learned and about the nature of the task and context.

Measurement Systems > Assessment Events

8. Adaptive: Student data is incorporated into adaptive systems that identify the next best steps–both in level and type of challenge. This technology supports the acquisition of intensive skill-building that enables equitable contributions to extended societal challenges.

9. Profiles: With the right measurement, learners aren't just letter grades on a page or a GPA; instead, they become well-rounded people whose progress and expertise can be explored in **comprehensive learner records**. Such records also aid individual development and goal attainment by identifying the most productive environments and experiences for growth.

In a **paper on the future of assessment**, Australian nonprofit High Resolves described profiles as "Very large, dynamic, database of all archived cognitive, affective and behavioral indicators from multiple activity-based assessments". Comprehensive records inform not only individual next steps but (with full privacy) provide valuable insights into the performance of subgroups and the efficacy of learning experiences.

10. Proactive: Powerful immersive experiences can take place both inside and outside of school, where improved measurement spots evidence of desired competencies. It moves away from relying exclusively on elaborate and inauthentic deconstructed post hoc assessment tasks (those big multiple-choice tests at the end of the academic year). Educators, advisors, and algorithms can all be part of proactively recognizing competencies.

Opportunities to provoke creative problem solving can indeed be planned—but they also can be acknowledged when and where they emerge given conditions that value curiosity and self-direction.

11. Cumulative Validity: Measurement takes advantage of cumulative validity, combining hundreds of data points. For example, multi-trait feedback on 30 writing samples from several classes over two years (each with 2-3 revisions) can provide a richer and much more accurate picture of writing competence than a standardized test. Automated feedback systems can augment human judgment in assessing skills progressions.

Good schools know every learner's current progress on each important competency every day by taking advantage of the cumulative benefit of high-quality, formative assessment.

12. Equity: Good measurement systems address equity issues. They identify learners that need more time and support; they power early warning systems. Equitable measurement systems avoid tasks and tests that incorporate bias.

13. Credentials: Measurement systems help communicate milestones in capability development in the form of credentials and portfolios of artifacts that enable learners to tell their stories.

The Current Landscape: Measurement in K-12 & Higher Education

CompetencyWorks notes progress in most states on the few school systems and postsecondary programs that are doing many of the above things well, noting that it's harder for an existing system of schools to adopt these principles but a few dozen are on the path, while a handful of built-from-scratch school systems and postsecondary programs exist that do many of these things well.

Conley sees an accelerating change in college admissions—an opening for multiple measures. And research suggests that a wider range of measures generally helps identify a more diverse candidate pool.

States can advance smart measurement with pilot programs that support schools moving in this direction. Future state accountability systems could authorize networks of schools that can present comprehensive datasets that consistently and accurately describe learner growth.

Measurement opportunities include:

- Pilot programs that empower schools to explore and iterate upon comprehensive learner frameworks.
- Statewide accountability systems that aggregate measurement across school networks for a macro view of learner growth.
- A revamped college admissions rubric that could yield a more diverse student body.

9 INVENTION OPPORTUNITY #9: Motivational Profiles

Motivational profiles: identification and use of the factors that motivate persistence and achievement to design learning environments and experiences

What if learners had a record of the factors that motivated them to learn?

Many more strategies to support the cognitive elements of learning and instruction have been created than strategies to support the affective and emotional learner motivation to actually use those strategies. What research has shown to motivate students' persistence—context, task, team, collaboration, competition—isn't always present in learning environments. Even if some or all of these elements exist, the information that is captured isn't necessarily shared in a productive way across vendors or partners.

Despite learners' natural curiosity, the hard work of learning requires motivation—the willingness to start, put in mental effort, and persist according to the **Designing for Learning Primer** from Transcend. Naturally, this is especially true in the face of challenges, of which there are plenty in the present moment.

Motivation itself is personal and varies from individual to individual; while some educational applications such as DuoLingo have had success in creating experiences that encourage learners to persist, when it comes to learning outside of full technological immersion, tapping into learners' intrinsic motivating factors is critical.

In the **Belief-Expectancy-Control (BEC) Framework**, Richard E. Clark and Bror Saxberg of the University of Southern California outlined a 'learning engineering' approach. By integrating and applying a wide array of research results and clinical experience from teachers and instructional designers, they guide the solution of a practical problem at scale: how to identify and solve some of the typical motivation problems experienced by educators in serving both adolescent and adult students.

The framework is based on research stemming from expectancy, value, and control theories of motivation and provides ways to measure the behaviors defining effort-based motivation: starting, persisting, and investing adequate mental effort to succeed. It then describes and demonstrates how to identify four of the main causes of failures to persist or invest adequate effort: student values, self-efficacy, emotions, and attribution errors—and suggests evidence-based strategies for solving each.

Enabling learners of any age and level to extract insights from their experiences and better understand how they learn will go a long way toward their development and subsequent academic achievements. One of learning designers' central goals should be to support motivation with each learner, whether this involves sustaining learners' natural curiosity and motivation, helping to expand on it, or removing barriers to it. By honoring the principles below, this is possible.

Value

People learn best when they find the content, outcomes, process, and/or relationships associated with learning important and relevant.

Self-Efficacy

People learn best when they believe in their ability to grow and achieve mastery of what they are learning.

Sense of Control

People learn best when they perceive that they have meaningful and appropriate agency over their learning.

Constructive Emotions

People learn best when they are in constructive emotional states versus ones of excessive stress or anxiety.

Motivational profiles opportunities include:

- Platforms that empower K-20 educators to infuse their curriculum/lessons with elements motivating persistence: context, task, team, collaboration, competition.
- Classroom technologies that allow learners to discreetly convey their emotional state or share current issues.
- Approaches to gamifying learning, presented in both digital and analog formats.

INVENTION OPPORTUNITY #10: Portable Records

Portable records: learners/guardians/teachers draw insights from comprehensive records drawn from teacher/partner assessments (with interoperability); learners tell their story with portfolios and portable credentials, they give permission to access and receive offers from employers and postsecondary institutions.

What if learners were better equipped to tell their own story?

While some of the world's tech goliaths have a comprehensive digital record on each of us, it may come as a surprise that some U.S.-based schools and universities still rely on a paper-based list of grades completed and classes passed as their record of progress.

This is due to a number of elements. Occasionally, commitments to certain tools create process-based and philosophical constraints. Relying upon what's always 'worked,' over time stakeholders at each stage of the educational ecosystem have become universally accustomed to students and their learning experience data belonging within a school district or postsecondary institution, its student information system (SIS), or other assorted tools for navigation.

Some U.S.-based schools and universities still rely on a paper-based list of grades completed and classes passed as their record of progress.

The technology and the learning science exists to begin changing processes. Instead of a school-centered approach, organizations can shift to a new and more expansive process that keeps the focus on the individual student.

Learners deserve portable learning records in order to have the fullest experience in the present culture as they pursue their aspirations and become more active contributors to their communities and the world. In light of this, massive invention opportunity exists on two fronts: in the development of comprehensive learner records and better transcripts that reflect the whole student and are interoperable in nature.

A comprehensive **learner profile** will help students, parents, and educators track progress, coordinate services, and make informed decisions. At the university level, an interoperable learner record (ILR) is key to creating an infrastructure that will empower learners to **pursue and manage their education and their career**, according to Ricardo Torres, President and CEO of the National Student Clearinghouse.

A demonstrated desire to reshape personal records exists. And there is no shortage of edtech options for trying to take on this complexity of a long-term project of growing a graduate, at either the high school or college level. However, the following solutions start to put together a promising forecast of what could happen with the right responsiveness in the field.

- Battelle for Kids' **Portrait of a Graduate** shifts the emphasis away from the diploma and transcript to what actually occurred in the life of an individual child during their learner's journey. For districts looking to start a learner-centered shift in their culture with impact occurring for the student and the field, a portrait of a graduate makes for a much more compelling and comprehensive document, increasing the value for the technical work of multiple parties to establish more portable records.
- The **Comprehensive Learner Record** (CLR) supports a variety of postsecondary academic and workplace recognition and achievements including courses, competencies, skills, and employer-based achievements and milestones, in a secure and verifiable dashboard. Its development began with early projects around competency-based education which led to a draft standard for the extended transcript (predecessor to the CLR).

- The **Mastery Transcript Consortium** is a collaborative effort of 368 of America's leading high schools. The consortium is working on a digital high school transcript that helps learners share their unique strengths, abilities, interests, and histories—providing a deeper holistic view of each as an individual for the next step in their academic or professional lives. While this adds another layer of insight into applicants, colleges and universities' admissions teams will need to be equipped to handle what is currently a non-traditional document.

Due to the complexity of a shift to a more equitable and portable record for learners, schools and institutions are reliant upon the tools developed by others to accomplish a vision with more interoperable systems. To date, small tech and consulting companies have helped with the process of managing the symbiotic relationship between scheduling and credentialing. The work of potential partners should persist and even converge as more educational leaders see the invention opportunity for combining their assets in compelling ways for students.

Privacy, security, and accuracy remain paramount for any potential solutions. Values communicated in a company's product offerings as well as its underlying technology to keep data secure and verifiable (i.e., encryption, blockchain) will reveal which vendors are most likely to be a part of the invention opportunity in the coming years.

Portable Records opportunities include:

- Comprehensive learner records for K-12 and college students.
- Better transcripts that reflect the whole student and are interoperable in nature.

INVENTION OPPORTUNITY #11:
Credentialing Capabilities

Credentialing capabilities: how to credential demonstrated skills (especially success skills that are context-dependent) to reduce friction in talent transactions.

What if credentialing capabilities could be better captured and communicated?

Students moving in lockstep with their peers regardless of personal mastery of learning material has become a woefully outmoded instructional model in the early learning, K-12 and postsecondary context. So, too, is the concept of time as the primary measurement for learning.

Letter grades and GPAs provide only a narrow window into learners' capabilities, as mentioned in the previous section on portable records. And an institution's brand offers some signaling value in the form of prestige, but little actual substance in terms of an individual's qualitative and quantitative achievements.

How can organizations help people to fully communicate what they know and can do?

Through improved credential units of learning, individual learning pathways can be opened up to better communicate capabilities, and to reduce friction in talent transactions.

The pandemic is accelerating this shift to **verified credentials**. Enrollment in short-term credential classes increased by 70% over last year while freshman college enrollment dropped by 16%.

Six opportunities to better capture and communicate learning do so via tools to credential demonstrated skills and reduce friction in talent transactions.

1. Better Badges. While not new, the **open badge** initiative has expanded digital credentialing and improved signaling for learners over the past decade, but it has come with wide variability in quality.

The K-12 education sector has pioneered badges related to professional learning, usually called micro-credentials. **Digital Promise** is a nonprofit leader in hosting and issuing more than 450 such micro-credentials that develop and verify important educator skills.

"Because micro-credentials focus on a single competency, they support educators in honing a specific practice. Instead of tackling the entirety of challenges in a classroom or school at once, educators use the process of earning a micro-credential to examine a challenge in the classroom, engage with rigorous research and rich resources to build knowledge of a skill and plan for implementation, and then document their demonstration of a skill."

~ Odelia Younge,
director of micro-credentials at Digital Promise

Bloomboard has developed the micro-credentials that power the professional learning system at **Harmony Public Schools**—a great example of a well-designed comprehensive talent development system

In partnership with badging platform **Credly**, **IBM** has created and issued digital credentials that capture important skills for its business with trusted assessments, and global organizations like higher ed association EDUCAUSE enable academicians and administrators alike to **display their professional accomplishments** from over 100 badge options, such as keynote speeches, panel or advisory participation, and article submission and review, among others.

Better-badged units of study will continue to expand options for learners outside formal education, particularly in workforce development.

As industry giants like IBM and educational companies such as Khan Academy issue more verifiable badges, learners will be able to back up skill assertions with evidence and receive credit for prior or outside learning from their high school or college—perhaps with some encouragement from policymakers.

2. Better Degrees. Interest in skills-based hiring and tangible value for college degrees has lead many institutions to make current degree programs better demonstrations of valuable skills.

Online higher education giants SNHU and WGU have been leaders in back mapping courses and degrees from job critical skills. They've made courses consistent in content and have incorporated assessments that validate skills.

3. Better Transcripts. As mentioned in the previous section, **Mastery Transcript Consortium** is a network of some of the most innovative schools in America that have banded together to issue more meaningful transcripts that cumulate demonstrations of mastery rather than relying on a list of classes and grades.

Other efforts are regional in nature. **Greenlight Credentials**, for example, helps North Texas high school scholars build and permission a digital profile to employers and higher ed institutions. The extended transcript includes traditional and new forms of evidence of learning with supplements that help learners tell their story.

4. Better Records. With learners accessing multiple providers inside and outside degree programs and learning for life across a range of employment experiences, portable interoperable records are becoming more important.

In September 2020, Walmart and Salesforce enlisted **Badgr** to help develop **pilot** solutions that could empower over two million workers to capture and communicate what they are learning. The system maintains a record of the skills required to earn each badge and because the data is machine-readable and interoperable, it offers the learner portability across institutions and employers.

5. Better Translation. To promote consistent skill definitions and system interoperability, the giant competency-based nonprofit university **WGU** organized the **Open Skills Network**. Launched in September, OSN already has four dozen corporate and university partners. It promotes a more equitable, skills-driven labor market by matching talent with career opportunities through a common skills language,

Also behind the scenes are translators like **MatchMaker Education Labs** whose inference engine can translate one set of competencies into another or reassemble learning assets developed for one system to the framework of another system with a new set of competencies.

6. Better Incentives. Incentives can be built into goal attainment along learning pathways. Byron Sanders, CEO of Big Thought in Dallas, sees the potential for badge attainments to unlock internships, stipends, scholarships, and school credits.

A blockchain record, like Greenlight Credentials, can automatically execute contracts that make attainment incentives available to learners. Learners could automatically have new credentials highlighted on a LinkedIn profile where it becomes discoverable and machine-readable.

To illustrate, if a learner gave a group of employers (like North Texas health providers) access to their Greenlight Credentials profile, they could automatically receive work-based learning and employment offers.

Eventually, credentialed demonstrations of mastery will replace most conventional grades and transcripts. In some places, it will unlock opportunities to learn from multiple providers, creating faster, less expensive, more flexible, and increasingly personalized learning pathways. Credentials will become better signals of capabilities and, as they become more portable, will make employment more equitable.

While promising, the mere presence of better credentials won't tell the whole story. Learners should also be collecting artifacts of their best work and honing their storytelling skills so they can make the best case for themselves: by showing, telling, and sharing verified credentials. As organizations recognize the importance of this skill set, emphasizing effective storytelling and even taking the traditional elevator pitch into the academic context will likely serve to improve employment prospects and long-term career outcomes.

Credentialing capabilities opportunities include:

- Competency-translation frameworks to ensure consistency in skill definitions.
- Blockchain-powered systems for credential earning.

INVENTION OPPORTUNITY #12:
Competency-based Progressions

Competency-based progressions: combining individual progress with effective use of cohorts and teams—and what that means for scheduling students and staff.

What if the ways students and adult learners are obtaining new skills and knowledge could be reconsidered? How will it be determined if existing school curricula, degree programs and wraparound services are effective?

Perhaps the most important question to ask is: What if learners could move at their own pace and get the time and support needed to succeed?

Humans inhabit a world that is rapidly changing due to technological advances and myriad crises beyond anyone's control. In order to remain successful in it, today's learners must be prepared to adapt their professional skillset throughout their lifetimes and adopt lifelong learning strategies so as to avoid obsolescence in the job market.

Shifts away from today's test-focused system were underway well before COVID-19 caused a major upheaval of the academic and professional worlds. Yet the current context **magnifies the need to make these changes now**.

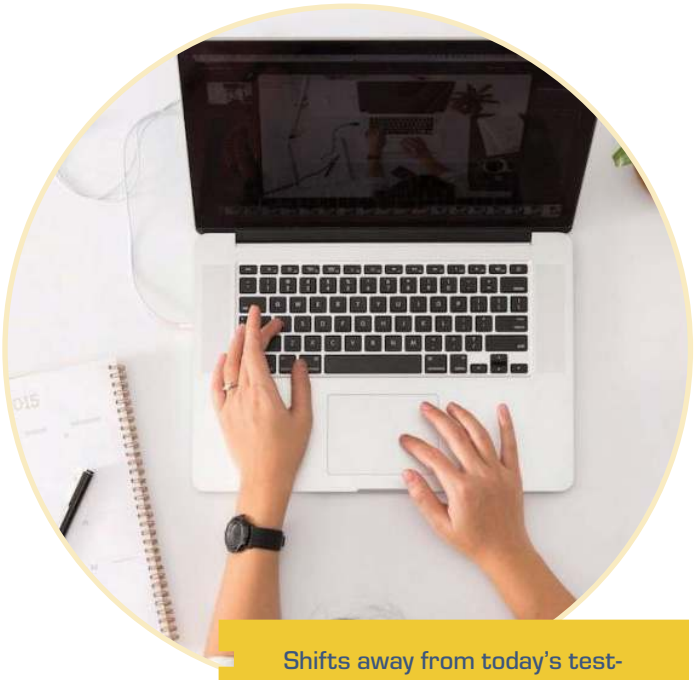
In the span of several months in the spring of 2020, many legacy metrics employed by districts and institutions as proxies of learning such as attendance were rendered impractical. "Many systems changed their grading policies to a pass/fail or credit/no-credit system," explained former superintendent and edtech leader Devin Vodicka. "In parallel with the ending of many familiar practices, suddenly most students were embedded in digital learning experiences, much of it with embedded, real-time feedback, where they also had the opportunity to engage in more self-directed learning."

Creating new policies, practices, and tools can encourage the development of purposeful goals tied to whole-child, competency-based learning progressions—whether this is happening in face-to-face, online or hybrid formats. It's also possible to build upon the successes currently witnessed at the edges of innovation now. New models can be invented to elevate desired outcomes from a knowledge-oriented perspective to a more holistic one encompassing knowledge, habits, and skills.

Two types of digital applications would be especially useful:

- **Comprehensive competency tracking tools**, which would grant learners, educators and parents the opportunity to view an individual student's trajectory and current achievements or areas of demonstrated mastery in real-time—allowing for more effective long-term planning and more agile approaches to addressing needs.
- **Scheduling platforms for dynamic individual schedules** that are intuitively designed to support students and staff, so that administrators, educators and learners could make order out of chaos, ensuring consistent messaging and a strategic method regarding changes in instructional modalities and other fluctuating logistical concerns. Different versions could be developed that speak to the needs of various audiences and provide an appropriate level of insight (e.g., early learners, parents, school leaders, and university C-suites)

Technologists eager to dive into this invention opportunity would be right in assuming that consulting the stakeholder groups mentioned above would be the wisest place to start.



Shifts away from today's test-focused system were underway well before COVID-19 caused a major upheaval of the academic and professional worlds.

Examining the Role of Emerging Technologies

A note of caution is warranted regarding the current potential for AI or machine learning algorithms as they relate to assessment. Since they rely on self-reference feedback loops, the value in this approach is only evident when a massive amount of data is present.

For an individual learner, the only areas where there might exist such an abundance of information would be at a granular level tied to 'ladder' learning experiences focused on knowledge. Even in those cases, it's been discovered that AI-informed insights are only valuable as input to an educator, who should apply their own subjective perspective and observations to make any holistic determinations about performance.

Technology will, of course, be an accelerator. For example, on the **Altitude Learning** platform students can create their own learning cycles and the authoring tools make it easier to co-construct and assess valuable learning experiences. In addition, there are already several options on the market that provide a number of tools that simplify combinations of assessments to help understand mastery judgment milestones. Other tools combine adaptive and performance-based assessments. Eventually, there will be competency-tracking tools that incorporate learning already credentialed by multiple partners. These resources will evolve into the critical infrastructure for learner records and 'mastery transcripts' that will replace current models.

At all times, the learner should be placed at the center of any decision-making as educators, policymakers and educational technologists work to determine the best approach. Consider the following questions in endeavors intended to support students around measurement and assessment:

What will best serve the learner? And what will best promote ongoing learning?

Competency-based progression opportunities include:

- Learning models that combine individual progress collaborative and project-based work.
- Competency tracking tools that draw from multiple assessments and inform mastery judgments and ongoing learning.
- Scheduling tools that support dynamic learner grouping (by skill, team and task) and educator staffing.

INVENTION OPPORTUNITY #13: Inclusive Learning

Inclusive Learning: tools and learning strategies that recognize and support learner variability and special needs.

What if we truly designed and innovated for ALL learners?

Ask any parent and they will say that all kids are different. However, some kids' differences come with a diagnosis that will allow for a personalized, special education. But what of the countless other children who struggle in school every day? Why can't their learning experience be more tailored, leveraging their strengths and interests?

For over 40 years, America has authorized an individualized program of instruction for students with disabilities; while there is certainly much to be said about ensuring quality in all special education systems, much can be learned about personalized learning from special education.

Educators have long recognized that the education strategies that work for students with additional needs would benefit all kids. These personalized learning strategies are, in fact, best practices for all students. Yet schools continue to be designed for the 'average' student. And then educators, school leaders and parents wonder why there is so much frustration when trying to fit the proverbial square pegs into round holes.

It may be assumed that the line between general and special education is clear, but in reality, it is quite blurry. Special education was never intended to be a separate system. It was designed to facilitate access to general education. Unfortunately, disability labels can now act as fuzzy barriers separating those who qualify for individualized instruction and those who do not. And this is the problem: the one size fits all approach to education doesn't account for students' differences or preferences unless they have a disability.

Even so, the commonly used special education terms of accommodations and modifications imply after-the-fact tweaks to an existing system. The idea of "falling behind" or "accelerating" implies one pace for learning—instead of allowing students to progress at their own time and pace and actually master concepts. COVID-19 forced difficult but essential conversations regarding education and equity. One lesson learned is that all students should have access to student-centered learning; students shouldn't require a label to make a system fit them.

Why is Project-Based Learning a Good Way to Address Learning Differences?

Differentiated instruction, interdisciplinary content, technology, collaboration, support and accommodations, self-determination, and authentic assessment are **key markers of successful inclusion** in school communities. These elements are present in the foundation of high-quality project-based learning—a vehicle for meaningful inclusion because each of its project design elements and teaching practices is geared toward creating the kind of engaging and dynamic learning environments that are also known to best serve students with a wide range of disabilities.

Differentiate Instruction and Support. There are a number of ways to differentiate in project-based learning, such as offering voice and choice in student products to increase engagement and building on students' strengths or the various approaches to managing project implementation. Scaffolding projects effectively still leaves room for conventional differentiation strategies like front-loading vocabulary, providing visual supports or offering texts with varied reading levels.

Resources like the **Learner Variability Project** can help teachers identify individual needs and help product developers accommodate differences. A system of tiered supports (as outlined by **Turnaround for Children**) creates structures and partnerships that ensure that dynamic needs are promptly and effectively addressed. **Educating All Learners Alliance** has teaching, assessment, intervention, and communication strategies.

Embed IEP Goals into Projects. There are opportunities to embed students' specific academic Individual Education Plan (IEP) goals throughout their differentiated project pathway that allow skills to be addressed with consistency, in addition to providing students with a sense of their genuine purpose.

IEP goals such as augmentative communication, self-management or nuanced social skills can be accommodated in projects. In project-based classrooms, the emphasis on key success skills provides daily opportunities to work on these goals in an authentic and natural context. Determining which essential competencies align with project goals at the outset enable educators to infuse them into projects and gather relevant data.

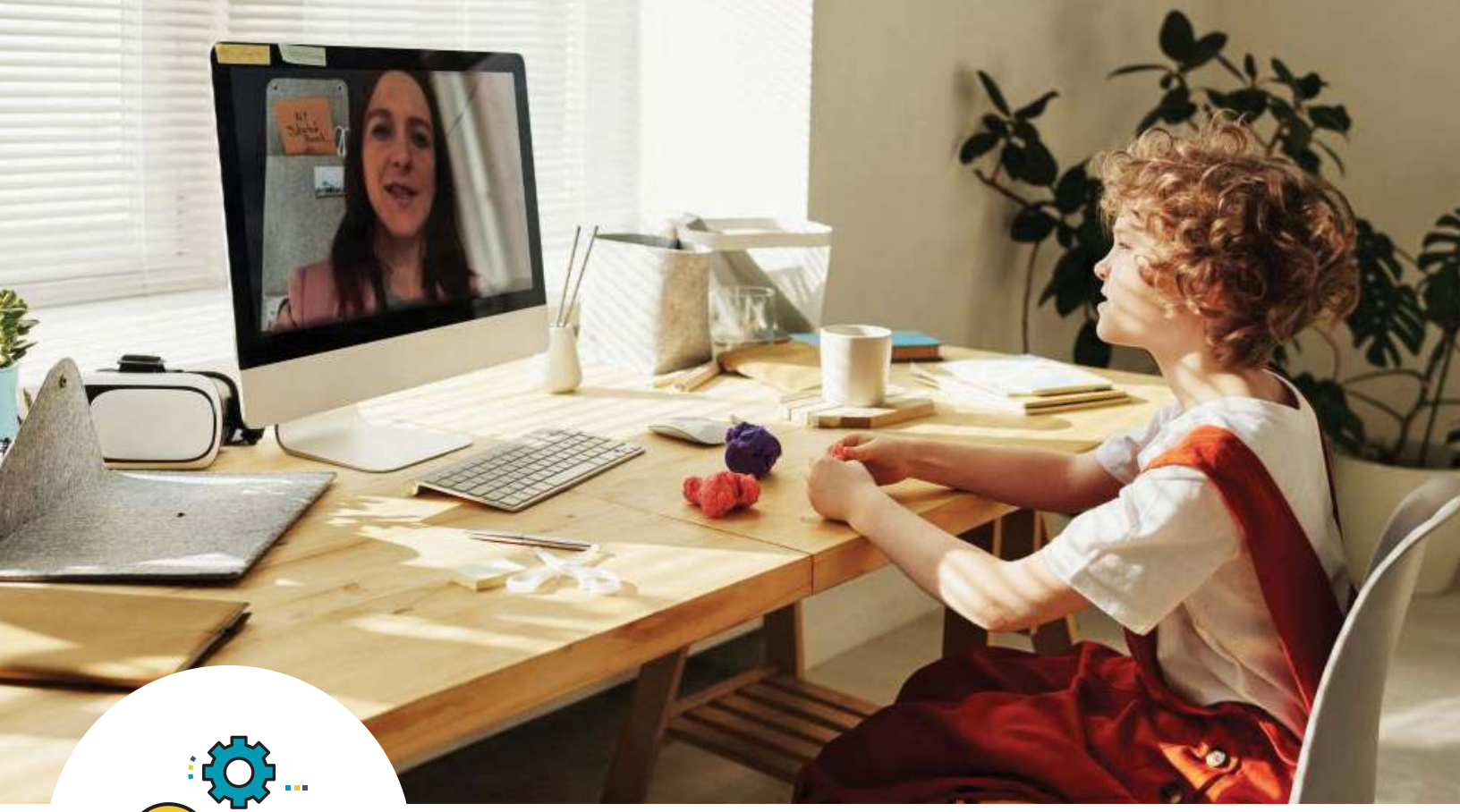
Assistive Technology. Invention opportunities include tools that improve accessibility in:

- **vision:** larger print, larger screens, different colors, text to voice
- **hearing:** real-time subtitles (in multiple languages)
- **neurodiversity:** block distractions, get organized, improve comprehension
- **mobility:** type without a keyboard, voice to type

Microsoft is making progress on improving accessibility in all of these categories across its product line. **Google** also made a commitment to accessibility with significant progress in voice recognition and translation.

Inclusive learning opportunities include:

- Creating learning environments where all learners have an individual learning plan, personalized learning pathways, engaging learning experiences with assistive tools, and strong supports.



System Design

INVENTION OPPORTUNITY #14: School As A Service

School as a Service: flexible portable learning services with community as classroom in a supportive ecosystem.

What if the classroom extended beyond the walls of a school and into the community?

For a long time, America's notion of 'school' has been a knotted bundle of assumptions about what's taught, where teaching takes place, when it takes place, who's in the room and why, and who gets to decide the what, when, where, and who.

For the vast majority of students pre-pandemic, this meant following a curriculum at a fixed pace in a building owned and operated by the district on a schedule designed by administrators within a fixed age-based cohort led by someone assigned according to opaque contract provisions. Each of these assumptions reinforced one another. They hardened into regulations and requirements, which became practices and customs, which reinforced the original assumptions. Decades of experience show that this bundle serves no students particularly well, and many students remarkably and consistently poorly. Yet parallel decades of reform efforts focused on one institutional assumption or another have failed to loosen the Gordian Knot.

The pandemic gave us a glimpse of an unknotted future. With schools closed, families, communities, non-traditional providers, and educators themselves stepped up to improvise alternatives based on the authentic needs and opportunities of the moment: nimbleness, individualization, community involvement, and a whole-child approach. Against a background of disruption, trauma, and institutional failure, promising practices and models emerged.

Within the old school silo, information flows were taken for granted (even if they didn't always function well). But they were bottled up, difficult for parents, students, providers, and others to connect to or make use of, unfortunately. It's possible to replace those silos with student-centered community-based learning environments that are trusted, joyful, flexible, and inclusive. To do so, though, information flows with a 'weak center' will need to be redesigned in order to prevent unearned gate-keeping privileges from re-emerging.

'School' does not have to be an institution or a place. It can be a widely distributed set of community services that merges formal and informal education with upskilling experiences for students, educators, and adults. It can adapt to the needs of learners rather than the other way around. It's time to move from institutional silos to community impact. It's time to shift from schooling to learning.

New Learning Models

Engaging in projects valuable to learners and community is an example of an experience that is inquiry-based, interdisciplinary, learner-centered, and leverages the community as classroom. It leverages design thinking and encourages learners to consider a global context. A recent book, The Power of Place, borrows principles from Teton Science School to outline how next-generation learning models are using these design elements.

The Power of Place, borrows principles from **Teton Science School** to outline how next-generation learning models are using these design elements.

The **Place Network** includes 14 rural microschools that share these design principles, an outcome framework, platform tools, and professional learning experiences.

Building 21 is "Empowering networks of learners to connect with their passions and build agency to impact their world."

The **learning model** is based on shared competencies and personalized learning pathways.

Acton Academy supports more than 200 global microschools where every child is encouraged to find a mission that will change the world. Near-peer mentoring helps set weekly learning goals that guide skill building and projects.

New online learning models like **WorldOver International School** feature individual learning plans, interdisciplinary courses, and community-connected impact projects, portfolios and exhibitions.

Da Vinci Connect is a Los Angeles public K-8 school combining homeschooling and two days per week on-campus instruction featuring project-based and social-emotional learning. **Da Vinci Connect High school** combines on-site and online learning. Students can earn an AA or even a BA with their high school diploma through a **partnership with SNHU**.

Workspace Education in Connecticut expanded from after school and homeschool support in a big red barn to launch Workspace Sky, an online co-learning platform that supports collaborative and interest-based learning with 1:1 guidance.

4.0 Schools helps fellows develop and test new learning models. Fellows receive coaching in a community of peers and small investments to test big ideas.

LOCAL TO GLOBAL CONTEXT

LEARNER-CENTERED

INQUIRY-BASED

DESIGN THINKING

COMMUNITY AS CLASSROOM

INTERDISCIPLINARY APPROACH

School as service opportunities include:

- Homeschool support services and special pricing from edtech startups.
- Accredited remote learning programs, including traditional academic subjects and extracurricular offerings.
- Cooperative learning/learning pod support services via an existing online school.

INVENTION OPPORTUNITY #15:
Flexible Shared Spaces

Flexible Shared Spaces: how to enable the benefits of comprehensive systems in small, safe, secure and personalized environments.

What if the traditional school building became more flexible, personalized and multi-purpose?

The imperative to enable the benefits of comprehensive systems in small, safe, secure and personalized environments has perhaps never been more urgent.

As the educational landscape changes, opportunities for collaboration between communities, business leaders and schools abound. By creatively repurposing otherwise unused community spaces, approaching learning from new angles, and focusing on place-based learning, leaders in education are finding nimble ways to tie learning and community interests together.

An invention opportunity exists in the form of new models that explore what to learn, how to learn, where to learn, how it is credentialed, how it's organized, how all learners are included, and where it's headed. Below are a few possibilities that challenge the traditional idea of learning in a dedicated school district-owned facility.

Prenda supports more than 200 nanoschools of five to 10 students in homes and community spaces and operates as a virtual charter school in Arizona. Experiences are organized around skill building, projects and collaboration.

San Francisco responded to the pandemic by developing 50 partnerships with community organizations such as Boys & Girls Club and YMCA to support learning pods. In partnership with Mindtrust, Indianapolis developed **pod partnerships** across the city. While temporary, these partnerships represent new ways of thinking about how and where education is delivered.

Portal launches a network of business-based Los Angeles high schools in September with a dual enrollment curriculum that builds business skills and results in a high school diploma and bachelor's degree.

Vaux Big Picture High School in Philadelphia is a partnership between the school district, the housing authority, the teacher's union, and Big Picture Learning. The first floor of the complex includes the housing authority, dual enrollment partner **Community College of Philadelphia**, and nonprofit partners that provide youth and family services.

Crosstown High in Memphis shares two floors of a 'vertical urban village' in a million-square-foot renovated Sears office and distribution center. The **Crosstown Concourse** includes offices, two health providers, a YMCA, art galleries, music venues, a theater, restaurants and bar, and 265 apartments. Crosstown High combines project- and problem-based learning connected to opportunities in the Concourse and community and personalized and competency-based learning of critical success skills, all in a diverse community that reflects the future of Memphis.

With thousands of vacant strip centers and dead malls nationwide, there is the opportunity to create **public-private partnerships** that transform abandoned malls into community hubs that like Crosstown become vibrant community spaces featuring job services, workforce training, college extensions, small elementary and secondary schools, mixed-income housing units and more. The key to vibrancy and sustainability is building a synergistic portfolio of tenants, funding sources, and business models.

Flexible shared space opportunities include:

- School districts and networks partnering with homeschool parents and community groups to support learning pods and cooperative solutions.
- Community school facilities that share youth and family services.
- Public-private partnerships for human development centers.

INVENTION OPPORTUNITY #16: Personalized and Localized Guidance

Personalized and localized guidance: relationship-based advising informed by personal and local data.

What if next steps and postsecondary plans were guided by personalized and localized guidance?

The primary role of **advisory systems** was once focused on students persisting toward high school graduation and (for some) filling out college applications. Today, it incorporates broader goals including success skills and it invites learners into decision-making on personalized pathways on a wider range of valuable postsecondary experiences.

Sustained relationships are the most important aspect of advisory systems at any level. They can be informed by smart systems in five categories—starting early, personalized pathways, localized guidance, adding entrepreneurship, and promoting progress. Each represents an invention opportunity for new tools and strategies.

1. Start Early. Discovering strengths and interests and possible futures should start early. Elementary career programs can start exposure to professions and career options while providing hands-on experiences and related practiced skills.

The **World of Work**, developed by the **Cajon Valley Union School District** in East San Diego County, provides 54 immersive K-8 career awareness units. With each, children are invited to reflect on their strengths, interests, and values and how they match up with possible futures.

In November, Cajon and San Diego Workforce opened **Launch Pad**, a middle school career awareness space designed to host guest speakers (called MeetAPro experiences) and workshops where students can engage with different careers. The Launch Pad will support student clubs, career-focused electives, and conversations with adults and career coaches.

Possible Futures is an age 6-10 curriculum from JFF that allows learners to "explore STEM occupations, develop essential 21st-century skills such as collaboration and communication, and learn how to positively contribute to their communities."

2. Personalize Postsecondary Guidance. What if learners' next steps and postsecondary plans were informed by personalized guidance? What if sustained advisory relationships were informed by inferences drawn from a comprehensive learner profile combining insights drawn from achievement levels and growth rates, interests and motivational factors, and context variables.

What if possible learning experiences—both local and global—could be identified, curated, even co-created by learners with advisors and teachers.

What if personalized guidance systems helped every learner create a well-informed postsecondary plan? These career awareness and postsecondary exploration systems should enable students to:

- Identify interests and strengths;
- Explore career areas, **global goals, and impact opportunities**;
- Develop and execute a comprehensive career pathway plan;
- ain work experience through job shadows, internships, and apprenticeships;
- Explore postsecondary options and develop a plan;
- Develop a postsecondary plan; and
- Apply to and gain acceptance to the postsecondary option of choice.

Two early examples:

- **My Best Bets** from JFF guides young adults to positive choices in postsecondary education and training pathways that lead to high-demand and high-growth careers.
- **YouScience** helps youth uncover what they like and what they do well. They connect natural talent, skills, and knowledge with in-demand education pathways and careers.

3. Localize Guidance. What if guidance was specific to zip code opportunities for employment, entrepreneurial opportunities, and impact? What if an advisory system built **social capital** by introducing learners to mentors, community-connected projects, work-based learning opportunities? Early examples include:

- **ImBlaze** from **Big Picture Learning** helps learners find, select and manage local work-based learning experiences. Learners receive mentor feedback and can share endorsements on LinkedIn.
- **MyNextMove** from **San Diego Workforce Partnership** provides personalized and localized guidance. Job seekers access local job openings, coaching, work experiences, and training programs. The system gets smarter over time about the learner's interests and maps the information against updated local opportunities. They provide support from **kindergarten to career** and invites families to join students in visiting the career development centers where they **provide childcare**. This **two-generational approach** can be the first time in which parents have been invited to think about possible futures.

4. Add Entrepreneurship. Because knowing how to create a job is as important as how to get a job, every young person deserves the opportunity to develop an entrepreneurial mindset and the skills to spot an opportunity and deliver value to a community. It starts with design thinking, a structured problem-solving approach. Examples include:

- **One Stone** (Boise), **LEAD Innovation Studio** (Kansas City), **Design Tech High** (Redwood City), **Purdue Polytechnic High** (Indianapolis) all teach design thinking skills in ninth grade. **Grand Rapids Public Museum School** starts in sixth grade. **Design 39** infuses design thinking into K-8 education.
- The Design Thinking Academy at **Grand Valley State** uses the **Innovators' Compass**, a simple but powerful tool distilled over 20 years at MIT, IDEO, and Olin College by Dr. Ela Ben-Ur who also uses the Compass in a **Life Design Studio** at Olin.

Several new applications help learners identify strengths, interests, and a sense of purpose:

- **Living in Beta** from **One Stone** is a semester-long wayfinding experience (which can be repeated) that invites students to explore their personal values and passions and discover their purpose. It takes inspiration from **Designing Your Life** by Stanford's Burnett and Evans. The program runs on an innovative mobile social **Touchstone** platform.
- **Thrively** believes in unlocking each child's potential by helping them realize their strengths through hands-on experiences that matter. By engaging stakeholders and curating hundreds of activities, they live out their creed of "exploration + action = passion."

In and out of school programs that create and support entrepreneurial experiences include:

- **NFTE** powers entrepreneurship courses and competitions that can be used in and out of school.
- **WIT (Whatever it Takes)** is the only college credit social entrepreneur and leadership course in the country for high school teens. Focused on "doing WIT," students utilize a virtual community and teen-only hackathons to take on issues that matter to them. True to WIT's entrepreneurial spirit, all great ideas and solutions are rewarded.
- **STARTedUP Foundation** teaches students to have an entrepreneurial vision to see opportunities everywhere. Employing a design thinking approach, students are taught to use their innovative mindset to spur solutions while instilling a sense of urgency to act.
- **INCubatoredu** has a simple premise: Instead of having a regular business class, teach students how to start and operate a business. A subsidiary of **Uncharted Learning**, students partner with coaches and mentors for personalized entrepreneurial development.

5. Promote Progress. Secondary and postsecondary advisory systems should monitor academic and social development and provide early warning systems that guide quick and effective automated reminders and human interventions.

- **Georgia State** uses a system of predictive analytics and a system of more than 800 alerts to track undergraduate progress, identify at-risk behaviors, and guide adviser response to alerts to get students back on track and boost graduation rates. **Brightbytes** helps school districts build similar early warning systems.
- Along with resources, links, and support for students to apply for college/career pathways, **Dallas County Promise** offers a **FAFSA Tracker** that is interactive and supports completion by nudging pledged applicants on the next steps for their college application process.
- Dallas County Promise also works with **Greenlight Credentials** which **allows students to manage their records** and build lifelong stackable academic transcripts (discussed in this post on **credentialing**). Greenlight also provides health providers with the means to efficiently and effectively diagnose and manage depression and improve care for patients through screening and integrated care. This sort of wellness monitoring could be added to school **tiered support** systems.

Employing the right inventions could mean the difference between a higher graduation rate or a school or institution on the precipice of failing its learners. Such inventions could reduce student anxiety, provide appropriate supports on demand, and add a layer of personalized to the typical advisory experience which has too often relied upon checklists and been served by siloed technologies. In addition, they could generate auspicious outcomes for students and their neighborhoods. By adding contextual and personalized dimensions to the guidance experience, schools can tap into learners' passions and communities' areas of need.

Personalized and localized guidance opportunities include:

- Creating learning structures and schedules that encourage sustained data-informed advisory relationships.
- Building guidance systems that are informed by students' interests, strengths, and local opportunities.

INVENTION OPPORTUNITY #17: Accelerated High Wage Pathways

What if we created better wage pathways that encouraged learning?

Pre-pandemic, there were about seven million unfilled jobs. This massive skill gap is now masked by the spike in unemployment that threw 30 million Americans out of work. As the economy slowly and unevenly recovers, some people will go back to school hoping for an advantage in the job market. Until recently, most efforts to close the skills gap were what Ryan Craig calls "Education-Up." Schools would hear about job growth, develop a program, and students would complete the program and then look for employment.

An expanding alternative to addressing the skill gap is "Employer-Down," which starts with intermediaries that already have relationships with dozens or hundreds of employers. They build Last-Mile Training (LMT) into pathways and that connect workers and employers.

Through his Putting America Back to Work initiative, Craig plans to enable 100,000 rejoin the workforce by establishing frictionless pathways to good jobs—and in doing so, change the paradigm for workforce development from an education-centric to employer-centric model.

Craig wrote the book on last mile training: **A New U, Faster + Cheaper Alternatives to College**. Since its publication, Craig said, "The need for new pathways is greater than it's ever been."

"The models that grow fastest are the ones that reduce friction for candidate and employer," added Craig. "We see try-before-you-buy models scaling rapidly in software development, data science, data visualization, medical device training, health IT, and medical records.

These are the early days of what Craig calls the "faster + cheaper revolution that will upend the traditional college route as America falls out of love with the bachelor's degrees, particularly from non-selective colleges." He urges consideration of 'last mile programs' that share six characteristics:

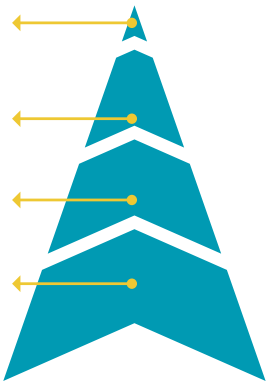
- a focus on technical skills as well as job skills;
- intensity of applied effort in a 'bootcamp' setting;
- demonstrated competencies rather than grades and credits;
- strong connections to employers;
- clear pathways to high demand, high wage jobs;
- and jobs rather than credentials as the real finish line.

Many of these programs will be free or debt free to the learner.

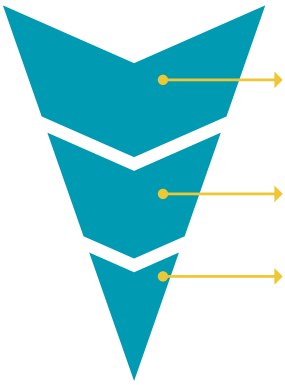
Strada Education Network is a national nonprofit that has spent more than $100 million building and acquiring resources to advance "the universal right to realized potential." Their mission is "Completion With a Purpose." Their advice is to get a good job after high school or find a certificate or degree program (preferably employer paid) that is a direct path to a good job. Look for "flexible, direct, cost-effective learning pathways that keep up with the emergent demands of the workforce."

EDUCATION–UP

4. Hope and pray graduates find jobs
3. Deliver curriculum
2. Develope curriculum
1. Determine missing skills



EMPLOYER–DOWN



1. Consult with clients on needed skills
2. Build LMT into model
3. Allow clients to try talent before they buy

Tech Giants Extend Job Pathways and Resources

In the last three years, Indian tech giant **Infosys** has created 13,000 jobs in six American cities and pledged to hire another 12,000 over the next two years. To support these efforts, Infosys launched the Reskill and Restart initiative, leading an industry consortium to train job seekers and build pathways to connect them with employers. Infosys hires many community college graduates. New hires receive anywhere from six weeks to six months of training—part of the Infosys culture of lifelong learning. Other corporations are following suit:

- **IBM** offers a wide range of technology experiences **learning journeys** culminating in digital credentials
- **Amazon Educate** supports pathways to cloud computing careers both in high school, college and through independent learning.
- Google offers **Computer Science resources** and **Code with Google** CS curriculum for 9-14
- **edX.org** offers computer science and technology courses from several tech companies

Adding Tech Pathway Experiences to Dual Enrollment

Building on growing college credit opportunities in high school, **P-TECH** combines a pathway to an associate degree with high tech work experiences, industry recognized credentials, and often employment opportunities.

Texas is home to 63 **P-TECH** academies as a result of a productive public-private partnership and clear and supportive state policy. (**Dallas ISD** alone has 18 P-TECH academies.)

Accelerated high wage opportunities include:

- Corporate-sponsored training programs and learning resources offered free or with income share agreements (ISAs).
- P-TECH pathways that offer high tech work experience with high school diploma and an AA degree

INVENTION OPPORTUNITY #18: Wellness

Wellness: how to use quantified self capabilities to improve wellness, and nutritions supports into education

What if schools were community hubs for mindfulness, nutrition and fitness?

More than ever before, 2020 has brought into sharp relief the grave importance of wellness—both physical and mental. Children and young adults suffered. Even if they avoided COVID-19, kids of all ages, from all backgrounds, have been impacted by the inherent emptiness of a year that wrought significant amounts of stress, loneliness, anxiety, depression and economic uncertainty upon families.

It's been hard to overlook what has been missing: the lack of human connection, the lack of structured education, the lack of special events—even the absence of simple interaction with friends. Teachers, school staff and administrators have suffered along with them. Not only were they unable to mentor their students in person, collaboration with colleagues was limited to video gatherings or quick meetings, always socially distanced and masked.

The arrival of the vaccine is good news, but the U.S. is not out of the woods yet. In moving forward, educators across the spectrum must maintain focus to fix the gaps revealed by the events of 2020, and the systemic inequities that have existed for many years.

Building equitable access requires innovation and action

Educators also need to work to rebuild connection—both literal (Internet) and metaphorical. Some of the most vulnerable students still don't have reliable Internet access and all students are missing out on personal connections in some way.

According to Dr. Beth Rabbitt, CEO of The **Learning Accelerator** (TLA), a national nonprofit that supports teachers and learners, reconnecting to teachers, friends and mentors will need to be done in creative ways, both online and offline. When school resumes, utilizing outside spaces (weather permitting) for meetings will be critical.

A key tenet of TLA's work is a drive to ensure each student receives an effective, equitable, and engaging education that supports them in reaching their full, unique potential.

In their work to achieve that goal, Rabbitt stresses the importance of collaboration. She reminds educators that much of their work in the near future will simply be "doing the next right thing." Plan what the next step forward is and then commit to taking it together. Communities will require action if progress toward equity and engagement for all students is to be made .

Further, the educational community must be open to change. Innovation, creativity and commitment will be vital as all involved work to catch up. Stagnation isn't an option.

All forms of wellness are important for optimal student achievement

Rebuilding after COVID-19 provides the unprecedented opportunity to integrate the various factors that make up a student's comprehensive development, including mental, physical, social, identity, and cognitive needs. Dr. Rabbitt says that key to achieving this goal is agreeing that "readiness to learn is a function of wellness beyond just academics, knowing that these domains are interrelated and reinforcing."

In moving forward, educators across the spectrum must maintain focus to fix the gaps revealed by the events of 2020, and the systemic inequities that have existed for many years.

A bright spot has been the opportunity for schools, parents, and students to reflect on and communicate more openly and often about wellbeing. COVID-19 has served as an instigator for daily screening, parent surveys, and remote connection to home. When done well, these communications have opened up new conversations at the individual and community level about how students and adults are feeling and progressing, as well as offering new means for and building habits of community reflection and action.

Moving beyond COVID-19, how can educators, schools and campus communities hold a commitment to communicating early and often with each other and then acting on data about wellness? The answer might be found in popular rhetoric: "There's an app for that."

- Developers who choose to create mindfulness apps targeted toward specific age groups and developmental levels could offer stimulation and a respite for students who (on the whole) possess digital devices, but have largely been left out of such innovations' core audiences.
- Community-focused fitness trackers that engender friendly competition and encourage healthier habits will not only prevent childhood and adolescent obesity, but will promote long-lasting lifestyle changes across generations, leading to less of a burden on the national healthcare system.
- Applications that assist busy families with a challenging component of daily life—nutrition—will inculcate a structure around thoughtful consumption, more intentional grocery purchases and enhanced understanding of the impact of food on their daily lives. Research has shown that students who routinely practice healthy nutrition also **perform better academically and contribute to stronger communities**.

Wellness opportunities include:

- Mobile apps that promote mindfulness for students.
- Affordable wearables that enable fitness tracking.
- Mobile or desktop nutrition and meal planning applications.

INVENTION OPPORTUNITY #19: Personalized Talent Development

Personalized talent development: portable system of microcredentials and employment benefits.

What if teachers had personalized learning systems that provided anywhere, anytime learning that credentialed and compensated new capabilities?

Educators don't come to teaching because of the focus on talent development or the opportunities for professional advancement. It's the lack of those resources, in fact, that is a leading reason they exit the classroom.

In the pre-pandemic educational climate of limited resources amid near-constant testing, educators spent more time plugging leaks than contemplating improvements. Perhaps ironically, the ensuing operational and economic damage wrought has shifted the focus. When business as usual was swiftly rendered a thing of the past, districts began working in cross-functional teams that included community–based organizations and caregivers.

Roles changed as parents shouldered tasks districts used to handle, including instructing their children, finding tutoring and forming learning pods. Families found other avenues for childcare and transportation. Districts partnered with microschools and some teachers decided against returning to the classroom (either in person or virtual) and moved to working on homework helplines or tutoring opportunities. **College campuses went fully online** in mid-March, turning what was largely a marginalized approach to teaching and learning into the entire academic offering—with support services buttressed within it in a mostly piecemeal fashion.

Systems and employment benefits can be reconsidered, opening up two significant invention opportunities:

- Professional learning should no longer follow the perfunctory 'sit-and-get' model that has been relied upon in districts and universities for decades. Instead, creating new systems that are personalized, behavioral, portable, and growth-focused will empower a new generation of educators to define and pursue meaningful goals, address problems in context, ultimately achieving loftier careers and broader learner impact.
- Enterprise resource management (ERP) tools could be reconfigured to support change leadership in 100-day sprints in distributed projects. These would help to consolidate the arduous process of gathering, organizing and sharing data across silos through an integrated and accessible software suite.

These ideas echo what currently exists in some industry sectors. The ways people work in and with schools and institutions are starting to reflect modern workplace expectations: flexible roles, adaptation to the unexpected, and continuous collaboration inside and outside the organization. In avenues many wouldn't have considered prior to the catastrophic events of 2020, educators, parents, students and community leaders are changing education.

To make these shifts permanent, however, will require a sea change in the policies and supports other sectors take for granted.

Embrace flexibility and use data

If there's one lesson learned from the height of the recent health crisis and ensuing chaos, it was the need for flexibility. Learning gaps have widened in both directions; some students leapt ahead while others fell back. After almost a year of chaotic learning - with switches from remote to blended to in-person and back again; summative testing for 2020 has been halted nationwide. It's uncertain whether testing will even resume in 2021.

For educators who embrace this shift, new career opportunities will emerge inside and outside of schools as communities demand more performance, responsiveness, and equity. In order to attract and retain the best employees in a time of shrinking budgets, schools will have to compete on this terrain.

Present circumstances offer a golden opportunity for schools and communities to attract and retain the best employees, those who exemplify the performance, responsiveness and equity that communities will demand in this new climate.

Microcredentials help facilitate professional learning culture

Harmony Public Schools in Waco, Texas, has established a system with natural opportunities to invest in a teacher's career advancement. Among those opportunities is a thriving microcredential program. The educators at Harmony not only participate in the program, they advocate for their colleagues to do so as well. In fact, Harmony teachers and administrators have earned 815 microcredentials since launching the program. Former Harmony Teacher of the Year and instructional coach Jason Fletcher said, "I liked having an avenue that I can control, regarding my career advancement."

Using flexible data-rich systems to improve

Organizations are swimming in information, but is it information they can use? Schools need flexible, usable data that allows them to carry out and monitor their work and how they engage with others. Instead of juggling separate systems for attendance, engagement and progress - among other factors - districts should embrace new approaches to managing the school-enterprise. Companies like **Frontline** for talent, **Allovue** for finance, and **Intellispark** for student engagement and learning progression can enable, connect, and sustain new approaches.

New funding models.

Both school and higher ed have involved a bundle of very different services, including education, recreation, nutrition, social services and (in case of students who are not yet adults), childcare. Organizations can and should emerge to more efficiently handle what these institutions have traditionally provided, either in collaboration or in competition with other districts and entities. Funding will likely follow, with schools and colleges no longer serving as sole-source providers to their communities.

New compensation models.

With major changes in the work and funding, it's only logical that job descriptions, org charts, and compensation models will follow. Shifts toward partnerships, project and team-based approaches, and even a freelance model can provide more responsive and personalized services, immediately benefiting kids and families. Additionally, this clears a path for those educators whose energy and creativity have been hamstrung by bureaucratic school cultures.

Personalized talent development opportunities include:

- Establish customized microcredentials that address knowledge gaps or desired growth areas.
- Design for interoperability across popular existing programs and platforms.
- Create bundled services across the K-20 spectrum that support the whole learner.
- Embrace a compensation model that enables freelance talent to provide on-demand services.

INVENTION OPPORTUNITY #20:
Tech Stack

Tech stack: integrated learning and administrative tools designed to support specific learning sequences

What if all of our tools and learnings were seamlessly integrated?

Pandemic education made clear the need for learning platforms that reliably support rich in-person and remote learning experiences. It accelerated the shift from teacher as individual practitioner to learning facilitator as member of a school-as-a-service team.

The addition of video conferencing to the edtech stack was a mostly great additional capability in 2020. But it encouraged many schools to attempt a bad video version of traditional school at a distance (often a well intentioned effort to comply with outdated policies).

The pandemic clarified the opportunity for new engaging sequences of learning experiences supported by new learning platforms with interoperability agreements, which would allow learner records to pass from place to place—braiding together individual, team, cohort and community experiences in a dynamic way that facilitates individual progress.

Getting this co-construction of tools and experiences right is more complicated than designing an MRNA vaccine, but it could similarly improve the life trajectories of billions.

There are 10 design shifts that represent an opportunity in learner experience and supporting learning tools.

From registration to invitation. What if instead of a tedious enrollment process, there was an invitation to learning, one as welcoming an Apple store or as intuitive as the progressive enrollment on Amazon, where recent views on one device are built into recommendations on another? What if expressed interests, strengths, and values guided surfaced learning opportunities?

From subjects to skill sprints. What if instead of enrolling in math and English courses, learners entered into personalized workshop environments (physical and/or virtual) that facilitated skill sprints enabling focused practice—practice that was supported by experience recommendations and automated feedback systems, punctuated by periodic demonstrations of mastery?

From course enrollment to dynamic projects. What if, instead of enrolling in yearlong content courses, learners engaged in a series of community-connected projects (some individual, some team, many co-constructed) that developed and demonstrated leadership and problem solving skills? What if these projects were informed by exposure to community needs and **#GlobalGoals**?

From testing to embedded measurement. What if, instead of stopping for periodic testing, assessment was built into skill sprints and projects? What if measurement largely occurred in the background and surfaced as useful real time feedback and during periodic reflection?

From inclusion to portable accommodations. What if, instead of just being included, learners had portable accommodations that showed up in each learning instance they experienced (e.g., learning preferences, reading assistance, communication aids)?

From intervention to integrated support. What if, instead of responding to crisis, platforms helped monitor **well-being** and equipped learning advisors with early warning systems and supported integrated school and community support?

From grades to credentials. What if instead of idiosyncratic grades (a combination of feedback, attendance, and extra credit games) learners periodically received portable digital learning credentials that reflected demonstrated mastery? What if portable credentials unlocked enabling anywhere, anytime learning?

From course lists to portfolios. What if, instead of a transcript as a list of classes passed, learners had credentials that certified learning and linked to curated portfolios that reflected their best work?

From proprietary to portable. What if, instead of information trapped in a dozen edtech apps, comprehensive records combined data extracts into a synthesized view (e.g., persistence measured across 10 tasks on four apps across a week)?

From common to personal and local. What if, instead of a standardized set of advice and experiences, platforms and advisors were equipped to recommend next steps and postsecondary plans based on personal and local opportunities (e.g., an MLK Day event, a local internship, an emerging high wage job cluster)?

Toward a Whole Learner Tech Stack

Getting Smart has a stack of tools designed for the schools that this country has had, not for the schools it needs. Most tools support age cohorts in content-focused courses organized around small tasks and resulting in letter grades. This obsolete 130-year-old model often results in low engagement and collaboration, low integration and application, low differentiation and depth of knowledge, and low optionality and portability. It leaves learners unprepared to address ambiguity and complexity and unable to describe what they know and can do.

What leaves the education system stuck? In short, there's weak expressed demand for something different and better as a result of a tangle of federal, state, and local policy entwined with employment agreements and higher ed entrance requirements. Edtech business models are based on closed systems and proprietary data. Add teaching traditions (and licensure and preparation) and idealized parental memories, and complexities arise.

The problem is no longer a lack of access to venture funding; but much of $12 billion of global venture funding for digital learning tools last year (up from $500 million in 2010) went to test prep and tutoring.

There are, around the edges, 10 examples of activities aggregating demand for new and better tools. The world could use more:

- Philanthropic funding for new school models (like **NewSchooools Venture Fund**, **Walton's Innovative Schools Program**, and **VELA**);
- Sponsored partnerships between competency-based systems and edtech providers (like **Lindsay USD** and **Empower** and **Latitude High** and **Headrush**);
- Support for community conversations considering broader outcomes frameworks like **Building Blocks from Turnaround** and **Portrait of a Graduate** from Battelle for Kids;
- Regional initiatives like **Real World Learning** in Kansas City that result in new outcome agreements and demand for new learning experiences;
- Support **networks of innovative schools** working on common challenges
- State support for **competency-based** school networks;
- Support for project-based networks like **New Tech Network** and **EL Education** and work-based learning networks such as **Big Picture Learning**;
- Pilots of comprehensive learner record like **Broward County's** effort to expand math learning opportunities;
- Federal **research support** on learning platforms; and
- Support for interoperability initiatives like **Project Unicorn**.

Integrated tools that support personalized, project- and competency-based learning with portable learning records are more likely to develop with less

- Federal policies that require standardized testing rather than robust formative assessment;
- State policies that **require courses** and grades rather than demonstrated competencies;
- College entrance requirements that rely on courses and grade point averages;
- Edtech business models that rely on owning item level data;

Like a pandemic vaccine, the opportunity to invent powerful new learning sequences supported by new tools will take smart public private partnerships and substantial investment. It will take longer than a year but, like a vaccine, it could change life trajectories for more than a billion people.

Tech stack opportunities includes integrated tools that support the personalized, project- and competency-based learning with portable learning records.

Conclusion

In this report, 20 of the most pressing and timely invention opportunities have been identified. Each warrants further discussion and rigorous assessments regarding how they can be brought to scale to address fundamental inequities—both in the United States and globally.

These opportunities for invention address roadblocks for meaningful learning and, in turn, work to include and empower the most marginalized learners. However, the paradox of innovation is that it, at least initially, introduces new inequities to systems.

From this study, two conclusions can be drawn about strategic intent:

- Invention should be rooted in the science of learning and development. As such, the goals of invention should be whole child development–experiences, supports and environments that build the skills and dispositions for thriving.
- Invention, while it initially may cause differences, should have the potential for equitable scaling.

System leaders are responsible for facilitating an agenda that embraces the right mix of invention and improvement for their stakeholders. System leaders own the tension between permissioning invention and scaling it for equity. Given the circumstances, leaders can't choose equity or invention, it must be equity in a new and better learning ecosystem.

Inventing and scaling are aided by a web of intermediaries–regional and thematic resources helping systems innovate. In most cases, invention and scaling are sponsored by public-private and/or philanthropic partnerships. It takes a village to invent and scale learning opportunities.

It's time to invent for equity. The nation has a new, compelling opportunity to offer to every person in America—in fact, every person on earth: access to high-quality learning throughout their lifetime. With new tools and new agreements, public-private partnerships and those who effectively lead them can empower all learners and their communities with the tools and skills needed for a future that is already here.

Thank You

To help inform and deliver new agreements, new practices and new tools Getting Smart and eduInnovation are exploring the Invention Opportunity thanks to support from the Walton Family Foundation and the Bill & Melinda Gates Foundation. The findings and conclusions contained within are those of the authors and do not necessarily reflect positions or policies of the foundations.

Contributors

Devin Vodicka
Altitude Learning

Steven Hodas
Center on Reinventing Public Education

Karla Phillips-Krivickas
KnowledgeWorks

Rebecca Midles
Getting Smart

Tom Vander Ark
Getting Smart

Kristen Uliasz
Davis Joint Unified School District

Join the Conversation

GETTING SMART
Think. Learn. Innovate.

eduInnovation

GettingSmart.com
Facebook.com/GettingSmart
@Getting_Smart

GettingSmart.com/InventionOpportunity