The Five Stickiest Changes to Education:

As a Result of the COVID-19 Pandemic

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The Five Stickiest Changes to Education

Acknowledgments

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A huge thank you to the individuals whose voices are the heart and soul of this effort. To Amy Jagodnik, Andy Homden, Barbara Papamarcos, Bryan Gibson, Irene Nigaglioni, Jeannette Lee-Parikh, John Fisher, Luis Valentino, Matthew Romiti, Patrick Sánchez, Sadie Bell, Sharon Gamson Danks, Thom Markham, and Trevor Soponis, I am forever grateful for your generosity. It was an honor to hear your stories and I so appreciate your willingness to share your COVID-19 education changes experiences with me. I enjoyed every conversation we had and learned so much from you all.

About Aedis

For nearly seven decades, Aedis has developed a deep expertise in K-12 and Higher Education design by bringing people together – educators, students, parents and neighbors – to create some of the most innovative educational facilities in Northern California.

Leading through inclusivity and empowerment is the Aedis core approach, which we are now bringing to other project types: community health centers, senior assisted-living facilities and urban living. In addition, our belief that architects must play a key role in addressing climate change has transformed us into the Bay Area's leading firm working with Mass Timber, which promises to revolutionize the design and construction industry.

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Introduction

The Context

The research upon which this paper is based was gathered from November 2020 to April 2021 in the context of the COVID-19 pandemic. The political landscape during this time was a literal war zone marked by an insurgence at the nation's capital and deep wounds from a fractious presidential election which exposed a deeply divided country. Vaccines were not yet widely available and shelter-at-home orders were in effect. Infections and deaths were surging to unimaginable heights.

Holiday celebrations, weddings, funerals, and graduations, all deemed too dangerous for in-person gathering, were taking place in homes surreptitiously, or online. Going to the grocery store was a high-risk activity and "Zoom-fatigue" became a frequent complaint. We were all struggling with social isolation and restrictions on our freedom. Our essential workers toiled under unimaginable stress, working without breaks and without adequate resources.

School shutdowns had caused huge disruptions in the education system across the country and the world. The anticipated few weeks of closures had already stretched into more than a year. In the early weeks of the pandemic, educators had successfully shifted from in-person to remote teaching and learning, despite little to no preparation, training, or resources. Education leaders had responded swiftly to get digital devices into the hands of children and invested in purchases of digital technology. School district staff members worked diligently to provide vital services to their neediest community members, delivering meals, constant streams of information, and creating version after version of their return to school plans. Despite all these efforts it became clear that families were struggling and that many children were becoming increasingly disengaged from learning.

The Question

Seven months into the pandemic it was impossible to deny that education needed to change. COVID-19 had shone a bright spotlight on the gaping digital divide, on how systemic racism is thriving within the education system and laid bare a plethora of related socio-economic inequities. Sensing that change was inevitable, in November of 2020, John Diffenderfer, the President of Aedis Architects, asked me to consider this question:

> "What are the five stickiest changes to education that will come about as a result of COVID-19?"
> (Diffenderfer 2020)

We wondered why wish for a return to normal if the pre-pandemic normal wasn't worth returning to? The question was an invitation explore what a new normal might look like. It was a way to engage with and document an historic event of epic proportions, an event that has disrupted virtually every aspect of daily life on our planet. We wondered what kind of lasting impact would COVID-19 have on education in the twenty-first century?

We set up a series of interviews to ask the question of educators and others, experiencing life in the time of COVID right now. We asked them to describe the changes they were experiencing, to predict which of these would stick, and to share whether they thought these changes would be better for education, or worse.

Introduction

The Bias

The inherent biases of both the interviewees and me, the interviewer, are presented as an integrated element. The interviewees shared their opinions, and their hopes and fears, and were encouraged to engage in personal sense-making based upon their lived experience.

The question asked in the interviews has two parts:

> 1. What changes have you observed to education during the COVID-19 pandemic?
>
> 2. Which of these observed changes do you feel will persist after this pandemic ends?

Everyone interviewed answered the first part of the question through the lens with which they were experiencing the changes. We understood that an educator might have experienced the changes differently from an educational services provider for example. The second part is an invitation to make a prediction. We asked each interviewee, of the changes you have observed, which do you feel are most likely to stick.

For example, one the interviewees, Thom Markham, predicts that the containers built for learning are no longer relevant.

> "In the end, four walls are not going to be able to contain young people, or their learning."
> (Markham, 2021)

The five stickiest changes that emerged from the interviews have the potential to make education better or to make it worse. Each change includes predictions, key components, and a list of "better" and "worse" attributes.

As you read through the five changes, we invite you to bring your own bias to the conversation and to make predictions. Ask yourself which changes should stick and consider how to support them. Perhaps there are other changes, not expressed in these pages, that you personally would like to see stick. This information is intended to support your agency and capacity as a future-shaper. Because in the end, which of the changes stick, is up to all of us to decide.

This is only the beginning of our understanding of how the crisis caused by COVID-19 will affect education long term. To know which changes are the stickiest will require follow up investigation in the years following this pandemic.

Introduction

The Interviewees

In all, fourteen people were interviewed including teachers, school district leaders, a middle school student, and a handful of education services providers. All the interviews were conducted over the virtual meeting tool Zoom and were recorded and transcribed via the recording tool Otter.

The final list of interviewees include those working in public and private schools, non-profit organizations and for-profit service providers. They span a variety of gender identities, races, ages, ethnicities, and cultural backgrounds. In addition to those living in the United States there are two interviewees who currently reside in Ireland. Eight of the fourteen are from California and Oregon. The balance of interviewees are scattered across the continental US bringing their unique geographical perspectives into the experiential mix.

Once the five stickiest changes emerged from the interview data, we conducted follow up interviews with several of the original fourteen. These interviews helped to verify the conclusions represented in this paper. They also gave us a chance to dive deeper into the specific changes that these interviewees felt resonated the most with them.

Many of those interviewed are founders of education organizations and leaders in their respective fields within education. The two from Ireland represent global organizations. Some of the teachers interviewed had returned to in-person learning while others were still teaching entirely remotely. All the interviewees shared their direct experiences, their hopes, and their dreams vulnerably and authentically. It was clear they all care deeply about education and view the changes caused by the COVID-19 pandemic as potentially positive. Their message to us is not to go back, but to go forward.

NAME	ORGANIZATION AND LOCATION
Amy Jagodnik	Public Elementary School Garden Sciences Teacher ES, Washington DC
Andy Homden	Educator, Founder of Consilium, School Start-ups Expert, Ireland
Barbara Papamarcos	Public Middle School Teacher, Port Washington, Wisconsin
Bryan Gibson	Former Teacher, Global Education Researcher, LearnLife Alliance, Ireland
Irene Nigaglioni	Architect and Accredited Learning Environments Planner, Dallas, Texas
Jeannette Lee-Parikh	Private High School English Department Chair, Curriculum Designer, Teacher, Boston, Massachusetts
John Fisher	Director of Programs and Partnerships, Life Labs, Santa Cruz, California
Luis Valentino	Chief Academic Officer, Portland Unified School District, Portland, Oregon
Matthew Romiti	Public Middle School Math and Science Teacher, Gilroy, California
Pat Sánchez	Superintendent, Reef-Sunset Unified School District, Avenal, California
Sadie Bell	Middle School Student, Ben Lomond, California
Sharon Gamson Danks	Landscape Designer, Urban Planner, Green Schoolyards America Founder, Berkeley, California
Thom Markham	Teacher Trainer, Founder of PBL Global, Project Based Learning (PBL) Leader, San Francisco, California
Trevor Soponis	Chief Learning Officer, Founder of Sustainable Learning Projects, Portland, Oregon

Introduction

Why change?

If we decide not to let this crisis go to waste, we need to examine our resistance to change even in the face of a crisis. By asking the question, which changes will stick, the implication is that some change is inevitable. However, some of the five stickiest changes that emerged from the research are not really changes at all. They are a simple re-framing of issues that have plagued our education system for over a hundred years.

School choice, school safety, the failure to close the achievement gap, inequitable distribution of resources, sorting children by age rather than ability, and the separation of learning into subjects that can only truly be understood in relationship to each other, are a few of these issues. Not to mention the ongoing disconnect between a traditional education focused on passing tests and a progressive education focused on creativity and critical thinking.

Decades of dissatisfaction with the current education system has intensified during the COVID-19 pandemic. Laudable efforts to transform education and systematically address the inequity in our schools have historically been difficult to sustain. Activating education as the vehicle by which we collectively heal ourselves and our environment has too often been stymied by institutional risk aversion and resistance to change.

While admittedly these five stickiest changes are not entirely new, they are being looked at through a new lens. The lens of suffering through a year plus of COVID-19. A pandemic that has shattered "normal" and is now inviting us to create a new normal. The five stickiest changes are a glimpse at the potential new normal, for better or for worse.

The Five Stickiest Changes to Education

1 **Learn Anywhere Learn Anytime** – Technology supporting ubiquitous asynchronous and synchronous remote teaching and learning. Access to a global catalogue of quality distance learning content. Families able to choose between distance learning, hybrid learning, and in-person learning for their children.

2 **Personalized Learning** – Adoption of flexible curriculum and instructional delivery that celebrates each learner as a unique individual. Children recognize themselves in curriculum that is relevant to their lives, anti-racist, and equitable. The education professional sees their role as co-learner, guide, coach, and mentor.

3 **Quality of Life** – Schools as centers of joy, happiness, healing, and well-being, providing mental health, stress, and trauma reduction services, and equitable access to nature and natural systems.

4 **Stay Open School Design** – Inclusion of features in school facilities design, maintenance, and operation that are specific to ensuring schools can safely stay open to in-person learning during a crisis. Recognition that schools provide essential services including childcare, food distribution, and socialization.

5 **To Test or Not to Test** – Intensification of the ongoing debate regarding the value of summative standardized tests. Formative assessment as a preferred metric that supports personalized learning and reduces inequities. Supporting innovation and reimagining education.

Introduction

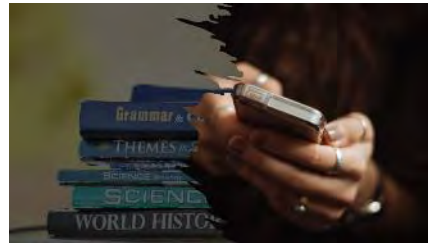## Key Components of The Five Stickiest Changes to Education

Each of the Five Stickiest Changes has three key components. Each component has a list of attributes that describe a possible new normal–for better or worse. In the conclusion we will explore some possible next steps and invite you to help shape the future you want in your community.

| 1	2	3	4	5
Learn Anywhere Learn Anytime	**Personalized Learning**	**Stay Open School Design**	**Quality of Life**	**To Test or Not To Test**
Technology Distance Learning Choice	Student Led Learning Educator as Co-Learner Social Justice Lens	Community Schools Indoor Environmental Quality Outdoor Learning	Community Well-being Mental Health Access to Nature	Measure What Matters Relevance, Rigor, and Relationships Funding Innovation

Learn Anywhere
Learn Anytime
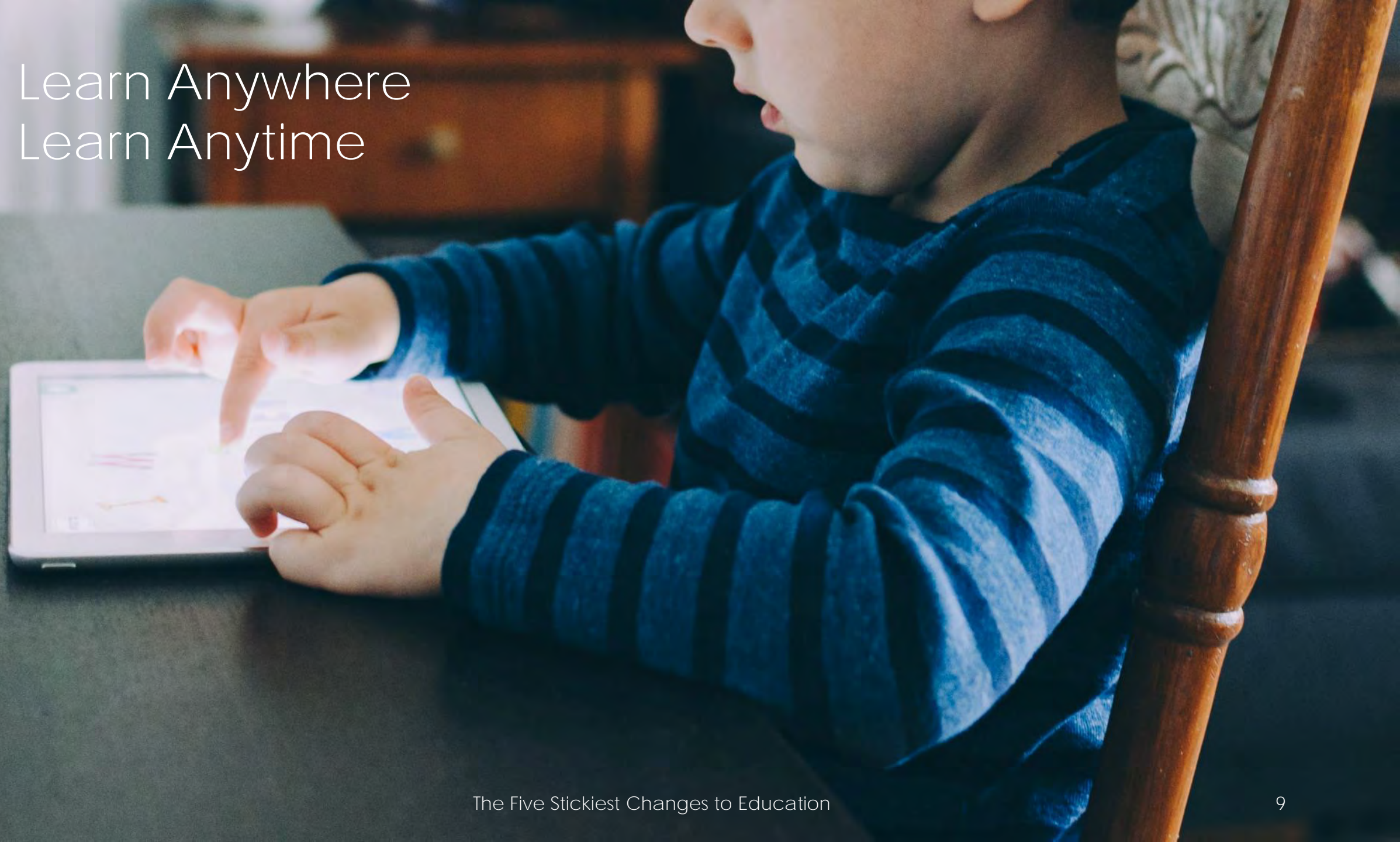
Learn Anywhere Learn Anytime

Predictions and Key Components

The pandemic has demonstrated that learning can take place outside the four walls of the classroom and the interviewees were unanimous in their predictions that technology is here to stay. Emergency remote learning will continue to evolve into quality distance learning for K-12 education. Many children thrived online, preferring it over in person learning, enjoying the freedom to choose when and where to learn. As Jeannette Lee-Parikh notes, "Remote/virtual learning will be seen as a viable and even a preferable option for more students and families. Before the pandemic, there were already virtual high schools; they will become more mainstream. Outdoor learning will also gain traction."

However, shifting quickly to remote learning illuminated the deep digital divide, systemic socio-economic and racial inequities, and the crisis of student homelessness. These historic barriers to academic success were exacerbated by the pandemic.

The Prediction:

- Traditional systems of delivering content, tracking, and assessing progress will be replaced technology tools.

- Distance learning will replace remote learning, removing some of the barriers to equitable access to learning.

- Schools will provide a variety of choices as to when, where and how learning is accessed.

For many children and their families, the benefits of choice were offset by the difficulties of relying upon technology and internet access. It became clear that all children are different and that equitable access to learning whether it be virtually or in-person, depends upon the removal of barriers. The online environment itself can be a barrier. Middle schooler Sadie Bell reports that she and her friends find that "it's easy to get distracted online because everything's on the computer, school-related and not school-related, so I sometimes get off track and start doing something else."

Key Components of Learn Anywhere Learn Anytime:

- **Technology**

- **Distance Learning**

- **Choice**

"Centralized technology offers complete transparency."
(Jagodnik, 2021)

Technology

BETTER

- Curriculum developers can use technology to empower learners to access learning from anywhere.
- Centralized technology offers complete transparency for school leaders and parents.
- Supports global connectivity.
- Supports community connection.
- Progress made by learners is easier to observe and track.
- Encourages use of augmented reality, virtual reality and gaming as learning tools.
- Investment in technology infrastructure ensures equitable access to reliable internet and technology devices.
- Children who enjoy using technology are more engaged with their learning.

- Children who are not comfortable with technology will fall behind.
- Learners without access to technology will become impossible to observe and track.
- Poor and underserved communities will struggle to maintain and upgrade technology infrastructure.
- Inequitable uptake by educators of new and emerging technology.
- Onetime training sessions vs. ongoing technology coaching for educators.
- Educators reverting to traditional forms of instruction when technology breaks down.
- Insufficient technology support staff.
- Learners who prefer hands-on in-person experiences will become disengaged.

WORSE

Distance Learning

BETTER

- Educators receive training and support to shift from remote learning to distance learning.
- Schools within rural school districts can expand their offerings via global access to distance learning options.
- Some specialized services such as speech therapy can be more effective online.
- Learners can go anywhere in the world virtually to acquire or augment their learning in school.
- Parent and community participation is more convenient and more frequent.
- Adult learning is accessible and convenient.
- Learners become more autonomous and empowered.

- Children who struggle with distance learning will become disengaged.
- Lack of socialization opportunities will exacerbate social isolation and depression.
- Children who prefer in-person learning will have fewer options.
- Eye strain, sleep interruption, and inactivity causing adverse physical health issues associated with too much "screen time."
- Less time spent outdoors resulting in lack of environmental literacy and stewardship.
- The sheer volume of distance learning makes quality control untenable.
- Educators who have no interest in providing distance learning will leave the profession, creating a shortage.

WORSE

Choice

BETTER

- Learners are empowered to develop independence and agency over their own learning.
- Families can structure learning together with educators to best suit the needs of their children and their life-style.
- Schools can attract families based upon the quality of their online content.
- School facilities and curriculum can be designed to provide hands-on experiential learning that is not possible online.
- The quality of in-person learning improves, is appreciated, and celebrated.
- Educators teaching online can choose to live and work in different locations.
- Individual student learning styles vs socio-economic status determines how, when, and where learning content is accessed.

- Learners that are unmotivated or lack adult support may opt out of learning altogether.
- Too much choice can be a distraction.
- Families choosing online learning will leave schools resulting in declining enrollment.
- Low enrollment due to increased access to online courses could lead to school closures.
- School facilities will receive less funding as distance learning diminishes the need for physical facilities.
- Traditional instruction will remain dominant and only small school districts, private schools, and charter schools will provide choice.

WORSE

Learn Anywhere Learn Anytime

For Better or Worse

While schools have been shut down or in hybrid mode children, families, and even educators became accustomed to flexibility and autonomy, creating the learning and teaching environments that work best for them. Now that we have all had a chance to investigate different types of environments in which to work, play, rest, and learn, how will the education system respond?

Innovative approaches to learning have emerged from the COVID-19 petri dish, such as neighborhood learning pods, outdoor learning, and online academies. These have proven to be successful alternatives to traditional school. It is clear, however, that distance learning alone did not work for every child.

"When everything is online you don't really get to have the fun experience of learning and it kind of takes away from the part that makes it memorable and interesting."
~Sadie Bell

"I want the option to keep my kid online, even while the regular class is going on. School systems that don't adapt to anywhere anytime learning are going to perish."
~Pat Sánchez

Will we see community resources, such as coffee shops, libraries, parks, and community centers embracing their role as learning hubs? The concept of community school becomes more feasible. When teaching and learning is decentralized, liberated from any one set of buildings, it begins to occur visibly everywhere and all the time within a community.

The education system has been forced to catch up with modern technology, deliver quality distance learning, and embrace choice. The idea that the pandemic crisis could result in reducing and even permanently removing barriers to learning is exciting and way overdue.

As Amy Jagodnik notes, "The ability to see what the students are doing has changed, I think dramatically. I don't think that we're ever going to go back. I think we're always going to have this virtual option."

"There's a whole range of different ways to approach the world."
(Markham, 2021)

Personalized Learning

Personalized Learning

Predictions and Key Components

Thanks to remote learning many parents have had a front row seat to their children's learning experience and as Trevor Soponis notes, "I think that parents are seeing upfront the shocking level of irrelevance and lack of importance in the majority of the quote unquote learning that the students are doing."

Luis Valentino is optimistic about this sticky change, "All of the learning experiences that people remember have to do with tactile things, opportunities to climb things and build things and grow things." Also noting how "Each community is entirely different, because every person is different, and every community has different levels of trauma and wounds that are historical and must be addressed. It's a real adventure to think about designing trauma informed experiences, hands on experiences. That's what I find super exciting about this next phase."

Now that "young people are taking more control of their learning" as Thom Markham reflects, they "have the freedom to discover purpose and meaning in their learning." Students have had to become more self directed if they want to continue learning. Educators too have discovered they can rely more upon their students to take control of their learning and ask for help when they need it. However, as Sadie Bell notes, "I've noticed that some of the students have been trying really hard because they still want to persevere through this and still get an education, and some of the students have kind of been slacking."

Key Components of Personalized Learning:

- **Student Led Learning**
- **Educator as Co-Learner**
- **Social Justice Lens**

The Prediction:

- Creation of flexible curriculum and instructional delivery that is student-led and individualized.

- The education professional embraces their role as co-learner, guide, coach, and mentor.

- Curriculum that is relevant, anti-racist, socially just, sustainable, and equitable.

"Personalized learning is the wave of the future. Identifying the talents and strengths of kids from a very early age is critical.
~Pat Sánchez

Student Led Learning

BETTER

- Learners free to explore their interests.
  Learners engaged and inspired to learn.
- Subject matter aligned with learner's interests.
- Freedom to innovate and co-create the learning experience.
- Learning is constant, happening all the time, no longer time bound.
- Personalized formative and learner led self-assessment is used to continuously improve the learning experience.
- Pride of ownership of learning and increased sense of agency over learning.
- Learners progress at their own pace.
- Peer to peer learning, coaching and mentorship occurs across age levels.

- Children will lose focus.
- There will be a failure to learn basic numeracy and literacy.
- Potential for gaps in content mastery among children.
- Difficult to assess, children may fall through the cracks.
- Teachers become discouraged, checked out, and disengaged.
- Lack of curriculum to support student led learning.
- Extra work for educators.
- Inconsistent quality of learning.
- Children may not be developmentally ready to lead their own learning.
- Diving deeply into a specific area of interest will conflict with obtaining a well-rounded education.

WORSE

Educator as Co-Learner

BETTER

- Inspires educators to explore multiple means of engagement, representation and action and expression of learning.
- Creates incentives for differentiated learning for basic skills.
- Allows for greater use of and experimentation with adaptive technology.
- Neural diversity and learning differences viewed as assets rather than liabilities.
- Assumes that children have value as teachers as well as learners.
- Creates an environment of mutual trust, respect, and collaboration.
- The curriculum and instructional delivery adapts to the learner vs the learner adapting to the curriculum.

- May conflict with grade level standards.
- May conflict with prepping for annual standardized testing increasing the perceived achievement gap.
- Increased workload for educators trained in traditional instructional models.
- Reduced perception of educator as professional.
- Administration failing to adequately support and advocate for educators seeking to become co-learners.
- Parents uncomfortable with teachers as co-learners and seek a return to traditional methods.
- Inconsistent curriculum and instructional delivery.

WORSE

Social Justice Lens

BETTER

- Fosters environmental justice.
- Empowers students as social justice advocates.
- **Sustainable development goals (SDG's)** such as, no poverty, and reduced inequalities, adopted as curriculum.
- Anti-racism and anti-discrimination curriculum.
- Socio-emotional skill development and global literacy improve tolerance.
- A well-informed discerning society.
- An emphasis on repairing the damage caused by a century of discrimination.
- Historically marginalized community voices heard.
- A sense of collective responsibility and accountability.

- Segregated school and communities lack access to diversity needed for justice.
- Exposure of systemic prejudice, discrimination and racism will be traumatizing.
- Despair will breed apathy.
- Hatred and greed will increase as a result of untreated shame and a scarcity mindset.
- Social justice will be talked about in lieu of being acted upon.
- Added burden to educators to include social justice related curriculum into existing core standard requirements.
- Poorly conceived and poorly executed attempts at diversity within education institutions that further alienates communities.

WORSE

Personalized Learning

For Better or Worse

Progressive educators from Rudolph Steiner to Maria Montessori, and Lev Vygotsky to John Dewey, have been advocating for various forms of personalized learner-led education for decades. When children and young adults are supported in taking ownership of their learning, they become more engaged.

The dream of an equitable and socially just world starts with access to an equitable and socially just education for every child. Educators seeking to learn from their students are reinvigorated and inspired to co-create curriculum that is relevant to each learner's lived experience. Accessing the wisdom of children can help end cycles of social and environmental injustice and inequity. The promise of personalized learning is ensuring that each child is empowered to express their unique gifts and passions.

"Teaching is holding the space for student learning. It isn't content transmission. It is creating the opportunity for students to have an authentic learning experience. My job as a teacher is to design the structure and then step back."
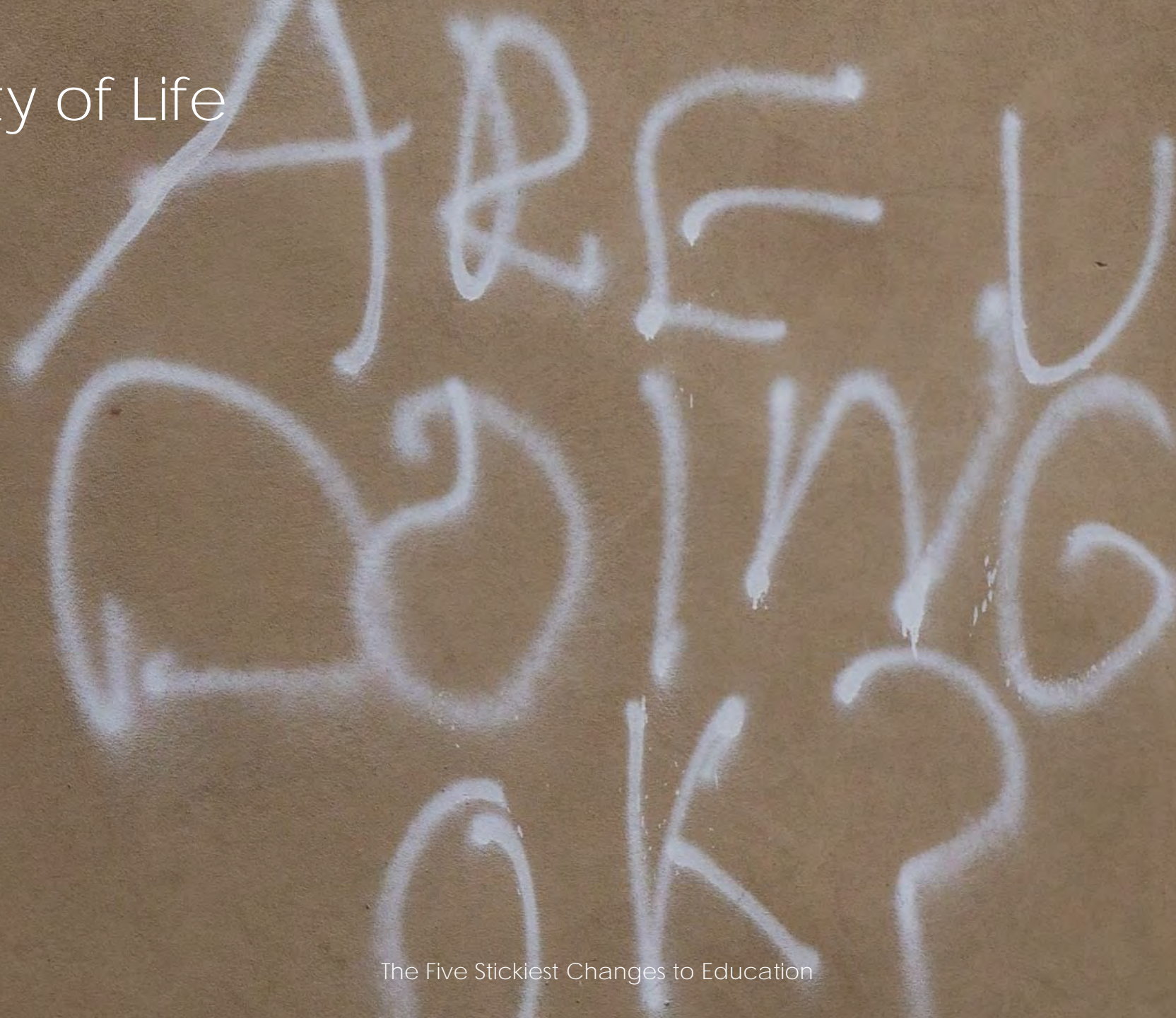~Jeannette Lee-Parikh

"We can allow students to lead their own learning on the subjects and dispositions that they want to evaluate and then a teacher works with them to provide feedback."
~Trevor Soponis

> "The ingredient that's missing is the voice of the student. We generally don't want to hear it because it's complex."
> (Sánchez, 2021)

Quality of Life

Quality of Life

Predictions and Key Components

A shift in the normal daily routine has both positive and negative consequences. For the privileged, those with access to reliable internet, the option to work and learn from home has created a simpler less hectic lifestyle. For those in historically underserved communities the pandemic has only worsened the effects of a century of discrimination, unfair housing, and systemic racism. As Sharon Danks notes, "There have always been in equities, there have always been mental health issues. But this pandemic has made both front and center."

Those of us fortunate to live in neighborhoods with easy access to parks are harnessing the power of nature to relieve our stress. "Nature is here to stay" according to Barbara Papamarcos, "The children have realized their animals have helped them through this and they want to learn more about how that connects with learning." In nature we are able experience moments of joy and gratitude despite the near constant anxiety and fear of contracting the virus.

And then there's the toll the pandemic has taken on teachers. Some are predicting that a mass exodus from teaching is on the horizon. Trevor Soponis remarks, "I think that teachers have found this to be by far and away the most difficult year of their teaching experience." Many educators report that trust has been eroded as some school districts ordered them back into poorly ventilated classrooms or risk losing their jobs.

What remains to be seen is if those families that have successfully shifted to home schooling and distance learning will send their children back to school. Schools that take on the role of supporting well-being may emerge as a beacon of hope, healing trauma by embracing their communities.

Key Components of Quality of Life:

- **Community Well-being**
- **Mental Health**
- **Access to Nature**

> "For people to be well they need to have social interaction and community."
> (Gibson, 2020)

The Prediction:

- Schools will become centers of joy, happiness, healing, and well-being for the community.

- Services and practices supporting physical and mental health will become embedded.

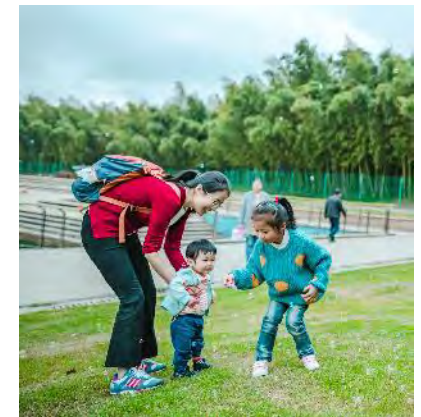- Children will have equitable access to nature and natural systems at their school.

Community Well-being

BETTER

- The focus on social and emotional well-being metrics will enhance educational outcomes.
- Well-being is embedded into school culture as an aspect of all learning.
- Self care is taught and practiced via meditation, yoga, music, art, and dance.
- Authentic honest communication around states of well-being is a regular part of the school day.
- Parent education is a community development tool.
- Community members are invited into schools to provide mentorship and support well-being programs.
- Schools are open to the community creating pride of ownership and stewardship.

- Open campuses will result in the homeless population encroaching upon school campuses.
- There will be competition for space and resources shared with the community.
- Inadequate staffing will make campuses unsafe.
- Lack of basic infrastructure such as nighttime lighting will reduce access in the evening.
- Efforts to enhance well-being efforts will take the focus away from academic achievement.
- The academic achievement gap will widen as marginalized communities are hampered by systemic inequities that schools are powerless to address.
- The community will litter, vandalize, and destroy school property.

WORSE

Mental Health

BETTER

- Time spent in unstructured play outside defined as necessary for mental health.
- Measuring and providing for the mental health of the school community (children, families, educators, administrators and staff) defined as within the purview of school responsibilities.
- Schools become safe and nurturing places to grow and heal.
- Schools as centers of community health.
- Trauma informed practices result in increased resilience.
- Whole child initiatives gain funding and prioritization.
- Whole family health considered as a key indicator of child health.
- Socio-economics ceases to be an indicator of long-term health outcomes.

- Schools will be overwhelmed by the number of mental health issues caused by the pandemic and educator burn out will persist and increase.
- Educators will leave the profession seeking less stressful professions.
- Complex mental health issues will manifest in increased negative behavior among children and adults.
- Schools will become more institutional and prison-like to keep children and adults safe.
- Schools are not equipped, and staff is not trained to provide mental health services leading to misdiagnosis and inappropriate interventions.
- Access to mental health services will be determined by socio-economic status vs actual need.

WORSE

Access to Nature

BETTER

- Schools as the key strategy for providing equitable access to nature for all children.
- Improved environmental literacy and environmental stewardship.
- Emphasis on outdoor physical activity.
- Creative and hands-on curriculum built around nature and natural systems.
- Improved perceptions of equity and inclusion among diverse learners.
- Emotional, cognitive and physical well-being.
- Improved academic outcomes.
- Boosted immunity to disease.
- Pro-social behavior, cooperation and kindness.
- School grounds as a carbon sequestration strategy.

- Inadequate resources for maintenance leads to overgrown and blighted school grounds and gardens.
- Lack of professional development for educators leads to underutilization of nature as an instructional tool.
- Other critical safety-related facilities maintenance and operation needs go unmet.
- Reliance on community volunteers breeds inequity placing an undo burden on the few.
- Inequitable access to planting materials, water, storage, and tools further segregates communities.
- Risk aversion shuts down nascent nature-based programs.

WORSE

Quality of Life

For Better or Worse

Scientists and researchers have described well-being as a precursor to learning. This in turn has prompted investment into socio-emotional learning (SEL) curriculum. And yet music, art, and gardening programs are still struggling to survive year to year, despite an abundance of evidence that these programs support well-being as well as academic achievement. Schools focused on well-being will ensure traumatized children are met by loving adults who make trauma informed choices and prioritize happiness and relationships.

Perhaps all that is needed is a shift in mindset. Small interventions featuring outdoor learning and access to nature have been piloted by schools across the country. As Andy Homden notes "Planted environments reflect the education needs of kids, science, the environment, play areas, and activity areas."

Engaging the community in the design of schools such that they are oasis of community well-being, verdant, and full of joy will require a willingness to rethink the very purpose of a school campus. Maintenance and operations staff become integrated into the education process, as everyone invests in caring for the school as a living eco-system.

The interview data suggests that if schools are to remain viable as centers of learning post pandemic, they need to be safe and joyous places for children as well as adults.

"If you can connect the value of nature to help alleviate mental health burdens, then maybe you'll see more nature as the response."
(Danks, 2020)

"School should be places where, instead of being stressed out about grades and tests and fitting in, they're places where you feel comfortable, you feel accepted, and you feel like you matter."
~Irene Nigaglioni

"I've been talking to our garden educators. Get those gardens ready and don't even worry about curriculum, just invite your teachers... tell them where they can sit and do read-alouds."
~John Fisher

Stay Open School Design

Stay Open School Design

Predictions and Key Components

In addition to educating our children, the pandemic has shown us that we rely on several key services that schools typically provide, custodial, nutritional, and social. When schools closed, the needs fulfilled by these services simply failed to be met for millions of children. As Sharon Danks remarks, "I think we didn't understand, as a society, how much the economy depends upon the childcare provided by education." The fallout from this is deepening economic disparity, food insecurity, depression, anxiety, and a loss of community.

Matthew Romiti feels that although, "closing schools was a necessary evil. I could have never imagined this. It's just nuts!"

The Prediction:

- Schools will become vital centers of community.

- School communities will co-design flexible, healthy indoor environments that recognize the impact of space on learning.

- School communities will capitalize on outdoor spaces as learning assets, resulting in greening schoolyards and outdoor learning.

Schools were shut down because their indoor environments were not flexible enough to accommodate physical distancing and lacked sufficient airflow and air filtering to stop the COVID-19 novel coronavirus from spreading. However, poor indoor environmental quality has long been known to impact learning. Toxic materials such as lead based paint and asbestos are still being removed from schools. Many school buildings lack operable windows and cooling.

Outside of the classroom buildings where physical distancing and airflow were available, a lack of imagination coupled with a sea of hot asphalt made taking learning outside seem undesirable. Seasoned outdoor educators like John Fisher, immediately recognized the possibilities, "We have County Office of Education environmental literacy specialists, outdoor educators, and others saying we can do this."

Key Components of Stay Open School Design:

- **Community Schools**

- **Indoor Environmental Quality**

- **Outdoor Learning**

"Outdoor learning spaces can't be an afterthought."
(Nigaglioni, 2021)

Community Schools

BETTER

- Increased offerings of before school and after school enrichment programs and childcare.
- Improved food service and food security for the community.
- Schools open to community members with increased hours of operation.
- Preschool availability.
- Increased parent and community presence in school buildings and on school grounds.
- Community stewardship and sense of ownership and connection to schools.
- Community responsibility for safety and well-being of children.
- Safe walkable, bikeable streets, and improved mass transit access to schools.

- Increased staffing at school entries and exits are required to respond to safety concerns.
- Possibility of vandalism and theft when a campus is open to the community.
- Schools in underserved communities become underutilized and fall into disrepair.
- Learning resources are siphoned off to provide basic services.
- Communities cannot agree on how to prioritize programs.
- Lack of participation from community members.
- Community demographics change and schools don't change with them.
- The loudest voices take over and the minority viewpoint is lost.

WORSE

Indoor Environmental Quality

2.4

BETTER

- Easier access to handwashing facilities.
  Natural ventilation through operable windows and ceiling fans.
- Improvements to HVAC filtration and indoor air quality.
- Flexible spaces and flexible furniture.
- Activation of hallways and other transition spaces as learning spaces.
- Creative use of multi-purpose spaces as learning spaces.
- Adoption of voice amplification devices.
- Greater emphasis on providing thermal and acoustical comfort.
- Improved indoor/outdoor connectivity.
- Specification of sustainable non-toxic materials and cleaning practices.

- Over emphasis on cleaning and sanitizing.
- Windows closed due to exterior noise and environmental pollutants.
- Concerns about pathogen exposure prompts a return to lecture-based instruction, reducing social interaction and group work.
- Lack of funding that results in pressure to retrofit indoor spaces with easily maintainable inexpensive materials over sustainable non-toxic materials.
- Lack of cooperation among educators as to how to mitigate distractions in shared flexible spaces.
- Underutilized flexible shared space.
- Inequitable access to high quality interior environments.

WORSE

Outdoor Learning

BETTER

- Greening of schoolyards supports equity and social justice.
- Being outdoors in nature improves cognition, and emotional and physical well-being.
- Un-asphalting of school grounds reduces heat island affect and creates a cooler more hospitable environment.
- Being outside promotes positive social behavior.
- Improves efficacy of environmental literacy curriculum.
- Opportunity for Next Generation Science Standards (NGSS) cross-cutting curriculum.
- Hands-on STEM and STEAM opportunities.
- School gardens provide access to healthy food and community engagement.

- Inequitable access to green spaces and nature exacerbates social injustice.
- Difficult to learn outside during inclement weather.
- Poor outdoor air quality.
- Techers uncomfortable and inexperienced at holding classes outside.
- Parents reluctant to have their children learn outside.
- Inequitable access to appropriate outdoor clothing.
- Lack of access to outdoor furnishings, equipment and supplies.
- Lack of access to shade and shelter from the elements.
- Lack of sufficient resources to maintain outdoor spaces.

WORSE

Stay Open School Design

For Better or Worse

We have seen how closing schools is a major disruption to family life, to the economy, and to community well-being. For schools to stay open during a pandemic, requires a new approach to school design. Relevant resilient schools include a variety of indoor and outdoor learning environments equipped in ways that dining room tables and coffee shops are not.

We can imagine schools as thriving community centers, filled with multi-generational community members. And imagine them as precious living eco-systems. By removing asphalt and planting gardens and trees the outdoor environment becomes an active learning laboratory. Indoor environments are flexible, homelike, and thermally and acoustically comfortable.

"I think those teachers that have been reluctant to take kids outside will start doing it because of the safety reasons (and) will start to see certain kids really light up and learn better outdoors."
~Amy Jagodnik

"Wouldn't it be wonderful to have open spaces where students can actually engage in different ways using different furniture like couches, the floor, the walls that you can write on. I mean all of those things are more conducive to creativity."
~Luis Valentino

To design schools as a vital community asset takes a village of community members, architects, landscape architects, interior designers, healthcare specialists, educators, facilities professionals, and others, engaged as co-designers. In this way schools become places of healing as well as learning. Places that regenerate communities and serve as beacons of belonging.

"Design schools such that they can stay open during a pandemic, schools cannot be shut down, to ignore this is irresponsible."
(Homden, 2021)

Indoor Spaces

Outdoor Spaces

To Test or Not To Test

To Test or Not To Test

Predictions and Key Components

Proponents of testing argue it is necessary to understand the severity of COVID-related learning loss caused by remote learning and inequitable access to learning. Detractors question the validity of standardized tests as a metric. As Pat Sánchez observes, "Test scores are typically used punitively to remove kids from the system, because if a school is seen as doing poorly, it prompts those who have means and resources to leave the neighborhood."

Educators believe that ongoing formative assessment is a more reliable source of information, and it allows them to personalize learning in real time. Jeannette Lee-Parikh asserts that "schools and teachers must engage with the science of learning to restructure teaching and learning on what cognitive science says about how students learn. Learning loss and testing misses the point. We should ask instead: How do students learn and what are the conditions that enable that learning?"

The Prediction:

- Standardized testing will persist with the caveat that it provides but a fraction of the whole picture needed to truly measure learning.

- Equitable access to learning will require adoption of relevant, rigorous curriculum, supported by high quality relationships.

- Creative innovations spawned by school shut-downs will continue to fuel a reimagining of education.

"I think that people understand standardized tests are basically very poor measures of what they purport to measure."
(Soponis, 2021)

The lightning-fast shift to remote learning caused by the COVID-19 crisis has proven that innovation, even within a traditional education system, is possible. Rather than reverting to a system that does not serve children equitably, we have an opportunity right now to reimagine education and redefine how learning is assessed. Bryan Gibson reminds us that "Mindset is so important, if the mindset doesn't shift, we will remain stuck."

Key Components of To Test or Not To Test:

- **Measure What Matters**

- **Relevance, Rigor, and Relationships**

- **Funding Innovation**

Measure What Matters

BETTER

- Children will create portfolios showcasing their best work to demonstrate learning.
- Measuring engagement, joy, and belonging will be considered central to achieving academic outcomes.
- Assessment strategies created by Maria Montessori, Rudolph Steiner, and Reggio Emilio will be adapted and updated for the digital age.
- Curriculum will be designed following the Universal Design for Learning (UDL) guidelines: multiple means of engagement, representation, and expression.
- Children will be supported in co-creating their own unique educational experiences.
- Rubrics will be designed around social justice impact, environmental literacy, and multi-subject cross-cutting concepts.

- Letter grades as a means of measuring learning will prove to be inconsistent with student self assessments.
- Higher Ed institutions will continue to insist upon traditional summative assessments and disregard student portfolios.
- When tests are administered the temptation to cheat will increase as children are no longer prepared for or care about standardized tests.
- Learning differences will be highlighted during self assessment and will continue to be misidentified as deficiencies.
- Schools will continue to teach to the test, denying educators flexibility and opportunities to innovate on behalf of their students.
- Children's voices will continue to be judged as less important than adult voices.

WORSE

Relevance, Rigor, and Relationships

2.5

BETTER

- Communities will be invited in to co-create curriculum that is relevant and responds to their lived experience.
- Rigor will be assessed in terms of growth and development rather than strictly based upon grade level standards.
- Multi-disciplinary skill development will be required to demonstrate mastery.
- Fostering trusting and mutually respectful relationships between educators and children will be central to the learning experience.
- Educators will collaborate across disciplines to co-create curriculum with learners that is relevant to learners.
- Access to internships and experience-based learning will become the definition of career-ready.

- Educators who prefer traditional forms of instruction will leave the profession leading to shortages and increased class sizes.
- Matriculation to the next grade level will be based upon inconsistent subjective metrics as opposed to standardized summative assessment.
- Children who need targeted support in basic skill development will fall farther behind.
- Children who prefer to work independently will disengage when subjected to dysfunctional team dynamics.
- Community members will not have the time or energy to engage with schools.
- Educators will be expected to accommodate the unique needs of each child without adequate resources.

WORSE

Funding Innovation

BETTER

- Schools will be supported with funding for innovation and reimagining education.
- Schools will be motivated to try innovative strategies to meet diverse learners.
- Schools will be expected to iterate innovation through piloting and failure of a pilot will be seen as part of the natural iterative process.
- Schools will be free to invest in professional development focused on well-being as a vital precursor to academic success.
- Schools will be encouraged to engage their surrounding community in the co-design of community-wide educational programming.
- Successful innovation will be scaled up quickly, adopted widely, and iterated upon freely.

- School funding on the national level will continue to be allocated based upon participation in annual standardized testing, effectively discouraging innovation.
- Schools will continue to be underfunded nationally making funding innovation a luxury for the few.
- Shiny new pilot projects will take focus away from basic skill development and children will suffer for it.
- Test scores will decline and negatively affect neighborhood home values.
- Districts will lack the necessary facilities improvement funds to support and maintain innovation spaces.
- Innovations specific to a particular school community will not scale easily, intensifying educational inequity.

WORSE

To Test or Not To Test

For Better or Worse

Historically underserved, socioeconomically disadvantaged, and marginalized populations have consistently underperformed on summative standardized tests. These groups of children are at the most risk of learning loss as a result of pandemic related school closures. However, as a metric to understand learning there is general agreement that formative ongoing assessment is a much more effective tool, allowing educators to adapt to meet an individual learner's needs.

As Thom Markham remarks "learning loss is based upon retention of information, not actual learning." When we engage children in learning something that is meaningful to them, they don't lose the learning. To achieve high levels of engagement, relevance, rigor and develop the kinds of interpersonal relationships necessary for learning requires investment in innovation. For educators to innovate requires a shift in mindset, accepting that failure is part of the process.

"So much of education is experiential, you do not learn everything from a book, go out and experience it."
~Matthew Romiti

"What I want from education is students engaged in a consistent practice of positively impacting their community and the planet."
~Trevor Soponis

> "Relevance is not for the teacher it's for the student. How do we help students take on a real-world problem and apply math, language arts, and social studies in an interdisciplinary unit, in a way that's going to be meaningful for them?"
>
> (Sánchez, 2021)

As project-based learning gains more advocates amongst educators standardized testing becomes just one of many assessment strategies. Students are already creating portfolios and expressions of their learning that warrant a hands-on real time approach to assessment.

The disruption of the education system created by COVID-19 is an opportunity to reimagine how learning is obtained, represented, and assessed. We can choose to look at the crisis of learning loss experienced by millions of children as a call to action. Both traditional approaches and innovative approaches will be needed to provide equitable access to learning for all children.

Our risk averse education system has received a seismic shake-up. In the words of middle school science and math teacher, Matthew Romiti, "We can't keep doing things simply because that's how it's always been done."

Conclusion

What's Next?

Working alone, we will not be able to make any of these changes stick. We may simply fall back into old patterns as John Fisher fears, "if you were to ask me what's going to stick, I'm afraid we're just going to run back to where we were." To make something better out of this crisis will take commitment to change.

One of the most powerful strategies we have is simply to continue to engage in dialogue with one another. Perhaps conduct a few of your own five stickiest changes interviews. Seek out perspectives that are different from your own. If we want to learn from this crisis and leverage it to move towards the environmentally and socially just, anti-racist, equitable future of learning we all want, we need to listen and learn from each other. that includes listening to our children. Bryan Gibson recommends we ask children, "What did you learn about yourself during COVID-19 that you can take with you to support you post COVID-19?"

Engage a diverse group of your community stakeholders and begin with asking why. Why educate our children? To get to the why requires that anti-racist inclusive norms are set at the start and that facilitators are empowered to hold the group accountable to them. From the why, a shared vision of what's next emerges. Hold up each of the stickiest changes and their key components and discuss how each one either supports or obstructs the vision.

Once your community has a list of changes and components they are willing to commit to, seek out synergies between them. There are synergy examples in "Synthesizing the Data" on page 40. Prioritize those changes and components that have the most immediate positive impact on your vision. Seek out some quick wins that can serve to energize and maintain commitment for the long term.

Every possible change for the better contains within it a worse problem. Entrenched systems will take time to change and require embracing the discomfort of a lack of easy answers. Discuss the pitfalls and obstacles that may arise and prepare to address them.

The changes we have weathered during the COVID-19 pandemic have shown us that with all the seemingly insurmountable issues we face there is great resilience, creativity, and caring in our education system. As we look back upon the beginning of this pandemic, we can celebrate how we came so far so quickly. We achieved a major transition to distance learning, digital devices and broadband were deployed with lightning speed, and we can all attest to our deepened relationship with nature as going outside became a key strategy for staying sane while sheltering in place. All these transformations happened during the COVID-19 pandemic and are still happening.

We cannot alone repair the effects of centuries of racism, discrimination, and socio-economic disparity. Singlehandedly we cannot rewrite the entrenched policies that tie school facilities funding to community wealth, that underpay and undervalue education professionals, and discourage innovation. Together we can. We hope this research is helpful to you as you redefine normal for yourselves, your families, your schools, and your communities.

If you believe that schools belong to communities and communities belong to schools, then believe that each one of us is responsible for the quality of the educational experience for each child. So, let's get to work putting this crisis to good use. It is both more difficult and easier than we think. The silos that have held educational innovation hostage are breaking down. Let us not build them back.

Conclusion

Synthesizing the Data

Leveraging synergies between the Five Stickiest Changes key components can help to establish small wins. These will fortify the community to continue despite the inevitable push back. Change includes loss. Focus on what will be gained.

For example, *distance learning* made **Learn Anywhere Learn Anytime** possible for K-12 learners while also exposing how a lack of relevant curriculum is disengaging learners. **Personalized Learning** component *student-led learning* specifically addresses engagement.

Another key component of **Personalized Learning** is *social justice lens.* Systemic social inequities were exposed by school closures. **Stay Open School Design** key component *community schools* highlights the essential services beyond education that schools deliver to their communities. In addition, the socialization that happens at school supports the *mental health* of children, families, and communities, a key component of **Quality of Life**.

Other key components that overlap with **Quality of Life** and **Stay Open School Design** include *outdoor learning* and *access to nature*. Both provide opportunities for socialization among peers, one of the three essential services provided by schools.

Bringing in the community to co-create relevant learning experiences creates an overlap between *community well-being* a key component of **Quality of Life,** *community schools* a key component of **Stay Open School Design,** and *relevance, rigor, and relationships* a key component of **To Test or Not To Test.**

The interviewees predicted that **Learn Anywhere Learn Anytime** would prove to be the stickiest of all the changes. This change alone has produced a cascade of other changes. The overnight shift to *distance learning* (for better or worse), demonstrates that the education system can think and act outside of the box when necessary. **To Test or Not To Test** component *funding innovation* asks us to build upon this out of the box thinking and continue innovating while we view learning through the **Personalized Learning** *social justice lens*.

To Test or Not To Test component *measure what matters* asks that we understand the limits of summative standardized testing and emphasize other types of assessment such as, formative assessment, which may include assessing the **Quality of Life** component *mental health*.

These synergies and many more exist. We need only commit to looking for them and acting upon them.

1	2	3	4	5
Learn Anywhere Learn Anytime	Personalized Learning	Stay Open School Design	Quality of Life	To Test or Not To Test
Technology Distance Learning Choice	Student Led Learning Educator as Co-Learner Social Justice Lens	Community Schools Indoor Environmental Quality Outdoor Learning	Community Well-being Mental Health Access to Nature	Measure What Matters Relevance, Rigor, and Relationships Funding Innovation

Images and Quotes

Images:

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Epilogue

It is September of 2021 and the hoped-for end to the pandemic seems to keep moving farther and farther out. The Delta variant is wreaking havoc among the unvaccinated, the vaccinated are experiencing occasional break through infections, and debates on wearing masks indoors continue. In fall many schools returned to in-person learning indoors and consequently have begun to experience COVID outbreaks. Teachers are now challenged to simultaneously tend to the learning needs of the children in their classrooms and those of children quarantined in their homes.

Early in the pandemic schools that embraced outdoor learning had great success mitigating COVID outbreaks. Why haven't more schools followed their lead? During school closures, educators became adept at using technology to implement various forms of hybrid learning with flexible schedules. Why have so many schools now seemingly abandoned these innovations?

Along with the COVID crisis, the ongoing devastation wrought by structural racism and climate crisis dominate the headlines. What the headlines do not often point out is how interconnected these crises are. We have spent over two centuries thoughtlessly plundering the planet's ecosystems for profit in the name of quality of life for the privileged. A quality of life that is supported by the ongoing systemic oppression of black indigenous people of color (BIPOC.) It is time now to check privilege and return to stewardship. It is time to seek multi-cultural wisdom to restore, repair, and repatriate what has been damaged through settler colonialism greed and ignorance. All the elements of life, animate and inanimate, are connected. Humans will not begin to truly thrive until we recognize this and act accordingly.

> "We've done things like a meditative walk where you go out and see what's different today or find a piece of nature that you think is interesting and draw it in your journal."
> (Papamarcos, 2021)

Resuming our human role as environmental stewards, includes claiming every human being's right to be free of racism, discrimination, and socio-economic inequity. It requires healing our individual, collective, and generational trauma.

Schools can be places of healing. By replacing asphalt with ecosystems and taking learning outside, schools help to reverse the epidemic of inequities in our communities. Every child on every school campus deserves healing outdoor spaces in which to learn and self-regulate.

Being immersed in nature restores attention and creates a sense of belonging. While sitting or walking quietly in nature we become aware that life is within us and all around us. With awareness comes the call to act. For Earth's ecosystems to continue to sustain all life, they need us to act now.

The Five Stickiest Changes to Education

Author Biography

Anna Klare Harrison is an experienced interior designer, educational facilities planner, and sustainability educator who has worked with nonprofit agencies, corporations, and school districts, for over 30 years. A recognized industry leader in biophilic design, outdoor learning, and innovative learning environments, Anna is a frequent presenter at regional, national, and international conferences.

To support transformation within school communities and education leadership, Anna facilitates professional development training and workshops that illuminate the impact of the physical environment on the physiological, psychological, and cognitive well-being of children, youth, and adults. She brings a unique blend of interactive facilitation techniques to her work, including design thinking and mindfulness meditation.

The focus of Anna's work is to empower communities of diverse stakeholders to move from ideas to action. Dismantling structural racism and ending the climate crisis is the urgent calling of the 21st century. Anna believes that by working together we can realize the vision of equity and justice for all life now, and secure that vision for the future.