

WILL SCHOOLS CHANGE FOREVER?

Predicting how two pandemics could catalyze lasting innovation in public schools

BY CHELSEA WAITE & THOMAS ARNETT

FALL 2020



TABLE OF CONTENTS

Executive Summary	3
Introduction	4
Is this a crucible moment for schools?	5
Lessons from Sputnik and a polio epidemic	5
Confronting the current moment	6
Understanding the components of schools' organizational models	7
Resources: The assets a school relies on	8
Processes: How a school carries out its work	9
Revenue formula: How a school covers its costs	9
Value proposition: The promises a school makes to its stakeholders	10
The dynamics at work when schools attempt change	12
1. New processes change schools' capabilities more than new resources	12
2. New processes stick around when they're better at addressing prevailing priorities	13
3. When new value propositions or revenue formulas take root, resources and processes follow	15
4. Change efforts must overcome the inertia of existing organizational models	16
Recommendations: Cultivating innovation that persists	19
For state leaders, policymakers, and funders	19
For school system leaders	20
Conclusion	22
Appendix: Worksheet and discussion guide for school system leaders	23
Notes	25
Acknowledgments, About the Institute, About the authors	31

EXECUTIVE SUMMARY

Two pandemics—COVID-19 and systemic racism—are confronting American society, and by extension K–12 schools. Both pandemics have precipitated immediate challenges that schools must navigate, and also draw attention to longstanding, chronic problems in the education system. It’s more clear than ever that a return to “normal” won’t serve all students well.

As a result, there is an opportunity—and arguably an imperative—for schools to pursue lasting, positive change during this period of instability. It’s tempting to see crises as an inevitable harbinger of change. But innovations implemented in response to today’s crises aren’t guaranteed to last into tomorrow. To make sense of the potential for 2020 to change K–12 schools forever, this paper offers a framework for understanding why some crisis-induced innovations persist, while others are cast aside when conditions normalize.

Innovations implemented in response to today’s crises aren’t guaranteed to last into tomorrow.

The rigorous framework, developed by Harvard professor Clayton Christensen and his colleagues, unpacks four components that determine an organization’s capabilities (what it can and can’t do), as well as its priorities (what it must accomplish). Every school offers **value propositions** representing the promises it makes to a wide range of stakeholders. Schools rely on **resources** and **processes** to carry out their work. And every school has a **revenue formula** that defines how it covers its costs.

These four components form a highly interdependent system, meaning they act on each other and respond to changes like predictable chemical reactions. To illuminate the potential for current events to catalyze lasting changes in K–12 schools, this paper offers school system leaders and policymakers insight into four key dynamics at work in organizational models:

1. Resources alone aren’t likely to change what schools can do, but resources that power new processes could.
2. To stick around, new processes have to outperform old ones when it comes to meeting schools’ existing priorities.
3. New priorities are a key catalyst for transformational change because they hold sway over resources and processes.
4. Change efforts must overcome the persistence of legacy processes and competing priorities.

The paper concludes with concrete recommendations guided by the four-box framework for organizational models. These recommendations help decision-makers focus on where change is possible, and take targeted action to introduce and support innovations that enable every learner to reach his or her full potential.

As COVID-19 and racial justice advocacy shift the ground underneath schools, the door is open for change. We hope education leaders can walk through that door by using the framework and recommendations in this paper to increase the likelihood that their efforts at positive transformation bear fruit.

INTRODUCTION

Two pandemics confront American society in 2020. The first, a new virus that killed over 200,000 people in the US before the end of September, continues to threaten the lives of many more.¹ The second, a centuries-old pattern of systemic racism, perpetuates inequality and injustice.²

Both pandemics deeply challenge our education system. COVID-19 casts uncertainty on whether or how face-to-face learning can happen this school year. Meanwhile, the killings of George Floyd, Breonna Taylor, Ahmaud Arbery, and others heighten scrutiny over the role of education in perpetuating or fighting injustice. Both pandemics are lightning rods that draw attention to long-standing, chronic problems that plague public education, like the outsized correlations between race, socioeconomic status, achievement, and opportunity.³

As overwhelming as 2020 has felt so far, one thing is clear: going “back to normal” won’t serve all students well. And so even as educators work tirelessly just to keep the lights on, there is also an opportunity—and arguably an imperative—for schools to pursue lasting, positive change during this period of instability.

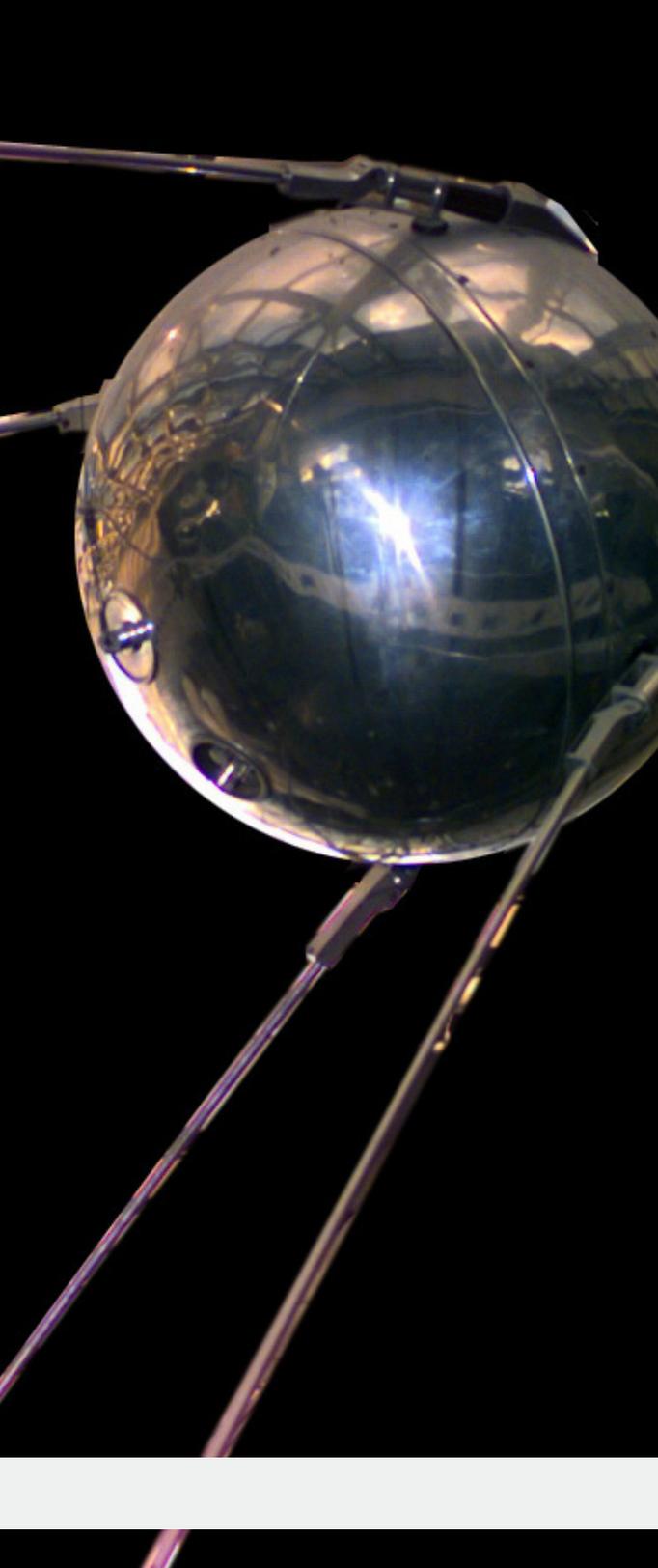
Innovative approaches that some schools were incubating before this year can shed light on the way forward, helping more conventional schools to imagine what it would look like to transform our school systems, not just revive the status quo. Increased rallying cries for innovative approaches—such as social and emotional learning, competency-based education, culturally relevant instruction, restorative practices, open-walled learning, and universal access to home internet—have arrived at a moment when they can no longer be relegated to niches in the education landscape.

But converting rallying cries into lasting change is a complex proposition. This paper aims to answer two important questions that underpin K-12 innovation:

1. What determines whether the promising changes schools undertake will conform to conventional systems, or transform them?
2. How can leaders make it more likely that their desired changes persist far beyond this year?

We will address these questions by applying a rigorous framework to explain how organizations successfully adopt certain changes, but reject others no matter how promising they seem. With this framework, we can more accurately peek around the corner to predict how the upheavals of 2020 will affect schools’ models. Most importantly, the framework can help school system leaders analyze where their desired changes are likely to run into roadblocks, and identify steps to increase the likelihood that positive changes persist.

There is an opportunity—and arguably an imperative—for schools to pursue lasting, positive change during this period of instability.



IS THIS A CRUCIBLE MOMENT FOR SCHOOLS?

In moments that require radical adaptation, it's tempting to see crisis as an inevitable harbinger of change. The history of K–12 education features many events that shifted the ground underneath schools and forced them to change. But the depth and endurance of those changes is mixed.⁴ Consider, for example, two ground-shifting events: one that produced lasting changes in what schools offer to benefit students, and one that did not.

Lessons from Sputnik and a polio epidemic

After World War II and into the 1950s, Cold War anxieties along with rising prosperity created increased demand for more academically challenging secondary schooling and higher education. In 1957, on the same day that *Leave it to Beaver* premiered on television, the Soviet Union launched the first satellite into space. Sputnik's blow to American confidence and security offered fertile ground for new reforms designed to make sure US students were competitive with their Soviet counterparts.⁵

Whereas reforms from only a decade before had introduced "life-adjustment education" focused on practical skills, a new wave of advocacy rapidly eclipsed them by pressing for more rigorous and advanced academic preparation in science and mathematics.⁶ In turn, this resulted in the creation of a variety of incentives enshrined in policy through the National Defense Education Act of 1958, which included more than a billion dollars for education and scholarships and set a new precedent for the role of the federal government in education.⁷

One legacy of this ground-shift is the presence of school resources like science laboratories, as well as overhead projectors and other audiovisual equipment—early precursors to some of the educational technologies more common in schools today.⁸ The Advanced Placement (AP) program, which was initially piloted in elite high schools in the early 1950's, also gained momentum in Sputnik's wake.⁹ AP courses introduced more rigorous academics into high schools and created opportunities for students to earn college credits while in high school, all while fitting easily into schools' existing schedules and staffing structures.

AP remains one of the few examples of educational reforms that historians argue actually succeeded.¹⁰ Today, the program remains academically rigorous but is no longer so exclusive: 16,000 public and

private schools offer AP courses, 165,000 educators teach them, and 22% of AP students come from low-income families.¹¹

On the other hand, some major ground-shifting events cause reactions that look dramatic but lead to no lasting changes whatsoever. For example, a 1937 outbreak of polio in Chicago closed the city's schools and prompted remote learning for three weeks. In what the superintendent referred to as "Air Newspaper-School," the school system leveraged radio stations and newspapers to continue students' learning while schools were closed. Although the superintendent named the experiment an "emergency plan," he also called it "promising" and noted that several university professors were studying the approach.¹²

But even with this sweeping system-wide authorization of new tools and methods in education, delivery of instruction via radio and newspaper never caught on in schools once they reopened.¹³ It didn't square with how teachers were used to instructing students, and in fact, the superintendent was careful to protect teachers from the new change: "no mechanical device can be successfully substituted for the teacher-personality and the pupil-teacher relationship."¹⁴

Confronting the current moment

One of the debates raging most widely in the education sector today is how schools will change as a result of the two pandemics. Will the ground-shifting events of 2020 be more like Sputnik or more like Chicago's polio-induced closures?

COVID-19 and racial justice advocacy are each putting pressure on schools for dramatic change. Some changes could benefit students: education leaders are making public commitments to challenge policies that marginalize and harm Black and Indigenous students, immigrants, and students of color.¹⁵ Some schools are equipping parents to more meaningfully support student learning at home.¹⁶ More flexible schedules and learning pathways are enabling some students' curiosity and creativity to thrive.¹⁷ The glimmer of hope is that the positive adaptations schools make could lead to meaningful, sustained changes that benefit students in the long term—and perhaps even that the sum of many promising changes could amount to a transformation in what schools offer and how they operate.

The glimmer of hope is that the positive adaptations schools make could lead to sustained changes that benefit students.

But as COVID-19 and calls for racial justice sweep the nation, the forces at work only create a *potential* crucible moment. External circumstances are certainly forcing schools to adapt right now. Whether these short-term adaptations convert into long-lasting changes that benefit students has more to do with the chemistry between schools' external circumstances and their existing ways of doing business.

So what will be the result of today's chemical reactions? Public reckoning with systemic racism echoes Sputnik by calling on schools to deliver something different from what they have before: safety, belonging, and equity of opportunity for each student regardless of background. But unlike Sputnik, doing so requires dismantling, rather than enhancing, a variety of tried-and-true mechanisms that were built for sorting and ranking students. And while the COVID-19 pandemic bears strong resemblance to Chicago's polio crisis, which resulted in no long-lasting change, COVID-19 is impacting schools at a much larger scale and on a longer timeline.

Side-by-side comparisons to ground-shifting events throughout history can spiral into endless debates without a rigorous framework for analysis. In the sections that follow, we offer such a framework. In doing so, we illuminate the causal principles that determine why some innovations introduced in times of crisis persist, while others are cast aside when conditions normalize. When school system leaders and policymakers internalize those causal principles, they will be in a better position to catalyze lasting change that comes from deep inside schools, not just from the immediacy of new circumstances.

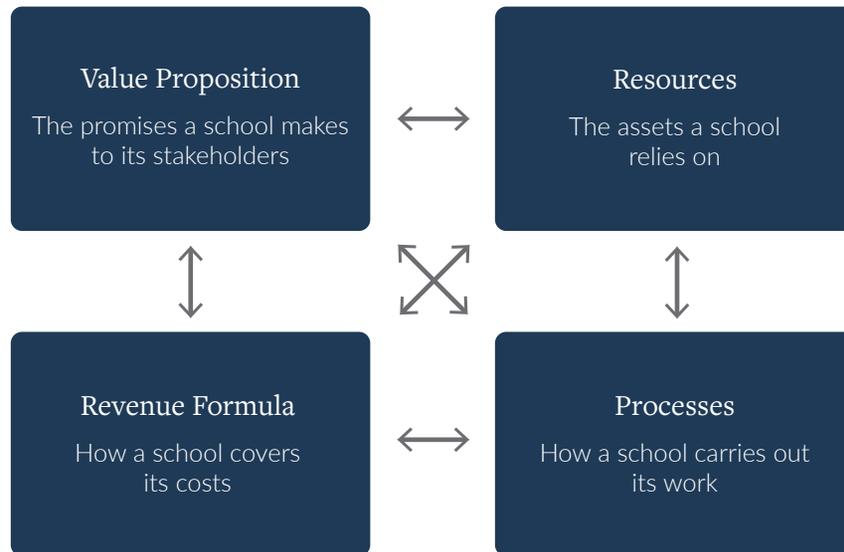
UNDERSTANDING THE COMPONENTS OF SCHOOLS' ORGANIZATIONAL MODELS

All organizations—including schools—have models that define how they deliver value to their stakeholders and society at large. An organization's model determines its capabilities (what it can or can't do) and its priorities (what it must accomplish). In shorthand, we can think of an organization's model as its DNA. Over the last several decades, Harvard professor Clayton Christensen and his colleagues developed a four-box framework that illuminates organizations' capabilities and priorities (see Figure 1).¹⁸ To understand this framework, consider how organizations develop their models.

The starting point for any organization is its set of core **value propositions**. Value propositions represent the promises the organization makes to its stakeholders—such as customers, investors, or community members—regarding how it will benefit their lives.

To get an organization up and running, founding leaders start to pull in **resources** to deliver on their proposed value propositions. Resources include people, technology, equipment, suppliers, facilities, and cash. Some resources don't show up in financial statements, such as name recognition, reputation, or access to community volunteers.

Figure 1. The components of schools' organizational models



In repeatedly working to deliver on its value propositions, an organization creates **processes**. Processes are habitual ways of working together that emerge as people address recurrent tasks repeatedly and successfully. At first, the founding team and early hires draw on their previous experiences to put processes in place. Later, new processes emerge and evolve to address new challenges. Some processes are explicitly defined, carefully documented, and consciously followed. Others are unstated, and people adopt them simply because “that’s the way we do things around here.”

To cover the costs of the resources and processes that are required to deliver on the value proposition, an organization creates a **revenue formula**.¹⁹ This formula defines how the organization will maintain financial sustainability to support those costs.

In the early life of an organization, all four components are fairly malleable. To survive infancy, organizations have to pivot their value propositions and adjust their resources and processes until they figure out how to bring in the revenue they need to survive.

But as an organization matures, the four components of its model calcify. When resources and processes meet a need or solve a problem, they get replicated, repeated, improved, and standardized. And while value propositions were an organization's starting point in the creation of its model, a mature organization can *only* successfully deliver value propositions that fit its existing resources, processes, and revenue formula. In this manner, all four components become interdependent, shaping a durable set of capabilities and priorities.

Now consider what happens when leaders or stakeholders call for changes to the organizational model. If an innovation creates friction with existing resources and processes, it struggles to gain traction. If a new initiative hurts the revenue formula, it withers on the vine. Employees become not just resources, but important stakeholders with vested interests in how the organization does its work. When a change threatens the value that internal or external stakeholders have already come to expect, stakeholders exercise their political influence to resist the change. Because every resource and process exists to solve a problem for the organization, they resist change as long as the purpose for which they were created remains.

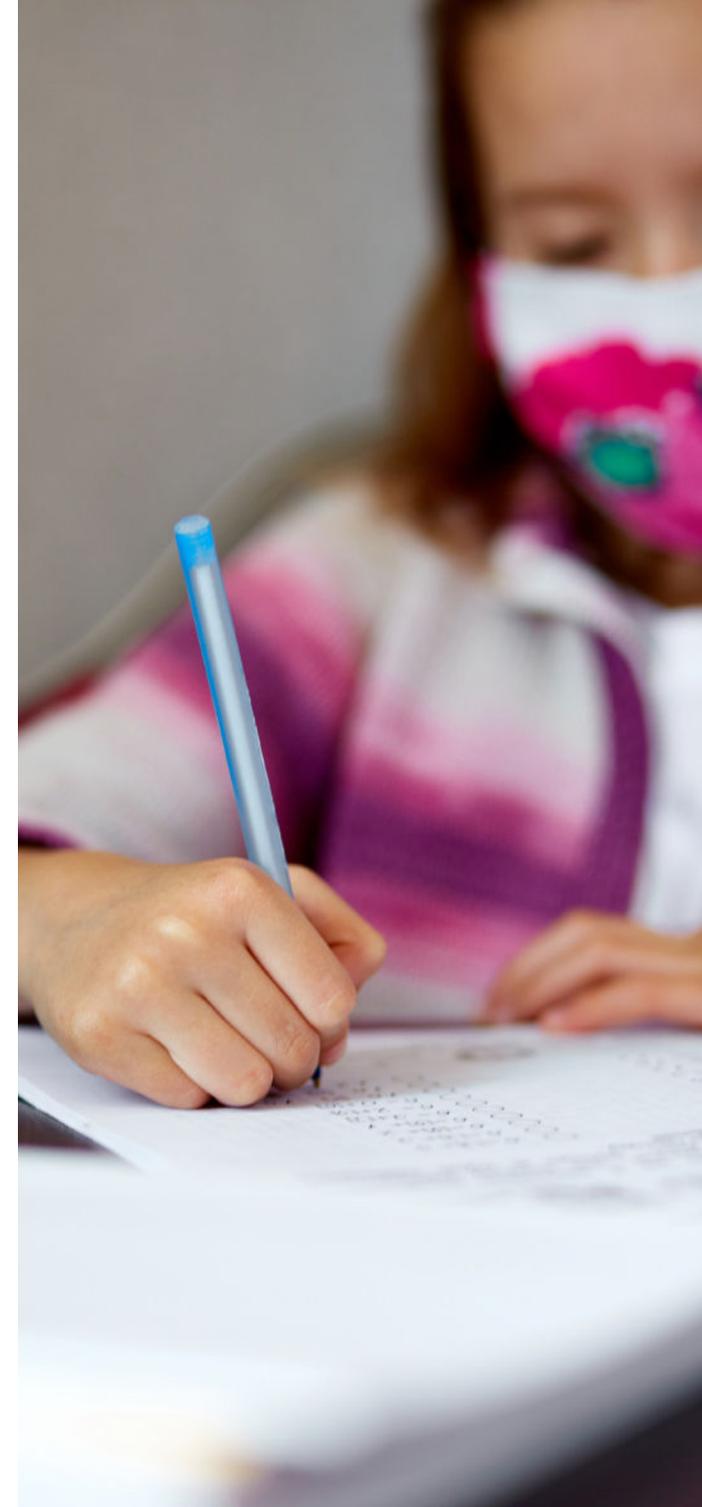
This organizational framework has important insights to offer education leaders from all types of schools. Regardless of whether a school is highly conventional, progressive, or uniquely adapted to its local context, the four-box framework helps leaders see how the capabilities and priorities embedded in their schools often have an invisible hold on their organization. The framework also helps us understand how schools' core DNA is likely to respond to COVID-19 and calls for racial justice, both during the present climate and once these moments of crisis recede. We now consider how this framework applies to schools—starting with the components that are easiest to change and then moving through those that are increasingly more recalcitrant.

Resources: The assets a school relies on

Schools' resources include things like buildings, textbooks, technology, and cash (see Figure 2). By far, the most important and the most costly resources for schools are human resources. On average, roughly 80% of schools' recurring expenses go to employee salaries and benefits—and for good reason.²⁰ Research consistently shows that effective teachers are a school's most important resource for influencing students' educational outcomes.²¹

Resources are usually the most flexible component of an organization's model, yet school systems' resources are much less flexible than in many other non-education sectors. Policies and union contracts put a number of constraints on how schools budget their resources. Furthermore, many of the resources schools own—such as buildings and textbooks—are not easily sold and converted to cash due to limited demand for them outside of K–12 education.

Nonetheless, resources are still the easiest part of a school to change. Technologies that didn't exist a decade ago are now common in schools. Over time, districts replace their curriculum with new



materials aligned to the latest standards. Although major updates to school buildings are expensive and therefore not frequent, changes to the physical space do happen over the course of decades as they align with schools' value propositions and revenue formulas.

Figure 2. Examples of resources in schools

- People: Teachers, administrators, students, parents, and caregivers
- Materials: Curriculum, technology, supplies, and equipment
- Third-party companies: Vendors and suppliers
- Physical structures: Facilities and buildings
- Money: Budgets, donations, fundraisers, grants, and awards
- Intangibles: Brand, reputation, and relationships

Processes: How a school carries out its work

Processes tend to be inflexible in any organization. They exist to help employees perform recurring tasks in a consistent way, which means that, by their very nature, processes are not meant to change. Although effective processes can unlock efficiencies, the inflexibility of well-established processes can also prove problematic: the processes that work well to solve one problem at one point in time often do not work well to solve different problems that may arise later.

For schools, processes include everything from how they enroll students to how they evaluate teachers (see Figure 3). The processes schools use today have seen many adjustments and modifications over the last century, but their core features trace back to the age-graded primary school models that took root starting in the late 1800s, and the comprehensive high schools that became widespread from the early 1900s through the 1950s.²²

Figure 3. Examples of processes in schools

- Pedagogy
- Scheduling and staffing
- Professional development and hiring policies
- Discipline policies and practices
- Classroom management and instructional models
- Peer coaching programs
- Budgeting and procurement

Revenue formula: How a school covers its costs

In the business world, revenue formulas often dominate organizations' priorities because the financial sector favors for-profit companies that maximize returns for shareholders over all other goals. Schools, in contrast, are not tasked with generating wealth, so when they are financially solvent, their priorities tend to be more strongly influenced by the value propositions that stakeholders expect them to deliver.

Nonetheless, school systems still do require a revenue formula that can achieve fiscal sustainability. Because state and federal policies largely determine school funding, schools place prime importance on compliance with the requirements set by these policies (see Figure 4). Likewise, because enrollment and attendance remain the primary drivers of how public schools get paid, many decisions school leaders make can be explained by the desire to preserve, or occasionally increase, enrollment. Achievement scores and reputations also factor into school revenue formulas because they impact real estate decisions and revenue from property taxes. Schools' revenue formulas become particularly strong priorities when they face declining revenue or rising costs.

Figure 4. Examples of revenue formula in schools

- Comply with state and federal policies to maintain eligibility for funding
- Maintain enrollments to receive enrollment-based state funding
- Build or maintain a strong reputation in the community to support residential property values and garner local property tax revenues
- Achieve eligibility for federal, state, and philanthropic grant programs
- Institute fees and fundraising programs to support the costs of extracurriculars

Value proposition: The promises a school makes to its stakeholders

Public education is generally revered for the value it promises to communities and society at large. But what exactly that value proposition is—and for whom—is complex.

Schools articulate their value to society through mission statements, graduate portraits, and the like. Some school leaders invite community stakeholders—students, families, taxpayers, and board members—to participate in articulating these statements. Public articulations of schools' intended value propositions might include statements like “Every student... is known by name, strength and need,”²³ or make assurances that graduates

will be “innovative problem solvers, socially and emotionally competent, effective communicators, collaborative, and socially aware global citizens.”²⁴

Yet external-facing mission statements may not account for the various—and sometimes conflicting—value propositions that community stakeholders actually expect. Public statements of desires and intentions for schools are not always the same as what stakeholders' behavior reveals they demand. People often make decisions based not on stated preferences, but on the progress they're trying to make under particular circumstances.²⁵ For example, some families may state that they value schools that develop their children holistically, but in fact push back against any changes that they fear might jeopardize their children's chances at college admissions. Schools are challenged by serving a wide variety of community members who are motivated by expected value propositions that go unstated.

And although families and communities are the most obvious consumers of a school's value proposition, a range of other stakeholders also exert powerful influence (see Figure 5).²⁶ Because schools are fiscally dependent on elected officials to provide resources, those officials and policymakers have strong influence over the value propositions schools are expected to deliver. School employees and their unions are also critically important stakeholders whose expectations schools must meet in order to keep their doors open. Foundations that fund schools expect their grantees to deliver on the activities and outcomes in grant proposals.

For school leaders who are responsible for delivering on this wide range of value propositions, the task can be mind-bending. Leaders must engage regularly in politics and persuasion to ensure that this wide range of stakeholders is satisfied with how schools deliver on their promises. Most school leaders got into the profession to serve students, not follow rules or engage in politics. But it's important to recognize that to keep their jobs, superintendents and school boards are strongly motivated to comply with regulations, avoid liabilities, and maintain a good public image with their constituents.



Figure 5. Examples of value propositions expected by different stakeholders in schools

Stakeholder groups	Expected value propositions
<i>State departments of education</i>	<ul style="list-style-type: none"> Produce high graduation rates Produce high student proficiency rates on state exams Eliminate disparities in equitable outcomes Maintain low student discipline rates
<i>Most families</i>	<ul style="list-style-type: none"> Ensure students are safe from physical and psychological threats Provide a social environment where students can make friends and learn positive social behavior Provide consistent custodial care and basic education
<i>Families of students expecting admission to competitive colleges</i>	<ul style="list-style-type: none"> Provide college-prep curriculum and extracurriculars Provide supports to ensure successful college preparation
<i>Families of students with learning differences</i>	<ul style="list-style-type: none"> Protect students from bullying and abuse Provide students with federally-mandated supports Ensure students learn on par with their peers
<i>Teachers unions</i>	<ul style="list-style-type: none"> Provide working conditions that allow teachers to focus on teaching Ensure fair treatment in hiring and job assignment
<i>Most students</i>	<ul style="list-style-type: none"> Provide an enjoyable experience that aids pursuit of personal goals and interests

THE DYNAMICS AT WORK WHEN SCHOOLS ATTEMPT CHANGE

The components of an organizational model—resources, processes, revenue formula, and value proposition—act on each other and respond to the world around them like predictable chemical reactions. For school system leaders and policymakers eager to instill positive change in schools, four dynamics of this chemical interplay can shed light on how current events will catalyze temporary or persistent changes in schools and reinforce or transform schools’ organizational models.

1. New processes change schools’ capabilities more than new resources.

Resources matter to a school’s success. After all, it’s pretty hard to teach literacy without reading material. Schools need effective teachers to support students’ learning and development.²⁷ Inclusive classrooms need culturally responsive curriculum. And online instruction doesn’t work unless students have access to the internet and devices. Without adequate resources like these, schools can’t deliver on their value propositions. Unfortunately, many schools lack a baseline of essential resources, especially when funding systems yield inequitable resourcing for low-income and non-white communities.²⁸ To make matters worse, anticipated reductions to schools’ budgets caused by the COVID-19 pandemic could exacerbate inequalities and harm student learning.²⁹ As such, there is a critical case to be made for ensuring schools have the resources they need.

Yet leaders who think they can dramatically change schools by spending more money, acquiring new technology, or renovating facilities will be disappointed to discover that their problems are more complex. Most barriers to change stem from processes that are deeply embedded in how schools operate, like scheduling and staffing, curriculum development, discipline policies, and instructional models. If those processes are flawed, more resources aren’t the cure.³⁰ And if stakeholders expect results that schools’ existing processes weren’t designed to produce, new resources alone will not deliver.³¹ To change schools’ capabilities, resources need to power new processes.

To see why, one need go no further than this headline from the BBC in 2015: “Computers ‘do not improve’ pupil results, says OECD.”³² The referenced report rankled the edtech community by finding that more frequent computer use in schools was associated with *lower* results.³³ The Organisation for Economic Co-operation and Development (OECD) designed the study to evaluate the impact of a resource—computers—on school’s capabilities, but did not take into account the variety of processes by which teachers used computers in their classrooms. As a result, the study’s findings are unsurprising: adding more resources has the least potential to fundamentally transform how schools operate. Doing so can actually hurt a school’s value proposition when those resources get crammed into misaligned processes.

Most barriers to change stem from processes that are deeply embedded in how schools operate, like scheduling and staffing, curriculum development, discipline policies, and instructional models.

In contrast, when educators integrate new resources—such as technology—with new processes, those resources can have a powerful impact on a school's capabilities.³⁴ For example, Teach to One: Math, a program that uses technology to optimize middle school students' individual daily learning plans for math instruction, has been shown to increase student achievement by up to 53% beyond national averages.³⁵ Similarly, a recent study found that when math teachers were given access to an online tool called ASSISTments *and* were provided with coaching on the formative assessment practices that the tool helps facilitate, students' scores on end-of-year standardized tests improved significantly.³⁶ Because these approaches combine new resources with new instructional processes that depart from whole-class pacing and teacher-led instruction, schools adopting them are more likely to achieve their desired results.

As schools confront both pandemics this year, it's critical to remember the role that processes play in redefining schools' capabilities. Some of today's calls for change are reminiscent of Chicago in 1937. They focus on urgently providing schools with new resources—such as WiFi hotspots, video conferencing, culturally relevant curriculum, or counselors in place of school resource officers—but not on the work of integrating those new resources into new and better processes. It can be tempting to prophesy that these new resources will seed lasting changes in how schools operate. But proponents of new tools and technologies who do not also push for changes to processes must take to heart the fate of Air Newspaper-School.³⁷

School system leaders should balance the urgency of identifying adequate resources with the skepticism that more resources alone will lead to meaningful change. Resources can be purchased or coerced, but it's processes that have the most potential to change schools' capabilities—and processes must be built, not bought.³⁸

2. New processes stick around when they're better at addressing prevailing priorities.

If processes largely shape schools' capabilities, then changing those capabilities requires effectively replacing old processes with new ones. To

do so, the new processes must outperform old ones in meeting a school's prevailing priorities, or else they will be at risk of fizzling out or reverting to old ones. Leaders seeking to change processes during COVID-19 and national racial reckoning will encounter a smoother pathway if they can carefully craft new processes to address the array of priorities that drive decisions in their school models.

It's processes that have the most potential to change schools' capabilities—and processes must be built, not bought.

The Coalition of Essential Schools (CES) offers one illustration of how new processes that don't do a good job at delivering expected value propositions or fitting the revenue formula are unlikely to stick around. CES was a network of schools founded in the late 1980s that committed to an about-face in conventional instructional processes. It introduced a number of new processes such as block scheduling, student advisories, portfolios, and interdisciplinary studies. At its peak, the Coalition involved more than 1,000 schools, but by 2017 less than 100 schools were affiliated with the network, and CES shut down in 2018.

Today, while its core ideas continue to inspire similar progressive reform efforts, the Coalition's vision for high school remains the exception rather than the rule. One reason is that even if communities supported the reform ideas, CES schools needed to demonstrate that the new model was in fact better at meeting the existing priorities defined by policies and funding formulas. Generating adequate revenue alone would have been a formidable challenge: comprehensive high schools found it difficult to achieve the CES recommendation for teacher-to-student ratios.³⁹ And

education historians have pointed out that no matter how promising it appears, the value proposition of learner-centered movements like CES have not (yet) been met with widespread demand from all stakeholders.⁴⁰

In contrast, Lindsay Unified School District, a small district in rural California, stands out as an example of a school system that installed new processes by beating old ones on existing metrics of performance. The district is well-known for having replaced lock-step student learning with a competency-based model. Prior to undertaking this transformation, the district's overall Academic Performance Index (API) scores were some of the lowest in California, graduation rates were in the low 70th percentile of California districts, and annual teacher turnover was above 50%.⁴¹ With these results, it wasn't hard to find broad consensus among stakeholders that the district's existing processes were failing.⁴²

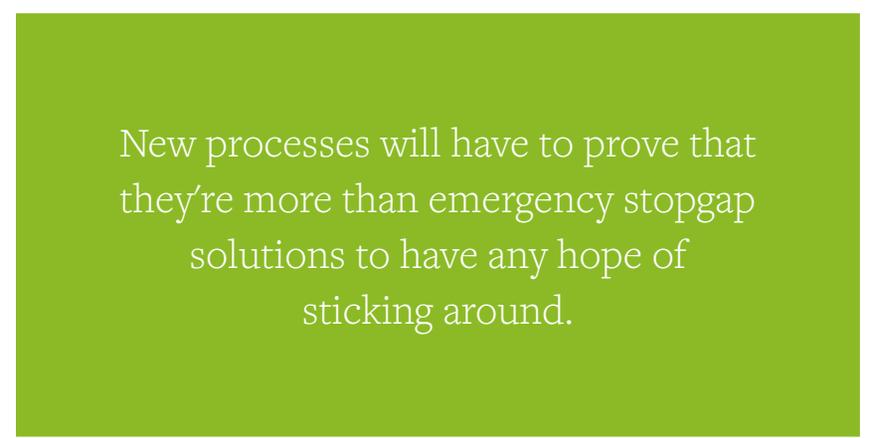
This failure, however, opened the door for a decade of work to redesign processes. The changes persisted because, in addition to offering new benefits like customized pacing and student ownership of learning, the new processes also proved more effective at delivering what stakeholders expected: test scores, graduation rates, and college admissions.⁴³ Over a four-year period, the percentage of Lindsay's students who reached proficiency on state end-of-year exams nearly doubled, and its graduation rate jumped to 94%.⁴⁴

When COVID-19 forced schools to close, the playing field in the competition between old and new processes shifted. Long-standing processes such as bell schedules, attendance protocols, and cafeteria lunches became unusable or irrelevant. Curriculum scope and sequence fell into disarray as teachers shifted their classes online. Grades and tests were put on hold. Simultaneously, the new circumstances created an urgent need for new processes, like family communication plans, meal deliveries, and remote instruction. As a result, schools began developing, testing, and adopting new processes at lightning speeds.

Some new processes induced by COVID-19 have promising potential to improve stakeholders' experiences with school. Some students—and not just the most privileged—are experiencing positive effects of remote learning due to factors like lower anxiety, better sleep, self-paced learning,

and less bullying and school-based trauma.⁴⁵ COVID-19 has given schools even more ground to stand on when arguing that basic social services must be integrated into education and fully funded in order to deliver on the promise of effectively educating learners from underserved communities. Blended learning, which has long shown potential to enable schools to help every student succeed by differentiating instruction at scale and offering insight into individual student progress, is especially relevant as schools wrestle with complete or partial closures.⁴⁶ Going forward, educators and entrepreneurs will likely develop and adopt other new processes that not only address critical issues during the pandemic, but show potential to make education more equitable, relevant, and empowering.

When schools fully reopen after the pandemic ends, there will be a reckoning. New processes will have to prove that they are more than emergency stopgap solutions to have any hope of sticking around. If educators want to keep some promising coronavirus-induced processes, they should ensure that new processes have a sufficient runway to improve. The new processes must show that they're better at delivering on a school's value propositions, within its existing revenue formula, compared to the predecessors they have temporarily replaced. Likewise, leaders should help unfamiliar processes gain traction by communicating clearly that they are more than just emergency solutions, and connecting them to known problems that stakeholders are trying to solve.



New processes will have to prove that they're more than emergency stopgap solutions to have any hope of sticking around.



3. When new value propositions or revenue formulas take root, resources and processes follow.

Prevailing value propositions and revenue formulas define the playing field on which new processes must compete. But when new value propositions or revenue formulas take hold, they can catalyze the development of new resources and processes. Put another way, if resources and processes in schools have notably shifted, it indicates that something has changed in the priorities influencing how decisions are made inside the organization.

The “Sputnik effect” illustrates this principle. Cold War anxiety created urgency around a new value proposition: a generation of competent American scientists and mathematicians to compete with the Soviet Union. The new demand, and new revenue sources through national legislation, prompted a variety of adjustments in resources and processes, like science curricula and AP programs. Decades later, a report titled “A Nation at Risk” prompted the initial wave of standards-based reform that has lasted from the 1990s through today.⁴⁷ In the same vein, the test-based accountability regime imposed under the federal No Child Left Behind (NCLB) bill changed many processes in schools’ models by leading schools to adopt more interim assessments, increase time spent on test prep, reduce emphasis on non-tested content areas, and focus attention on students at the cusp of meeting grade-level achievement expectations.⁴⁸

In the wake of COVID-19 and the racial justice movement, a range of voices in the field have raised rallying cries to radically reprioritize what problems schools should focus on solving. For example:

- A movement called “Just Ask Us” is engaging a million students and parents to reflect on what they want school to look like.⁴⁹
- Equity advocates argue that the pandemic will deepen long-standing injustices in society and schools if systems aren’t redesigned to prioritize the most marginalized students.⁵⁰
- Advocates for trauma-informed teaching point to how the effects of the pandemic should make social and emotional supports a first priority.⁵¹
- Critics of standardized testing and conventional grading are amplifying their calls to reimagine assessment and accountability.⁵²
- The broader Black Lives Matter movement is amplifying calls for educational justice and equity.⁵³

Amid this cacophony of demands for potential new value propositions, it’s not yet clear which might gain enough strength to influence how school leaders organize their resources and processes.

One place where new value propositions and revenue formulas take root is in the policy arena, since policy can both incentivize and compel school leaders to consider new factors in their

decision-making. In the K–12 sector, some policymakers see the COVID-19 moment as an opportunity to take legislative action on long-standing issues. For example, the rapid shift to remote learning drew sharp attention to what's long been called the homework gap: inequitable access to devices and the internet for students to do schoolwork at home.

EducationSuperHighway, a nonprofit focused on expanding internet access in schools, had historically steered clear of lobbying for home-internet access because of a “lack of political will,” but has now rapidly changed tack.⁵⁴ Both houses of Congress are now considering new legislation on the issue, which could impact districts’ policies and resource allocation if passed.⁵⁵ Competency-based education is another area ripe for legislative action at the state level.⁵⁶ As with legislation around the homework gap, the policy areas to watch are those that had some momentum before the crisis, and which COVID-19 is pushing toward a tipping point.

Another way that new value propositions formalize is through changes to the broader ecosystem of which schools are a part. For example, the high-stakes role of SAT and ACT testing for college admissions had already come under fire before COVID-19.⁵⁷ Now, the University of California system has suspended using SAT and ACT scores as a requirement for admissions until 2024, and other colleges are following suit.⁵⁸ If colleges and universities settle into new processes for evaluating student applications, high schools will quickly feel the effects. Since the promise of college admission is one of the primary value propositions high schools offer, new admissions processes will necessarily affect the processes and resources that high schools employ to deliver on that promise.

The policy areas to watch are those that had some momentum before the crisis, and which COVID-19 is pushing toward a tipping point.

A third way to influence schools’ value propositions is to organize around coherent new demands that gain traction locally. The Minneapolis School District’s recent decision to end a decades-long contract with the Minneapolis Police Department epitomizes this type of change.⁵⁹ In the wake of the killing of George Floyd at the hands of Minneapolis police, public opinion and the views of the districts’ trustees shifted strongly against police presence in schools. Accordingly, the district canceled its contract for a supply of school resource officers to promote school safety. This sudden amplification of a particular stakeholder value proposition—school safety and security through means other than the symbolic presence of force—led to an immediate and direct change to the resources and processes the district uses to support campus safety.

Although not all public rallying cries or policy actions will translate to new value propositions or revenue formulas, leaders at many levels can influence schools to consider new priorities in their decision-making, in turn creating space for resources and processes to shift.

4. Change efforts must overcome the inertia of existing organizational models.

One of the core tenets of the four-box framework is that the longer an organization has to mature, the more it resists change. Most public schools’ models are deeply entrenched, often persisting with the same fundamental DNA through dozens of leadership changes. In this sense, it’s remarkable to see the ways that schools *have* changed over time given how difficult it is to do so. Changing schools is possible—but leaders should keep in mind the challenges they’re likely to face.

The first significant challenge to change in schools is the presence of competing value propositions. Although it seems simple that change occurs when new processes beat out old ones, competing value propositions can stymie new processes that appear promising. For example, culturally responsive education, in theory, offers a compelling value proposition not just for marginalized communities, but for any advocate of boosting achievement in education. Studies have documented how ethnic studies students in San Francisco saw their GPAs rise, and students in Mexican-American studies classes in Tucson performed better on achievement tests and graduated at higher rates.⁶⁰



Yet as a legendary and long-standing confrontation in Arizona confirms, meeting one value proposition (student learning and achievement) was not enough for an approach that opponents argued undermined another value proposition (instilling American culture and values in students).⁶¹ Because schools have complex and multi-faceted value propositions that serve a variety of stakeholders, those with vested interests in one set of value propositions can influence schools to optimize theirs over others.

School system leaders can increase their chances for successful change by reducing the noise of competing value propositions for individual schools. For example, Rooted School in New Orleans organizes its resources and processes around the explicit goal of eliminating the wealth gap for African American families.⁶² As a charter school, it has an easier time aligning the value propositions expected by stakeholders due to its ability to recruit students, staff, and board members whose interests align with its focus. Nonetheless, traditional districts can launch a lab or magnet school with a similarly targeted set of value propositions. District leaders can also pursue a “portfolio” strategy, locating decision-making power in schools rather than a centralized bureaucracy and thus allowing individual schools to optimize for different sets of value propositions that are most relevant to their contexts.⁶³

The second significant challenge to change in schools is the conundrum of how old processes die. Legacy processes like the 180-day school calendar, age-graded classrooms, A through F letter grades, credit hours, and teacher-led instruction—what education historian Larry Cuban calls the “grammar of schooling”—have all proved persistent because they’ve been honed over time to address the priorities that prevail in most schools’ organizational models.⁶⁴

Even when new processes show promise, old ones are hard to kill off. Critics may point out how the old processes fall short at meeting current priorities. But maintaining existing processes is a powerful self-preservation mechanism for the people, departments, and institutions that create them and operate according to them.⁶⁵ As long as legacy processes still work at solving problems that influential stakeholders prioritize, they will have a tenacious grip on an organization, either clashing with new processes or twisting them to conform to the old model.

When new value propositions or revenue formulas are imposed on a school’s model, the first—and rational—instinct of school staff and leadership is to deploy the capabilities they already possess, as happened in many school turnarounds required under NCLB.⁶⁶ Even Sputnik, which led to persistent changes as schools pursued new funding and responded to demands for a new value proposition, illustrates the tenacity of old processes. New AP programs that expanded in the wake of Sputnik did so in part because they layered on top of schools’ existing resources and processes rather than replacing them.⁶⁷ AP courses featured optional externally-scored exams that could count for college credit, but didn’t do away with teacher-given grades. They could be taught by teachers accredited

in traditional ways, and could fit into schools' normal schedules. Elements of schools' models changed in lasting ways, but they didn't fundamentally transform due to the persistence, and continued relevance, of legacy processes.

Despite the tenacity of old processes, they can be replaced—and the full replacement of old, flawed processes should be the goal of school leaders seeking longer-lasting and more transformative change. Some old processes are ditched naturally as society's progress renders them inappropriate, which has happened with corporal punishment in schools.⁶⁸ Leaders can accelerate the retirement of old processes by designing new ones to solve problems for the people responsible for implementing them, like teachers—thus reducing the likelihood that key stakeholders retain a grip on old processes that work for them. And policymakers can allow schools flexibility to let go of legacy processes, like Carnegie units, that have become distanced from the problems they originally sought to solve, and curtail schools' opportunities to innovate.⁶⁹

Figure 6. External variables influencing the likelihood of lasting change

- **Full vs. partial school closures.** If school buildings remain fully closed for the pandemic, the new processes developed for 100% distance learning will clash with old ones for 100% face-to-face learning when campuses reopen. But if schools develop new processes that weave together both distance and in-person learning, the new processes will have a better chance of competing against old ones when schools reopen fully.
- **Stakeholder demand.** Some communities may develop coherent demands for schools to deliver a new value proposition. But because schools' operational models are so ingrained, stakeholder demand must be more powerful than the formidable normative strength of other processes and priorities. Communities will need to mount significant organizing efforts to exert force on schools as a collective.

- **Policy changes.** State and federal policies are some of the biggest influences shaping schools' organizational models. If shifts in state and federal policy come about during the pandemic—such as major changes to state assessment systems or funding formulas—those shifts could prompt changes in the resources and processes schools use in their day-to-day operations.
- **Local context.** There is no single organizational model that defines public schooling. Rather, there are many different organizational models of schools, each with its own variation of value propositions, resources, processes, and revenue formulas. Successful organizational model changes in public schools will vary from locality to locality, based on how the pandemic's effects interact with local circumstances and particular schools' models.
- **Competition.** Competition can have a powerful effect on a school's organizational model because losing students impacts a school's revenue formula. If the pandemic leads many more families to switch to virtual charters or homeschooling, districts will be strongly incentivized to respond to keep up their own revenue. This could lead to changes such as district-run virtual school programs that families can opt into, which keep revenues within the district.
- **New ground-shifting events.** As both the COVID-19 pandemic and the surge of the Black Lives Matter movement prove, the ground can shift underneath schools in unexpected moments. In the future, new ground-shifting events could unfold in ways that support, or stymie, education leaders' efforts to change schools' organizational models.

RECOMMENDATIONS: CULTIVATING INNOVATION THAT PERSISTS

The four-box framework has implications for education leaders across the spectrum. Armed with a better understanding of how new resources, processes, revenue formulas, and value propositions will affect schools' existing organizational models, policymakers, funders, and school system leaders can take steps to make it more likely that desirable changes introduced during the present crises will persist.

In the next section, we offer concrete recommendations guided by the four-box framework. These recommendations help policymakers and school system leaders focus on where change is possible, and take targeted action to introduce and support innovations that have a chance to endure.

For state leaders, policymakers, and funders

Leaders who influence policy and funding play an important role in determining the likelihood for lasting change. These leaders can help align schools' priorities to support innovation, ensure schools have what they need to develop new processes, and relax policies that protect legacy processes.

Introduce policies that align schools' priorities with desired outcomes.

New policies can nudge schools towards new priorities, but too often end up asking schools to do more, not *change* what they're doing. Policymakers seeking to support break-the-mold school models should craft legislation that helps reduce competition among schools' priorities.

For example, New Hampshire's Virtual Learning Academy Charter School (VLACS) receives funding for performance rather than traditional input-based measures like enrollment or instructional time.⁷⁰ As a result, with learning as the unambiguous north star, educators can focus on optimizing resources and processes that drive individual student growth and mastery. Along these lines, policymakers could pilot new funding formulas where a small proportion of schools' total funding is based on individual student growth against a set of competencies, and develop a learning agenda to

test and iterate these formulas.⁷¹ To ensure participating schools are not cherry-picking students who will demonstrate growth and mastery easily, performance-based funding models should offer weighted funding upfront for schools serving students farthest from opportunity.⁷²

Funding models should offer weighted funding upfront for schools serving students farthest from opportunity.

Make funding available to develop new processes, not just shore up resources. While many organizations managing education funding are focused on ensuring adequate resources for schools, their efforts are more likely to result in changes to how schools operate if they also release funding for schools to develop new processes.

For example, follow the lead of funders behind the Always Ready For Learning Network, which launched soon after schools closed and offers free on-demand coaching and technical assistance for school leaders

transitioning to anywhere, anytime learning.⁷³ Funding for professional learning, strategic advising, and innovation will make it more likely that educators develop promising new instructional processes that can replace—not just layer on top of—existing ones. State leaders should also create more flexible funding for interested schools to adopt full-stack models whose solutions integrate key resources and processes, as New Classrooms and Summit Learning do.

Give schools flexibility to let go of the old processes that hold back new ones. Education policies often require schools to abide by rigid processes, so much that processes become priorities themselves. Those processes can get in the way of promising new ones—even if the new processes, in theory, could deliver even better on stakeholders' value propositions. Policymakers should accelerate the creation of innovation zones and make it easier for schools to get exemptions and waivers in order to try radically new approaches.⁷⁴

For example, before COVID-19, the North Carolina General Assembly named Rowan-Salisbury Schools a Renewal School System, offering the district unprecedented control over budgets, hiring, calendars, and other processes that had previously been heavily regulated by the state. Now, the district is designing and testing a range of out-of-the-box processes that support its learner-centered vision.⁷⁵

For school system leaders

With or without changes to policy, school and district leaders can take strategic actions to integrate desired new resources and processes, and nourish the development of new value propositions.

Separate desired long-term changes from emergency measures. Changes that seem like COVID-19 emergency responses will be tied to the pandemic in people's minds, meaning that people will expect them to go away when the pandemic ends. But if leaders show how new changes will better deliver on stakeholders' expected value propositions, those changes are more likely to last.

For example, pass/fail policies during school closures could open the door to competency-based grading. If this change is part of the school leaders'

vision, they should ensure that families connect the advantages of a competency-based system to the value proposition already expected. Such a system, for instance, could give transparency to parents and students about students' individual progress and postsecondary prospects. While it could take a few years for this system to be realized, leaders can start by communicating changes in their grading policies as part of a broader aspirational vision, not just a COVID-19 measure.

Invest in building new processes, not just buying new resources. New resources may be necessary to change how schools operate, but they won't have much effect on their own. Leaders should invest time and money in building and improving new processes that deliver on stakeholders' expected value propositions.

Leaders should invest time and money in building and improving new processes that deliver on stakeholders' expected value propositions.

For example, redirecting funding from school resource officers to counselors will have a much greater impact on students' experiences in schools if the school also invests in reimagining the roles of all adults and young people in creating a positive learning environment. Sound Discipline, a nonprofit based in Washington State, partners with schools to develop positive discipline approaches across the school community, involving students, parents, teachers, and staff. A visit to a Sound Discipline demonstration school makes clear that the approach is enacted in classrooms, hallways, and the lunchroom, not just in behavioral intervention rooms when counselors get involved.⁷⁶

Pay attention to what stakeholders are trying to get done. As school closures have upended normal ways of doing things, it can seem like every stakeholder has strong opinions about the way resources and processes should be organized in schools. These opinions are only part of what will help school system leaders to develop plans for long-term change. To help discern the value propositions that stakeholders are seeking, leaders should observe intently what families are trying to get done when they send their children to school. Educators can then introduce plans for long-term changes that speak directly to families' desired value propositions.

For example, some families may expect their children to be competitive in elite college admissions processes, while others may see career exposure and professional connections as a more valuable promise for schools to deliver. Some may be desperate for schools to take custodial charge of children all day, while others are drawn to the idea of being more directly involved in their children's educational experience. This year may be an opportunity for school districts to consider a portfolio approach that allows each school in the district to align around a few key value propositions, and attract families for whom those value propositions are most desirable.⁷⁷

Predict the chemical reactions likely to occur when introducing a new change. Even though schools across the country share many common features, each school or district has a unique organizational model and local context. With the lessons of the four-box framework in mind, leaders can analyze the likelihood of successful change—and plan to minimize the barriers it will face—by mapping how desirable changes are supported or inhibited by their existing organizational models.

To start mapping how a school's organizational model will react to a desired change, see the worksheet and discussion guide in the Appendix.

This year may be an opportunity for school districts to consider a portfolio approach that allows each school in the district to align around a few key value propositions.



CONCLUSION

This year has caused elevated trauma, grief, and uncertainty for communities around the world. As school system leaders react to the COVID-19 pandemic and grapple with what it means for schools to be antiracist, they are forced to balance urgent needs with long-term aspirations for improving student outcomes and experiences. Without a doubt, both pandemics have prompted schools to change—but the burning question on many forward-thinking leaders' minds is whether any of those changes will be long-lasting and transformative, enabling schools to take a leap forward toward more equitable and student-centered systems.

Making change in schools has always been—and remains—difficult work. Schools' existing models are powerful normative forces that work to preserve themselves, even when external circumstances force changes upon them. Left on their own, many of the changes that leaders introduce during this time of upheaval are likely to either conform to schools' existing models, or fade away once the COVID-19 pandemic ends.

At the same time, it's clear that schools *do* change over time. As COVID-19 and racial justice advocacy shift the ground underneath schools, the door is open for change—and now policymakers and school system leaders must walk through it by taking strategic action to increase the likelihood that their efforts at transformation benefit students for years to come. Going forward, we are eager to learn from and highlight school system leaders who do just that.

APPENDIX: WORKSHEET AND DISCUSSION GUIDE FOR SCHOOL SYSTEM LEADERS

Since we argue that lasting change in schools doesn't automatically result from major events that shift the ground underneath schools, we offer this worksheet and discussion guide to aid school leaders in their pursuit of transformation.

The chemical reaction between external circumstances and schools' organizational models is what catalyzes long-lasting change. And while mature organizational models are remarkably persistent, leaders who understand the dynamics of those models are more likely to be able to shepherd school systems toward changes that benefit students. This worksheet and discussion guide helps school leaders reflect on the chemical reactions likely to play out as they pursue desired new changes.

1. Intended long-lasting change

Identify a change you would like to make, and see last far into the future, in your school or district.

(Example: Personalized, competency-based instruction).

2. Existing organizational model

Analyze how existing, persistent elements of your organizational model will support or inhibit the change (see Worksheet 1).

Worksheet 1. Components in existing organizational model that support and inhibit change

	These components of my existing organizational model will...		These new components will be necessary to make the change
	...support the change	...inhibit the change	
Value propositions	<i>Example: Family advocacy for more individualized instruction</i>		
Revenue formula		<i>Example: Funding formulas based on attendance & seat time</i>	
Processes			<i>Example: Flex blended-learning model</i>
Resources	<i>Example: 1:1 devices that students take home</i>		

3. Effect of external circumstances

Analyze how external circumstances will impact your organizational model in ways that support or inhibit the proposed change. As you identify external circumstances, note if you expect them to be temporary, which could mean that the window for catalyzing long-lasting changes is shorter.

Worksheet 2. Circumstances that support and inhibit change

	These circumstances impact my organizational model in ways that...	
	...support the intended change	...inhibit the intended change
Value propositions		
Revenue formula	<i>Example: CARES act funding (temporary)</i>	<i>Example: Desire by families to go "back to normal"</i>
Processes	<i>Example: Standardized tests suspended (temporary)</i>	
Resources	<i>Example: New municipally-funded WiFi hotspots in neighborhoods</i>	

4. Synthesis

Reflect on your findings with the stakeholders involved in shaping your school's design.

Questions to consider:

- What is the likelihood that the change can take root in the current context?
- When the current context changes (such as when the COVID-19 pandemic passes), will changes run into friction with the re-established, entrenched components of your organizational model?
- How can you accelerate improvements in the desired changes so that they are more likely to stick even once current circumstances change?
- What other allies and stakeholders will need to support the change for it to succeed?

NOTES

1. Bill Chappell, “‘Enormous And Tragic’: U.S. Has Lost More Than 200,000 People To COVID-19,” NPR, September 22, 2020, <https://www.npr.org/sections/coronavirus-live-updates/2020/09/22/911934489/enormous-and-tragic-u-s-has-lost-more-than-200-000-people-to-covid-19>.
2. Professionals in the areas of medicine and psychology have gone on record describing a “pandemic” of racism, and infectious disease and public health experts have called racism a “paramount public health problem.” See “‘We are Living in a Racism Pandemic,’ Says APA President,” American Psychological Association, May 29, 2020, <https://www.apa.org/news/press/releases/2020/05/racism-pandemic>; Jason L. Williams and Quentin R. Youmans, “Two Pandemics, One Responsibility: Constructing a response to COVID-19 and systemic racism,” American College of Cardiology, June 16, 2020, <https://www.acc.org/membership/sections-and-councils/fellows-in-training-section/section-updates/2020/06/12/14/42/two-pandemics-one-responsibility-constructing-a-response-to-covid-19-and-systemic-racism>; Shannon Palus, “Public Health Experts Say the Pandemic Is Exactly Why Protests Must Continue,” Slate, June 2, 2020, <https://slate.com/technology/2020/06/protests-coronavirus-pandemic-public-health-racism.html>.
3. “The Opportunity Myth,” TNTP, 2018, https://tntp.org/assets/documents/TNTP_The-Opportunity-Myth_Web.pdf; Emma García and Elaine Weiss, “Education inequalities at the school starting gate,” Economic Policy Institute, September 27, 2017, <https://www.epi.org/publication/education-inequalities-at-the-school-starting-gate/>; Raj Chetty et al., “Race and Economic Opportunity in the United States: An Intergenerational Perspective,” Opportunity Insights, March 2018, <https://opportunityinsights.org/paper/race/>; Matt Barnum, “Race, not just poverty, shapes who graduates in America—and other education lessons from a big new study,” Chalkbeat, March 23, 2018, <https://www.chalkbeat.org/2018/3/23/21104601/race-not-just-poverty-shapes-who-graduates-in-america-and-other-education-lessons-from-a-big-new-stu>.
4. Jal Mehta and David Cohen, “Why Reform Sometimes Succeeds: Understanding the Conditions That Produce Reforms That Last,” *American Educational Research Journal*, April 11, 2017, <https://dash.harvard.edu/handle/1/33064054>; and David Tyack and Larry Cuban, *Tinkering toward Utopia: A Century of Public School Reform* (Cambridge, Mass: Harvard University Press, 1995).
5. Paul Dickson, *Sputnik: The Shock of the Century* (New York: Walker & Company, 2011).
6. Larry Abramson, “Sputnik Left Legacy for U.S. Science Education,” NPR, September 30, 2007, <https://www.npr.org/templates/story/story.php?storyId=14829195>; Gerald W. Bracey, “The Sputnik Effect,” *Education Week*, October 2, 2007, https://www.edweek.org/ew/articles/2007/10/02/06bracey_web.h27.html.
7. “National Defense Education Act,” History, Art & Archives (website), United States House of Representatives, accessed July 28, 2020, <https://history.house.gov/HouseRecord/Detail/15032436195>.
8. Andrew Roush, “How the Space Race Changed American Education,” *Technotes* (blog), Texas Computer Education Association, April 12, 2019, <https://blog.tcea.org/space-race/>.
9. “A Brief History of the Advanced Placement Program,” College Entrance Examination Board, 2003, https://www.oakparkusd.org/cms/lib/CA01000794/Centricity/Domain/295/APUSH/AP_History_history.pdf.
10. Mehta and Cohen, “Why Reform Sometimes Succeeds”.
11. Jay Mathews, “The Triumph of Advanced Placement,” *Washington Post*, October 23, 2018, <https://www.washingtonpost.com/news/magazine/wp/2018/10/23/feature/meet-the-man-who-made-advanced-placement-the-most-influential-tool-in-american-education/>.

12. William H. Johnson, "Air Lessons Offer New School Test; Educators Show Wide Interest in Experiment, Forced on Chicago by Poliomyelitis," *The New York Times*, September 19, 1937, <https://www.nytimes.com/1937/09/19/archives/air-lessons-offer-new-school-test-educators-show-wide-interest-in.html>.
13. Audrey Watters, "Educational Crises and Ed-Tech: A History," *Hack Education* (blog), May 6, 2020, <http://hackeducation.com/2020/05/06/crisis>.
14. Johnson, "Air Lessons."
15. Matt Barnum and Kalyn Belsha, "Protests, donations, lesson plans: How the education world is responding to George Floyd's killing," Chalkbeat, June 2, 2020, <https://www.chalkbeat.org/2020/6/2/21278591/education-schools-george-floyd-racism>; Kimberly Smith, "Actions for White Education Co-Conspirators," Digital Promise, July 6, 2020, <https://digitalpromise.org/2020/07/06/actions-for-white-education-co-conspirators/>.
16. Colin Seale, "Parent Involvement Has Always Mattered. Will the COVID-19 Pandemic Finally Make This the New Normal in K-12 Education?," *Forbes*, May 19, 2020, <https://www.forbes.com/sites/colinseale/2020/05/19/parent-involvement-has-always-mattered-will-the-covid-19-pandemic-finally-make-this-the-new-normal-in-k-12-education/#4b7231f25e46>.
17. Nora Fleming, "Why Are Some Kids Thriving During Remote Learning?," *Edutopia*, April 24, 2020, <https://www.edutopia.org/article/why-are-some-kids-thriving-during-remote-learning>.
18. The original four-box framework describes companies' business models. Here we use the term "organizational models" rather than "business models" because the framework is applicable to all types of organizations, not just for-profit companies. See Clayton Christensen and Michael E. Raynor, *The Innovator's Solution: Creating and Sustaining Successful Growth* (Boston: Harvard Business School Press, 2003); Clayton M. Christensen and Mark W. Johnson, "Module Note: What Are Business Models, and How Are They Built?," Harvard Business School, May 5, 2016 (created for the Harvard Business School course "Building and Sustaining a Successful Enterprise").
19. Because schools are not expected to generate profits like companies are, we use "revenue formula" in this paper in lieu of the term currently used in management literature about the four-box model, which is "profit formula."
20. "Public School Expenditures," *The Condition of Education*, National Center for Education Statistics, accessed April 2020, https://nces.ed.gov/programs/coe/indicator_cmb.asp.
21. Isaac M. Opper, "Teachers Matter: Understanding Teachers' Impact on Student Achievement," (Santa Monica, CA: RAND Corporation, 2019), https://www.rand.org/pubs/research_reports/RR4312.html.
22. Mehta and Cohen, "Why Reform Sometimes Succeeds"; Tyack and Cuban, *Tinkering Toward Utopia*.
23. "Strategic Plan," Highline Public Schools, accessed July 31, 2020, <https://www.highlineschools.org/about/strategic-plan>.
24. This example of a school's vision for its graduates is excerpted from Reynoldsburg City Schools' graduate portrait, located at <http://portraitofagraduate.org/resource-hub/resource-hub-item/reynoldsburg-city-schools-oh>. Additional examples can be found at "Resource Hub," Portrait of a Graduate by Battelle for Kids, accessed July 28, 2020, <http://portraitofagraduate.org/resource-hub/gallery>.
25. This analysis is deeply informed by Jobs to Be Done Theory, a research-backed framework and methodology for revealing the motivations behind customer purchases. Learn more about this theory at <https://www.christenseninstitute.org/jobs-to-be-done/>.
26. Compared to a market-based context where customers can easily change their purchasing choices and impact a company's strategy, attendance at school is required and choice is more limited. Community members do have influence: schools are vulnerable to public opinion, residents can vote for bonds or in school board elections, and parents with means can choose to send their children to a private school or move out of the neighborhood. But most schools are held accountable to their community-facing value propositions in only limited ways.

27. Dan Goldhaber, "In Schools, Teacher Quality Matters Most," *Education Next* 16, no. 2 (2016), <https://www.educationnext.org/in-schools-teacher-quality-matters-most-coleman>.
28. See reports by EdBuild on inequitable school funding systems: <https://edbuild.org/content/category/problems>.
29. See Valerie Strauss, "K-12 school leaders warn of 'disaster' from huge coronavirus-related budget cuts as layoffs and furloughs begin," *Washington Post*, May 8, 2020, <https://www.washingtonpost.com/education/2020/05/08/k-12-school-leaders-warn-disaster-huge-coronavirus-related-budget-cuts-layoffs-furloughs-begin/>. For a historical example of how budget cuts harm student learning, see Kenneth Shores and Matthew Steinberg, "The Impact of the Great Recession on Student Achievement: Evidence from Population Data," Stanford Center for Education Policy Analysis, 2017, <https://cepa.stanford.edu/content/impact-great-recession-student-achievement-evidence-population-data>.
30. Clayton Christensen, Sally Aaron, and William Clark, "Can Schools Improve?," *Phi Delta Kappan* 86, no. 7 (March 2005).
31. Some readers may contest this statement, arguing that passionate and experienced teachers can produce results for which the overall school model was not designed. Indeed, talent is one place where resources (people) intertwine with processes (the way people do their work) to make a large impact on schools' capabilities. Schools are right to focus on hiring and retaining well-trained teachers who use effective instructional processes. But relying on educator talent alone isn't a sustainable or reliable solution to transforming schools, especially if teachers have to constantly dodge or defy existing, flawed processes in schools' models. Similarly, schools may see experienced and effective administrators as resources that can change schools' capabilities, but capabilities only change if those administrators can make an impact on the prevailing processes in schools.
32. Sean Coughlan, "Computers 'do not improve' pupil results, says OECD," *BBC*, September 15, 2015, <https://www.bbc.com/news/business-34174796>.
33. "Students, Computers, and Learning: Making the connection," OECD, September 14, 2015, <http://www.oecd.org/publications/students-computers-and-learning-9789264239555-en.htm>.
34. As an example from outside education, in the early 1900s, factories replaced their steam engines with a new resource: electric motors. But the new technology had practically zero effect on factories' productivity. It was only when factory managers realized they could use electricity to power small motors in individual pieces of machinery, and then organize that machinery around the flow of production, that factory productivity jumped two to threefold. See Erik Brynjolfsson, *The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies* (New York: W. W. Norton & Company, 2016), Kindle edition, 102-103.
35. Jesse Margolis, "Three-Year MAP Growth at Schools Using Teach to One: Math," MarGrady Research, February 2019, <https://www.newclassrooms.org/wp-content/uploads/2019/02/Three-Year-MAP-Growth-at-TtO-Schools-1.pdf>.
36. Jeremy Roschelle et al., "Online Mathematics Homework Increases Student Achievement," *AERA Open*, October 2016, <https://journals.sagepub.com/doi/full/10.1177/2332858416673968>.
37. We recognize that making new resources available within an organization can seed the creation of new processes. Inventive people within an organization will experiment with new ways to use previously unavailable resources to accomplish their priorities. We caution, however, that this approach to developing new processes is not immediate, guaranteed, or predictable. More often than not, new resources get co-opted into old processes rather than germinate new processes.

38. This statement reflects how processes, like blended-learning models, take time and energy to develop, as opposed to resources like computers that can be purchased. It's worth noting, however, that the time and energy involved in developing new processes can translate into hard costs, too. Many schools seeking to shift to blended learning, for example, hire technical assistance providers or contract instructional design experts to help in the transition. This is one place where resource gaps during COVID-19 will matter critically: especially as the recession threatens to exacerbate a trend of widening inequality in schools' budgets, schools with more resources will be better positioned to invest in the development and improvement of new processes. Those strapped for resources, by contrast, may struggle more to develop new processes. For more about the widening inequality in budgets, see Jill Barshay, "Rich schools get richer," *The Hechinger Report*, June 8, 2020, <https://hechingerreport.org/rich-schools-get-richer/>.
39. Larry Cuban, "Whatever Happened to the Coalition of Essential Schools?," *Larry Cuban on School Reform and Classroom Practice* (blog), January 2, 2018, <https://larrycuban.wordpress.com/2018/01/02/whatever-happened-to-the-coalition-of-essential-schools/>.
40. Mehta and Cohen, "Why Reform Sometimes Succeeds."
41. Lindsay Unified School District, *Beyond Reform: Systemic Shifts Toward Personalized Learning* (Bloomington, IN: Solution Tree Press, 2017), Kindle edition.
42. Schools and districts like Lindsay Unified, where there is general consensus that the organizational model is *not* performing well at its assigned task, are in a unique position to make more radical changes because stakeholders are more likely to be open to trying new processes and retiring old ones. Conversely, schools that are even moderately successful will have a much harder time implementing change. As Clayton Christensen has noted, "The better your [organizational] model performs at its assigned task, the more interdependent and less capable of change it likely is." See Clayton M. Christensen, Thomas Bartman, and Derek van Bever, "The Hard Truth About Business Model Innovation," *MIT Sloan Management Review* 58, no. 1 (2016), <https://sloanreview.mit.edu/article/the-hard-truth-about-business-model-innovation/>.
43. The new processes most notable in Lindsay Unified involve a transition from seat time to mastery as a measure for learning, but that does not mean that every single old process has been replaced. Visitors to the district will no doubt take note of other legacy processes that have persisted through this change. For this reason, Lindsay's model is often cited as a good example of how conventional public schools can transform aspects of their models within the confines of the existing education system.
44. Barry Sommer and Abinwi Nchise, "Building Solid Evidence—It's Working at Lindsay Unified," accessed June 17, 2020, <https://drive.google.com/file/d/0B6QRjuxlEcioUmUtSVNIQnRaelZ6al8yN1V1eld6ROR5cUc4/view>.
45. Fleming, "Why Are Some Kids Thriving." Additionally, some Black education leaders and equity advocates have challenged the typical narrative that Black and brown students will be most negatively affected by school closures, noting that this narrative assumes that school-based experiences are positive—rather than harmful or traumatizing—for these students. See "Our Moral Imperative: Racial Equity and the Public School System," NewSchools Venture Fund Webinar, June 17, 2020, <https://vimeo.com/430163246>; and Chris Emdin, Facebook post, April 7, 2020, <https://www.facebook.com/christopher.emdin/posts/10159710948043345>.
46. Clayton M. Christensen, Michael B. Horn, and Curtis W. Johnson, *Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns* (McGraw-Hill, 2008); Michael B. Horn and Heather Staker, *Blended: Using Disruptive Innovation to Transform Schools* (San Francisco: Jossey-Bass, 2014). To learn more about effective blended-learning design, visit www.blendedlearning.org/design.
47. Anya Kamenetz, "What 'A Nation At Risk' Got Wrong, And Right, about U.S. Schools," NPR, April 29, 2018, <https://www.npr.org/sections/ed/2018/04/29/604986823/what-a-nation-at-risk-got-wrong-and-right-about-u-s-schools>.
48. Thomas S. Dee and Brian A. Jacob, "The Impact of No Child Left Behind on Students, Teachers, and Schools," *Brookings Papers on Economic Activity*, Fall 2010, https://www.brookings.edu/wp-content/uploads/2010/09/2010b_bpea_dee.pdf; "The Iceberg Problem," *New Classrooms*, 2019, <https://www.newclassrooms.org/icebergproblem/>.

49. “Just Ask Us,” accessed June 17, 2020, <https://www.justaskusmovement.org/>.
50. “The Equity 8—California’s Key Legislative Principles Amid COVID-19 Pandemic,” The Education Trust—West, accessed June 17, 2020, <https://west.edtrust.org/the-equity-8-californias-key-legislative-proposals-amid-covid-19-pandemic/>.
51. Tim Walker, “Social-Emotional Learning Should Be Priority During COVID-19 Crisis,” *NEA Today*, April 25, 2020, <http://neatoday.org/2020/04/15/social-emotional-learning-during-covid/>; “New Data Show State Education Departments Prioritizing SEL to Support Student and Adult Needs, Committee for Children and CASEL Provide Recommendations for Fall,” Committee for Children, June 15, 2020, <https://www.cfchildren.org/press-release/new-data-show-state-education-departments-prioritizing-sel-to-support-student-and-adult-needs-committee-for-children-and-casel-provide-recommendations-for-fall/>; “A Trauma-Informed Approach to Teaching Through Coronavirus,” *Teaching Tolerance*, March 23, 2020, <https://www.tolerance.org/magazine/a-trauma-informed-approach-to-teaching-through-coronavirus>.
52. Valerie Strauss, “It Looks Like the Beginning of the End of America’s Obsession with Student Standardized Tests,” *Washington Post*, June 21, 2020, <https://www.washingtonpost.com/education/2020/06/21/it-looks-like-beginning-end-americas-obsession-with-student-standardized-tests/>; Annalisa Merelli, “Coronavirus lockdowns force educators to reconsider how they grade students,” *Quartz*, April 28, 2020, <https://qz.com/1841689/covid-19-lockdowns-force-schools-to-reconsider-fairness-of-tests/>.
53. Derrell Bradford, “Bradford: Black Lives Matter and Black Education Matters Because Freedom Matters. Only When Black Folks Are Safe to Both Learn and Live Will America Be Free,” *The 74 Million*, June 15, 2020, <https://www.the74million.org/article/bradford-black-lives-matter-and-black-education-matters-because-freedom-matters-only-when-black-folks-are-safe-to-both-learn-and-live-will-america-be-free/>.
54. Tara García Mathewson, “They Helped All Students Get Good Internet, Now They’re Focused on Homes,” *The Hechinger Report*, May 21, 2020, <https://hechingerreport.org/they-helped-all-schools-get-good-internet-now-theyre-focusing-on-homes/>.
55. Brian Bradley, “Senate Democrats Revive Calls for FCC to Expand E-Rate Coverage,” *EdWeek MarketBrief*, September 30, 2020, <https://marketbrief.edweek.org/marketplace-k-12/senate-democrats-revive-calls-fcc-expand-e-rate-coverage/>.
56. CompetencyWorks, part of Aurora Institute, has been tracking the evolution of states’ competency-based education policies since 2012. A map of state policies in 2018 shows marked progress over six years: <https://aurora-institute.org/blog/competencyworks-releases-updated-competency-education-state-policy-map-for-the-united-states/>.
57. Alina Tugend, “Questioning Their Fairness, A Record Number of Colleges Stop Requiring the SAT and ACT,” *The Hechinger Report*, October 9, 2019, <https://hechingerreport.org/questioning-their-fairness-a-record-number-of-colleges-stop-requiring-the-sat-and-act/>.
58. Sarah Moon, “University of California will suspend SAT and ACT testing admission requirement until 2024,” *CNN*, May 22, 2020, <https://www.cnn.com/2020/05/22/us/uc-suspends-sat-act-for-admissions-until-2024/index.html>; Neil Vigdor and Johnny Diaz, “More Colleges Are Waiving SAT and ACT Requirements,” *The New York Times*, May 21, 2020, <https://www.nytimes.com/article/sat-act-test-optional-colleges-coronavirus.html>.
59. Ryan Faircloth, “Minneapolis Public Schools Terminates Contract with Police Department over George Floyd’s Death,” *Star Tribune*, June 2, 2020, <https://www.startribune.com/mpls-school-board-ends-contract-with-police-for-school-resource-officers/570967942/?refresh=true>.
60. Zoë Kirsch, “As a Racial Reckoning Sweeps the Nation, Parents Still Await a ‘Rallying Cry’ to Change How Race and History Are Taught in Schools,” *The 74 Million*, June 23, 2020, <https://www.the74million.org/article/as-a-racial-reckoning-sweeps-the-nation-parents-still-await-a-rallying-cry-to-change-how-race-and-history-are-taught-in-schools/>; Nolan L. Cabrera et al, “Missing the (Student Achievement) Forest for All the (Political) Trees: Empiricism and the Mexican American Studies Controversy in Tucson,” *American Educational Research Journal* 51, no. 6 (2014), <https://journals.sagepub.com/stoken/rbtf1/%20Lvuzi8zZ6ltbw/full>; Thomas Dee and Emily Penner, “The Causal Effects of Cultural Relevance: Evidence from an Ethnic Studies Curriculum,” *American Educational Research Journal* 54, no. 1 (2017): 127-166, <https://www.nber.org/papers/w21865>.

61. Julie Depenbrock, "Federal Judge Finds Racism Behind Arizona Law Banning Ethnic Studies," NPR, August 22, 2017, <https://www.npr.org/sections/ed/2017/08/22/545402866/federal-judge-finds-racism-behind-arizona-law-banning-ethnic-studies>; Livia Gershon, "How Arizona Banned Mexican-American Studies," JSTOR Daily, July 22, 2017, <https://daily.jstor.org/how-arizona-banned-mexican-american-studies/>.
62. "Our Why," Rooted School, accessed July 27, 2020, <https://www.rootedschool.org/about/the-why>.
63. "Portfolio Strategy," CRPE, accessed July 27, 2020, <https://www.crpe.org/research/portfolio-strategy>.
64. Tyack and Cuban, *Tinkering Toward Utopia*.
65. Christensen, Aaron, and Clark, "Can Schools Improve?"
66. Dee and Jacob, "The Impact of No Child Left Behind."
67. Mehta and Cohen, "Why Reforms Sometimes Succeed."
68. Mehta and Cohen, "Why Reform Sometimes Succeeds."
69. Elena Silva, Taylor White, and Thomas Toch, "The Carnegie Unit: A Century-Old Standard in a Changing Education Landscape," Carnegie Foundation for the Advancement of Teaching, January 2015, <https://www.luminafoundation.org/files/resources/carnegie-unit-report.pdf>.
70. "VLACS funding model 'one of the best in the nation,'" Reaching Higher NH, April 7, 2017, <https://reachinghighernh.org/2017/04/07/vlacs-funding-model-one-best-nation/>.
71. "Conceptual Framework for Performance Funding," ExcelinEd, 2018, <https://www.excelined.org/wp-content/uploads/2018/07/Excelined.PolicyToolkit.EdFunding.PerformanceFunding.Framework.2018.pdf>;
- Michael B. Horn and Katherine Mackey, "Moving from Inputs to Outputs to Outcomes: The Future of Education Policy," Christensen Institute (formerly Innosight Institute), 2011, <https://www.christenseninstitute.org/wp-content/uploads/2013/04/Moving-from-Inputs-to-Outputs-to-Outcomes.pdf>.
72. Susan Patrick et al., "Performance-Based Funding & Online Learning: Maximizing Resources for Student Success," iNACOL, March 2015, <https://aurora-institute.org/wp-content/uploads/iNACOL-Performance-Based-Funding-and-Online-Learning.pdf>.
73. Always Ready for Learning (website), accessed June 17, 2020, <https://alwaysreadyforlearning.org/>.
74. "Future-focused State Policy Actions to Transform K-12 Education," Aurora Institute, April 2020, <https://aurora-institute.org/wp-content/uploads/future-focused-state-policy-actions-to-transform-k12-education-2020-web.pdf>; Susan Patrick et al., "Innovation Zones: Creating Policy Flexibility for Competency-based Personalized Learning," iNACOL, September 2018, <https://aurora-institute.org/wp-content/uploads/Innovation-Zones-Creating-Policy-Flexibility-for-Competency-Based-Personalized-Learning-September-2018.pdf>.
75. Lynn Moody, "Rowan-Salisbury Schools: A Conversation with Dr. Lynn Moody," Education Reimagined, April 21, 2020, <https://education-reimagined.org/rowan-salisbury-schools-a-conversation-with-dr-lynn-moody/>.
76. "Demonstration School Tours," Sound Discipline, accessed July 27, 2020, <https://www.sounddiscipline.org/demoschooltours/>.
77. "Portfolio Strategy," CRPE.

Acknowledgments

We are grateful to the following individuals for their valuable feedback on an early draft of this paper: Larry Cuban, Mike Goldstein, Betheny Gross, Chris Harrington, Caroline Hill, Susan Patrick, Joel Rose, and John Watson. Rich Alton, Michael B. Horn, Julia Freeland Fisher, Ann Christensen, Meris Stansbury, Hayden Hill, Christina Nuñez Ross, and Jessica Plante at the Christensen Institute were core contributors to the development and production of this paper.

About the Institute

The Clayton Christensen Institute for Disruptive Innovation is a nonprofit, nonpartisan think tank dedicated to improving the world through Disruptive Innovation. Founded on the theories of Harvard professor Clayton M. Christensen, the Institute offers a unique framework for understanding many of society's most pressing problems. Its mission is ambitious but clear: work to shape and elevate the conversation surrounding these issues through rigorous research and public outreach.

About the authors



Chelsea Waite is a research fellow at the Christensen Institute, where she analyzes how innovation theory can inform the evolution of student-centered learning and the advancement of student agency. As part of this work, she leads the Canopy project, a collaborative effort to build better collective knowledge about school innovation.



Thomas Arnett is a senior research fellow for the Christensen Institute. His work focuses on identifying strategies to scale student-centered learning in K-12 education through Disruptive Innovation. He also studies demand for innovative resources and practices across the K-12 education system using the Jobs to Be Done Theory.

