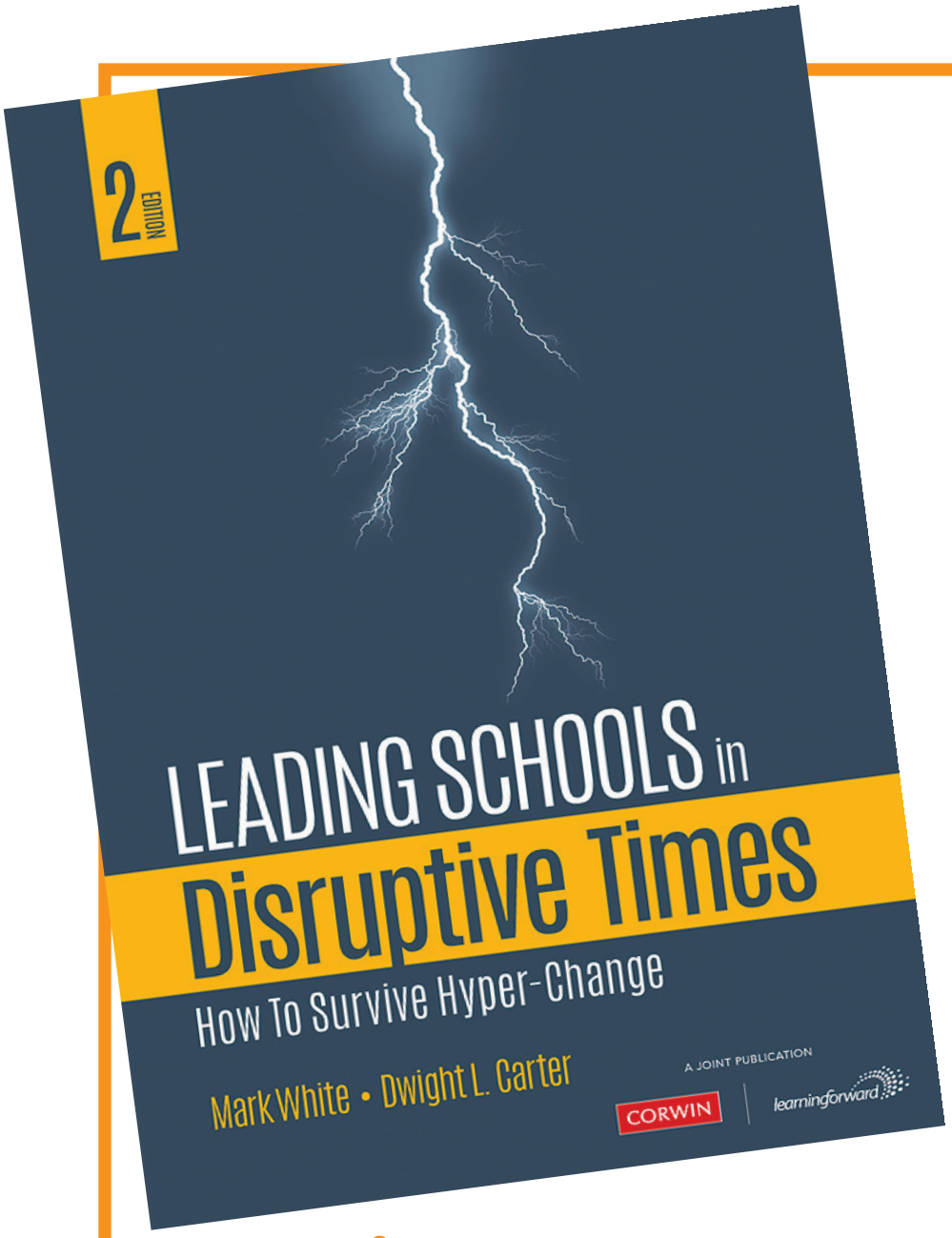

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CORWIN

1 Schools Disrupted

Understanding How We Got Here

Sometime in the fall of 2018, an individual at a market in Wuhan, China, became the first person in the world to contract the COVID-19 virus, and within months, schools around the globe shuttered their doors as a pandemic swept through 216 countries. What had been unthinkable for educators—the idea of telling students *not* to come to school—had become a new reality.

Think about it: A solitary person contracts a new disease, and education is disrupted forever. While the repercussions of the COVID reset are still reverberating like aftershocks through education foundations, we can already see that teaching and learning will never be the same. Students and parents have new expectations; some of them are questioning the need for brick-and-mortar schools. Teachers and school leaders have gotten a glimpse of how the Internet can open new teaching pathways, and they are wondering how the old education landscape will merge with a new one.

While many school leaders were stunned by the speed with which COVID-19 reset the jobs of educators, they should view the pandemic not as a fluke, but as a result of a world transformed by technology and lifestyles. Everything today is faster, from our 5G smartphones to the speed with which people can traverse the globe—and bring new microbes with them. And the rate of change continues to accelerate as supercomputers create more information, which leads to new disruptions. Administrators have stressful jobs that became even more stressful during the pandemic, but here's a harsh reality for educators: *This tumultuous start to the new decade is just the beginning of the education earthquake*. The disruptions of 2020 will be followed by other education disruptions built upon these earlier disruptions, and then those disruptions will lead to other new disruptions.

To get an even better understanding of how all of this is happening, school leaders should take another step back for an even larger view of the history of disruptions in American schools. When they do, they'll see that the education tremors being felt today are the next steps in a long line of technological, societal, and economic change.

This radical reset of education was inevitable.

Some Background

To begin to understand what is happening in schools today, let's go back to the 1960s. It was a different era, the one that helped shape today's eldest school leaders, the baby boomers. The United States had entered the Space Race, and politicians had begun their call for a heavier emphasis on math and science in public schools; they were laying the first bricks in the long road of school accountability. Massive computers that filled entire rooms spat out formulas for satellites and lunar modules. African Americans were marching for civil rights. Television was still in black and white, and communication to the masses came via television and radio. Parents learned about their children's progress through handwritten report cards brought home three or four times each year, and when they wanted to speak to a teacher, they called and left a message with the school's front office or attended the open house held in the fall of each school year. Anyone could walk into any school on any day through any door—which was almost always unlocked. Public school graduates often found jobs in the local community, and the American economy dominated the world. Young people had the same dreams as their parents: to become educated, get good jobs, and live the same types of lives as those who had come before them. In summary, American schools looked and operated as they had done for many decades—some might say for the previous century.

Those were simpler times for school leaders. An administrator could take a job as a building principal or superintendent with the knowledge that the school and district would probably be operating in much the same way in the future as they were in the present—and perhaps for the rest of that administrator's career. Even though technology was advancing and civil rights views were shifting in the 1950s, 1960s, and 1970s, changes in school operations came at a slower pace that was much more manageable and predictable. This is not to say these were easy jobs; some of these leaders dealt with extreme pressures in their schools, struggling with alcohol and drug issues, race relations, and antiwar protests. And they had the challenges of helping students, parents, and teachers navigate through the usual travails of youth and adolescence.

But that was before

- the Internet changed the world;
- school reforms brought massive amounts of testing;
- social media became a way for anyone to share a message;
- the middle class moved to the suburbs, leaving impoverished students in the urban schools;
- parents could email teachers or contact them through Twitter or Facebook pages;
- Columbine and Sandy Hook changed how we view student safety;
- the global economy transformed the workplace and began to create a global society;
- millennials dominated the workforce and Gen Z arrived with its own set of dreams; and
- the COVID-19 pandemic turned the world, and education, upside down.

We live in a world that is now being disrupted on many fronts, and those disruptions are buffeting our schools. Technology is advancing, social mores continue to transform, and today's education leaders struggle with 21st century disruptions that were incomprehensible to their predecessors in the 20th century.

Some of the old challenges are still found in today's schools, but they have become bigger and more visible to the entire world. For example, 20th century administrators might have dealt with a racial altercation in a school and managed the repercussions in their community; that same racial altercation today can be broadcast on social media, and people on the other side of the world can watch it and discuss it. Parents in the 20th century might have complained about a teacher or administrator by signing a paper petition and attending a school board meeting; today, the petition will be online 24/7, with photos, videos, and comments—and it could be covered by the local television news with a link to a website formed by the parental group.

There are more challenges now. Social media, globalization, LGBTQ+ equality issues, transparency, and generational differences are new 21st century disruptions that have made school leadership jobs more complex. It's no coincidence that 50 percent of American school principals now leave their schools within three years of starting their positions

(School Leaders Network, 2014). They either leave on their own or are pushed out the door by teachers or parents who are demanding more than the principals are capable of achieving.

How did school leadership jobs become so huge, and what can administrators do to more effectively manage them? If principals are going to thrive in the 21st century, and if their schools are going to survive as viable educational entities, they must do these things:

- Understand how American education became so disrupted
- Develop a new method to cope, adjust, and transform (CAT) in a constantly shifting environment
- Take a broader view of how they are evaluating their progress
- Begin to look to the future as even more impactful disruptions arrive at faster rates

To transition from surviving to thriving, let's take a 30,000-foot view of the school disruption landscape to get a broader perspective on what's happening in schools today and what we as school leaders can do to address it.

School Administrators Are Dealing With an Overload of Information and Demands

Principals and superintendents have so much data and so many demands coming at them each day that it's difficult to keep up. Many of them have reached the point where they know they just can't do it all anymore.

The futurist Alvin Toffler saw it coming. In 1970, he became famous with the publication of his best-selling book *Future Shock*, which he said is "the shattering stress and disorientation that we induce in individuals by subjecting them to too much change in too short of a time" (Toffler, 1970). He said the world was about to enter an amazing new age in which we would see massive societal and economic transformations, a rapid acceleration in change, and life beginning to move "faster and faster—in everything from technology to family structure to politics" (Toffler, 1970). He said people would be "moving more, throwing away their belongings sooner and having to adapt more often to new kinds of work" (Kaste, 2010).

These ideas will sound familiar to educators; they are leading schools today, as Toffler predicted almost 50 years ago. Schools now deal with perplexing changes in new family structures, advancing technology, and an evolving global economy. The data are coming at schools in bigger batches, so much that it's overwhelming. Personal technology continues to evolve more quickly than school technology. Societal mores are shifting to the point that debates rage about topics ranging from Internet freedom-of-speech issues to who can use which school restrooms; for better or for worse, what has been accepted in schools for 100 years could be changed today with a White House directive.

As we speak with principals and superintendents, we hear of the stress they endure on a daily basis. They want to be successful. They are trying to chart a path into the unknown without clear directions—while being held in the stranglehold of a 20th century school model designed for the Industrial Age.

Some school leaders are open to new ideas. The more progressive principals and superintendents want to

- stress more creativity and other global skills in classrooms, but they must devote most of their efforts to raising test scores because of their heavy weighting in accountability ratings and job security;
- break out of the 9-month school years to try new calendars, but their communities want to hold on to the traditional calendars because those are the ones they know; and
- reallocate funding into different areas for new initiatives, but the political uproar from stakeholders who see cuts to their long-established programs would be too intense to withstand.

And as they try to break out of traditional molds, they are still consumed by the tasks of managing parent, student, and staff needs and taking care of the multitude of other issues that fill their daily agendas.

The politicians who demand that educators prepare their students for a 21st century world are often confining them with reduced funding, more 20th century thinking, and a vision that doesn't extend beyond the next election cycle. Contrast their environments with those of business executives who recognize they must pivot quickly to new operating procedures if their firms are to survive, and you will find that school leaders are locked into systems that are slow to react and made more cumbersome by the need to placate a wide range of special interests,

including the locally elected school board, which might have various political agendas. How many Fortune 500 firms would thrive in a system where they had to elect members of the local community to approve all their long-term strategic decisions, hire the leaders, and be the ultimate authority in resolving problems, even when those decision-makers had no prior experience in that field? Yet this is the system in which school leaders work.

If schools are to move forward with the accelerations of the 21st century, then the leaders must deploy new coping methods and strategies. They must move from a state of future shock to a state of future awareness.

The Third Wave of History Is Fueling Rapid Disruptions in Our Schools

In 1980, Toffler (and his coauthor/wife, Heidi Toffler) published *The Third Wave*, in which they stated we were looking at world history from the wrong angle. Instead of viewing it in decades, centuries, or eras, we should step back and take an even wider look—and see that world history is moving in waves.

The first wave of history was the longest—the 10,000-year Agrarian Age, when people lived off the land and technology advances slowly transformed parts of the world. When the earliest schools were established in the American colonies, the first wave was reaching its end. Most people in the colonies made their living on small farms, and the schools that existed used curriculum, instruction, and assessment methods that had been consistently deployed for hundreds of years in Europe for those students fortunate enough to receive an education. Students were released from learning for the summer months. The standard of education quality varied widely from school to school, based on the instruction and stability of the teacher and the environment, but the rate of educational change was the slowest in our history.

The Tofflers assert that the second wave of history began with the Industrial Revolution in England in the late 18th century. It began to transform the United States in the early 19th century. Our rural schools operated as they had in the past in the traditional one-room schoolhouse, while some urban schools began to grow in size. The seeds of disruption began to take root. Horace Mann of Massachusetts gained national prominence in the 1830s with his call for free, high-quality public education, and the first kindergarten was opened in Wisconsin in 1856. The National Teachers Association (now the National Education

Association [NEA]) was founded in 1857, and Charles Darwin published his (still) controversial *Origin of Species* in 1859. The Department of Education was established in Washington, D.C., in 1867 to promote education. During this period, some schools were opened for African Americans, with perhaps the most famous being Booker T. Washington's school in Tuskegee, Alabama, in 1881. The future of student writing would eventually be transformed by an invention in 1884: the fountain pen (Sass, 2017).

In the early 20th century, the disruptions began a slight acceleration and their impact became more profound. Both John Dewey and Jean Piaget released their ideas on learning, the American Federation of Teachers was founded, and the SAT was administered for the first time. In 1938, Franklin Roosevelt signed an act that set a minimum age for working in nonagricultural jobs and limited the number of hours and types of employment for older children (Sass, 2017).

But note the amount of time that passed between these disruptions; educational change was slow to arrive and limited in its impact. When the Second Industrial Revolution accelerated in the last part of the 19th century and early part of the 20th century, one could still step into a classroom and find many of the same materials and methods as had been employed in George Washington's time. In other words, the first two waves of history washed over American schools, and the education methods barely shifted. Yes, the nation and society had undergone dramatic changes, but schools had not.

They didn't need to adjust.

The skills taught in schools in the first and second waves of history could allow graduates to be successful in agrarian and industrial societies. What had worked in the 1700s would work well into the 1900s. Since most people in that time span either worked on farms or did repetitive tasks in factories or offices, there was no strict mandate for educational change to teach application skills. While some schools went through isolated disruptions because of growth or changes in the teacher workforce and turnover, for the most part the schools were stable. Leading schools or teaching then wasn't easy; it's always been hard. Educators in those times faced daunting challenges, but the educational changes were slower to arrive.

Then during World War II, the advances of the industrial wave reached their apex. Albert Einstein and some of the greatest minds of the Industrial Age worked to split the atom and create the first nuclear

bombs for detonation in 1945, but the case can be made that a number of disruptions being felt in American schools today rippled out of Pearl Harbor in 1941. In addition to splitting the atom, the other revolutionary disruptions we (and our British allies and German adversaries) created were plastics, jet engines, rockets, new types of metals, penicillin, radar, new methods of electronic communication, a better understanding of mass transportation, and increased systems of production on a broad scale. The German missile system formed the foundation of America's early space program in the 1950s and 1960s, which led to an increase in computing capability and other forms of new technology.

In the late 1940s, as American servicemen and servicewomen were mustered out of the military and returned home to a changed world, a few intrepid people began to look around and ask, "What should be taught in our schools now?"

The choir of disruption was beginning its song.

In the 1950s, as Americans were led by Dwight Eisenhower and claimed the title of leaders of the Free World, our society and schools were rocked by one of the most significant, and most necessary, disruptions in our history: the *Brown v. Board of Education* case of 1954. Freedom meant equality, and what was happening in Topeka, Kansas, suddenly impacted every public school system in the United States. Education leaders began to ask how they would integrate schools and deal with the conversations, tensions, and promise of fulfilling the role of American schools for all their students.

Then, as the civil rights movement began to escalate and accelerate, American school leaders were pulled into the front lines of the Cold War. The Soviets were the first into space in 1957 when they launched their *Sputnik* satellite, and perplexed politicians turned their eyes on public school leaders for answers (Powell, 2007). We suddenly had a missile gap to close with the communists, and Congress said it was up to educators to do it. The call went out for more mathematics and sciences.

American schools received a large share of the blame for a national political problem, and it led to broad attempts to significantly restructure their operations. The American education system was now center stage and bathed in a red-white-and-blue spotlight—and it has not been switched off since.

Across the United States, school principals and superintendents, predominantly white males, probably went home in the evenings, sat in

front of their black-and-white television sets, ate frozen dinners off TV trays, and said to their wives, "You know, I don't understand what's happening. It used to be things were so much easier."

Goodbye, stability. Hello, disruption.

And hello to the third wave of history. The Tofflers said the Industrial Age was receding in the second half of the 20th century, and the rise of computers would bring about the Information Age, when knowledge would be found more quickly and success would go to those who understood that the world had shifted and who moved swiftly to apply new ideas.

Educators will recognize the major points of *The Third Wave* that have led to disruptions in schools:

- The rise of individualism
- A growing difficulty in reaching consensus
- A breakdown in many standardized factory models
- New ways of producing thought, products, and wealth
- A move away from mass media to a growth in ideas shared by individuals and small groups

In schools today, we see more individual expressionism from students than ever before, and their ideas are often expressed through social media and with online images and videos. Parents are pushing back in growing numbers against the standardized testing models of the Industrial Age. Current graduates are no longer fully accepting the ideals of the past—that they must attend college to get a good job and then settle down, get married, and have kids at a young age. Instead, they want to chart their own paths, balance work and leisure, and use technology to solve many of their problems. They are looking for new ways to be productive and to be happy. People have, as Toffler predicted, moved away from mass media to sharing ideas in public media, which can be done through Facebook, Snapchat, Twitter, and other social media platforms.

As we move forward, school leaders should understand that American education disruptions are not isolated events; they are tied to this new wave of history. School leaders were trained in a second-wave model, but the third wave requires an adaptive mindset and new ways of viewing the world and how to educate students to thrive in it.

Schools Have Experienced Their Own Waves of Change; American Schools Are Entering the Fifth Wave of Their Development

For administrators to fully understand the disruptions in schools today, they should apply the Tofflers' wave theory to education. The Tofflers saw three waves of global history, but we can see five waves of American school history: three that have already occurred, a fourth wave that is just ending, and a fifth wave that first arose out of the accelerations around us and picked up pace with the COVID-19 school closures of 2020. When we view our professional history through waves, it allows us to comprehend what is happening now—and what we must do as 21st century school leaders to thrive in the next wave.

FIVE WAVES OF AMERICAN SCHOOL HISTORY

Wave 1—Stability Age: 1600s to mid-1940s

Wave 2—Nuclear Age: 1945 to 1980

Wave 3—Accountability Age: 1983 to 1999

Wave 4—Disruption Age: 1999 to Present

Wave 5—Hyper-Change Age

The first wave came ashore in the 13 colonies with the European settlers, who brought their respect for education and the idea that learned individuals could teach a roomful of attentive students the fundamentals of knowledge. The teacher was the center of learning. All assignments, instructions, and classroom functions originated with the adult in front of the room, and disruptions were slow to arrive and minor in scope. As mentioned earlier, this concept was central in our schools until just after World War II. From the time of the Founding Fathers to the fathers of baby boomers, American education was relatively unchanged and stable—schools were anchored in a **Stability Age** that lasted from the 1600s to the mid-1940s.

That wave ended at 5:29:45 a.m. on July 16, 1945, when the United States detonated the world's first nuclear bomb in the Arizona desert. The advances in technology reached new levels with the splitting of the

atom, which resulted in a shift in education expectations. In this second wave of American school history, people began to understand that schools had to start adjusting to a world in which science had accelerated and society was transforming. This was the **Nuclear Age** of American schools—the 1950s, 1960s, and 1970s, when American life was dominated by nuclear reactors, the Cold War, spaceships, highways, cars, televisions, refrigerators, microwaves, and shopping malls. Schools promoted democratic/capitalistic ideals and were desegregated by forced busing and then resegregated when middle-class families moved to the suburbs. Teachers and principals were rocked by the societal shifts that included the civil rights movement, two wars against communism, the peace movement, hippies, illegal drugs, and a deep questioning of traditional values. Educators tore down some of the classroom walls to create open classrooms—and then put them back up when they couldn't see much of a difference in results.

To find the spot where the second wave crashed to its end and the third wave began, we need to move from Arizona to Washington, D.C., where *A Nation at Risk* was released in April of 1983. The global economy was on the rise in Mexico, India, and Europe, and seeds of doubt began to take hold about the effectiveness of American schools. Suddenly, we were being told the future of our nation depended on our ability to reform schools through heavier doses of standardized testing. In one state capital after another, legislators implemented piles of assessments and accountability ratings. The **Accountability Age** was upon us; we wanted to test our way to greatness.

For the next 16 years, American educators dutifully complied with the new requirements. We shifted curriculum outcomes, developed standards and assessments, and began to adapt a mindset of change. We were safely ensconced in our buildings, aligning lesson plans to standards and preparing for the next round of testing. Then, American education changed in a single day on April 20, 1999, at Columbine High School in Littleton, Colorado, when two students massacred 12 fellow students and one teacher. Who would have thought one horrible incident could have such a wide and sudden impact? Within 24 hours, schools locked their doors forever and began hiring school resource officers and planning lockdown drills. Everyone began to ask, "What if it happened here?" We would never feel so safe again; our world had been violently disrupted, and this would be just the first of numerous types of disruptions that would rock education culture and schools: accelerated education reforms, 9/11 and terrorism, the advent of social media, the founding of charter schools, the deep impact of the

Internet on teaching and learning, the emphasis on mental health problems among students—and the list goes on. This is the age in which we live now, the fourth wave of American school history: the **Disruption Age**. The disruptions are not stopping; we will not begin a school year in the future and find the disruptions have calmed and we can take a break from our shifting mindsets. They are coming at us more quickly.

To get a wider picture of the various disruptions that have reshaped schools, consider the reforms, technology, and shifts that have entered schools since the 1980s (Figure 1.1).

FIGURE 1.1 The Increase in School Disruptions by Decade

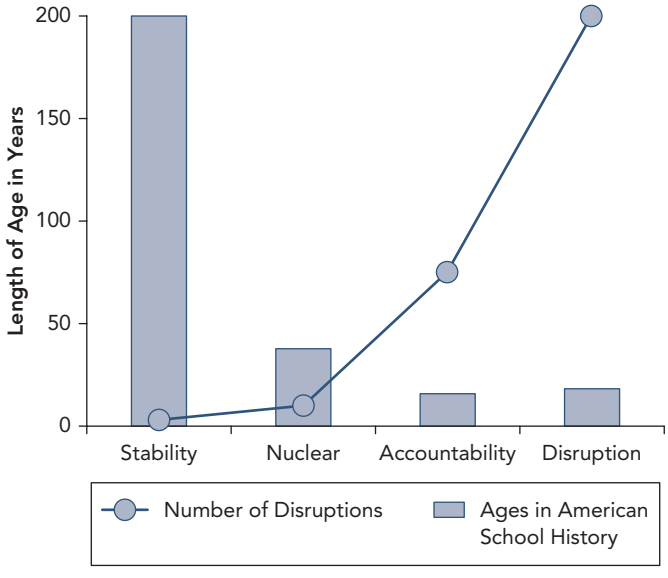
1980s	1990s	2000s	SINCE 2010
• *A Nation at Risk* • Mass testing • Copy machines placed in workrooms • Middle-class flight to the suburbs continues	• The Internet • The global economy • Standards-based curricula • Accountability ratings • Distance learning • Websites • Personal computers • Email • Voice mail • Computer games • Columbine	• No Child Left Behind • Subgroups • Smartphones • Texting • Facebook • Twitter • LinkedIn • Periscope • YouTube • Viral videos • iPods • Tablets • Blended learning • Vouchers • Charter schools • Changes in the SAT • Changes in the ACT • Common Core State Standards • Increased testing • More parent access • Calls for more school transparency • Heightened political scrutiny	• 4G mobile networks • Instagram • Tik Tok • Snapchat • Gen Z enters teaching force • Gen Alpha enters schools • COVID-19 • Distance learning • Race to the Top • Wearable technology • Sandy Hook • Every Student Succeeds Act

1980s	1990s	2000s	SINCE 2010
		• The 2008 recession • State funding cuts • Student and parent mental health concerns • Millennials enter the teaching ranks • Gen Z enters schools • More diversity issues	

Administrators who feel their world has accelerated are right; in the past three decades, the disruptions have reshaped their jobs. Today's principals and superintendents are experiencing change at a level unimaginable to their predecessors.

And when we look at the overall history of American school disruptions, we can see the accelerations of the past 30 years are the most sweeping in American school history (see Figure 1.2).

FIGURE 1.2 The Growth of School Disruptions in American School History



The amount of change administrators are experiencing in schools is not imagined or exaggerated; the disruptions are accelerating, and their jobs are accelerating with them.

If we look closely at the pace of disruptions around us, we can see we are beginning the fifth wave of American school change: the **Hyper-Change Age**. How is hyper-change different from other change? It is faster and deeper. Not only do the changes arrive at faster rates, but they are stacked on top of changes in new areas that might not have existed a decade ago. For example, social media assumed its prominent spot in society and schools 10 years ago, but new apps and extensions are constantly being introduced and then adopted by students. Educators learned to log on to Facebook and Twitter—just as students switched to Snapchat and Instagram. As we strive to understand a new disruption, the latest iteration arrives and we are forced to shift again. And education reforms continue to arrive at faster paces, bringing broader curricula, more testing, and greater accountability measures. It's safe to say the pandemic in 2020 jolted society, businesses, and schools. While parents and students missed their teachers, they are wondering if the old model is still the best one to which to return. The pandemic has accelerated the change in corporate business models, which is changing what employers are seeking in their workers. States had to cancel testing and are wondering how to jumpstart it as educators and parents push back against it. These rapid disruptions were previously unimaginable—they are products of hyper-change, and school leaders need to understand them to transform their mindsets and their schools.

States have not yet permanently abandoned their testing. This is their accountability model. As school leaders, we want students to have the skills to pass their tests. But those of us leading schools today understand that education in an era of disruption and hyper-change is wider than standardized testing: We are already coping with accelerations in school safety, technology, diversity, generational differences, inequality, transparency, and globalization. While we are evaluated by test scores, these other areas are already deeply embedded in our schools and operations. It's time for us to recognize them, deal with them more effectively, and assess our progress in these areas to get a truer picture of the quality of education. (A new assessment model will be discussed in Chapter 10, and hyper-change will be covered more deeply in Chapter 11.)

It's time to move leadership models from the 20th century neighborhood model to one designed for a global society.

Processing Speeds Have Fueled Technology Disruptions and Created a New Education Landscape

Sometimes, school leaders are in awe of the technology used by students in their personal lives, of how young people can use an app to solve a problem or play an online game with someone in another state.

They also look at the speed of their students' phones. Or the newest high-tech camera systems being placed in schools. Or the latest Chromebooks in the classrooms that surf the Internet, stream music through a cloud service, allow students to create charts and videos, and let them access free websites that help them arrange images to tell a story. Or how devices and the Internet allowed learning to quickly go online in the spring of 2020. Personal devices are becoming more complex, and they are changing the trajectory of society and learning. Processing speeds have been doubling every two years; computing has been getting stronger, and knowledge is growing. Captain Kirk and the *Starship Enterprise* haven't docked in outer orbit yet, but they're in the neighborhood.

Gordon Moore saw the technology disruptions coming. After Toffler, he's the second futurist whom school leaders should study to understand the disruptions rocking our schools. He looked at what was happening with processing speeds in computers and created Moore's Law.

Ask your school IT person about Moore's Law, and he or she will probably get excited to the point of giggling and stammering about how Moore predicted in 1965—when the United States was still running on massive, gas-guzzling eight-cylinder Detroit engines—that we would all soon be running our lives on transistors, integrated circuits, and microprocessors that would double in speed every two years and change how society functioned. He originally said speed would double in a decade, but in 1975, he adjusted his time frame downward, saying it would actually double every two years for the next decade ("Moore's Law," 2015).

He was only partially right. The processing speeds did, indeed, double every two years for the next decade—but they continued to double every two years for the next *four* decades. Put another way, computing speed is hundreds of thousands of times faster today than it was in 1975. He saw it coming and got it right. For IT geeks, Moore is not just the cofounder of Intel who created a theory for processing speeds;

he's a superhero. He's Captain America with an integrated circuit board strapped to his shield.

Students today are digital kids. They are part of Generation Z and Generation Alpha, and in many ways, they are products of Moore's Law. They are connected to the Internet on the average of nine hours each day (Wallace, 2015); they watch videos on their smartphones that are streamed from YouTube, Tik Tok, Netflix, and Hulu; and they have access to more information at their fingertips than any other generation in history. It's hard to imagine the changes they'll see in their lifetime brought about by technology—or the wonderful technology that will be used to educate them in the future.

In 2015, Moore said we were reaching the saturation point for current semiconductor speeds and that the law would probably die out within the next decade or so. But the rate of change is not slowing down. It will not do so in our lifetime. Everyone who studies computing speeds says progress will continue (Waldrop, 2016).

Some researchers assert computers will begin to think like humans. Many educators are aware of the software created by Ray Kurzweil that can help students understand text; he has a startling prediction for the future:

> *Many scientists believe the exponential growth in computing power leads inevitably to a future moment when computers will attain human-level intelligence: an event known as the "singularity." And according to some, the time is nigh.*
>
> *Physicist, author, and self-described "futurist" Ray Kurzweil has predicted that computers will come to par with humans within two decades. He told* Time Magazine *. . . that engineers will successfully reverse-engineer the human brain by the mid-2020s, and by the end of that decade, computers will be capable of human-level intelligence.* (Wolchover, 2012, paras. 4–5)

We must prepare for an education world where teachers and students are assisted by humanlike artificial intelligence *by the end of this decade.* The question is not if the technology disruptions will stop or if they will continue to transform education; the question is this: Will we have the adaptive mindset to stay ahead of new technology and find ways to apply it in our education systems?

Knowledge Is Doubling at Faster Rates, Which Is Redefining Education

All this change has led struggling school leaders to think about what it means for students to be successfully educated in a world of hyperchange. In earlier waves of our school history, administrators could easily define what it meant to be educated. They could point to courses, credits, and a high school diploma. But processing speeds and a world with new expectations for education have made the old answers obsolete and have created questions about the purpose of education today.

A third futurist, Buckminster Fuller, has chronicled the growth of knowledge. School leaders should study the work of this futurist to get a better idea of how to educate students in this century.

A lot of bright people consider Fuller to have been one of the greatest thinkers of the 20th century. He was born in Milton, Massachusetts, in 1895, and he dedicated his life, and his enormous intellect, to thinking of how to help all mankind. In 1982, he published a book titled *Critical Path*, in which he charted the history of knowledge. According to his calculations, knowledge doubled in the world from the year 0 to 1500. Then, it began to speed up: It doubled again by 1750 and then again by 1900. When World War II ended 45 years later, knowledge had doubled again, and it continued to accelerate until now, when it doubles every 12 or 13 months—which means every year we now have twice the amount of knowledge we had the year before (Schilling, 2013).

The doubling of knowledge will continue to accelerate. An IBM Big Data Study released in 2012 foresees a day in the future when knowledge will double every 12 hours (Schilling, 2013). For young people, this means there will be twice as much knowledge available at the end of each school day—and twice as much again when they wake up the next morning. And it will keep doubling . . . and doubling . . . and doubling. Some researchers think we have reached that point today (Sorokin, 2019).

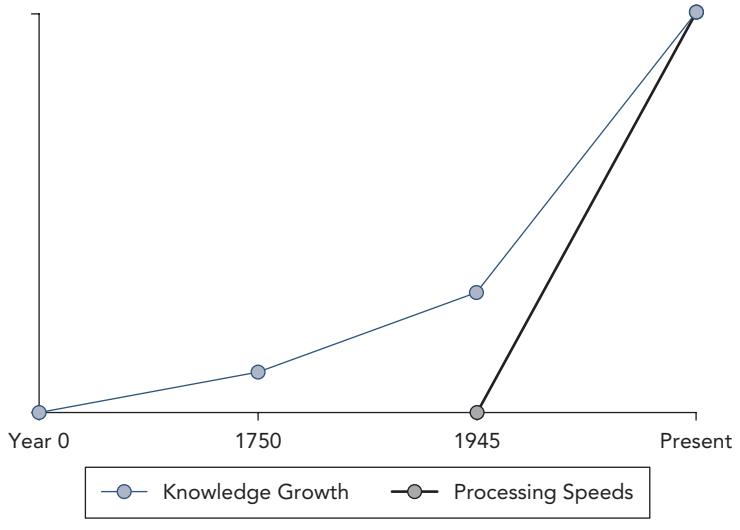
We saw evidence of this information growth in 2020 as researchers developed COVID-19 vaccines in less than a year. Two factors played key roles in accomplishing this feat: the global collaboration of researchers and the advances in genomic sequencing (Solis-Moreira, 2020). This leads to some serious questions for educators: How many textbooks should we be purchasing today when they are becoming obsolete faster than ever before? How much memorization should students do in an age when information is growing so rapidly or is at their fingertips?

Or when we can pull facts out of the air?

We already have phones and other devices that are voice activated and give us information ranging from weather reports to historical data. All we have to do is talk to them, and they answer us. Like other technology, this form will deepen in the future, become cheaper, and assume a more prevalent role in our lives. This new era calls for new ways for students to access information; we have to do more to provide online access to students so they will have the most up-to-date information at their fingertips.

Consider the chart in Figure 1.3, which shows how processing speeds have led to the growth of knowledge, which has led to the incredible technology advances we are seeing today. Technology in schools is not an option; it's a necessity. It must be the new foundation of learning.

FIGURE 1.3 The Correlation of Processing Speeds and Knowledge Growth



We Are Leading in a Disrupted Political World

Now let's see how hyper-change has affected political movements around the world and how this new political landscape is affecting school leaders. In 2016, Donald Trump used the slogan "Make America

Great Again" to get elected president of the United States. Let's view that slogan through a 21st century hyper-change lens, one that sees the world through the disruptions that have reshaped the entire world. People voted for Trump for a variety of reasons, but one reason was a yearning to go back to the way things used to be, to go back "again" to a time when America was the "great," unchallenged leader of most of the world. Trump was born in 1946, which is the first year of the baby boomer generation, making him one of the oldest baby boomers. He grew up watching John Wayne movies and early television. The world was a much simpler place, and America was the leader of much of the post–World War II world. There are plenty of people in America who wish they could go back to simpler times, when America didn't have to confront the issues it faces today: being a part of a complex global economy, growing civil rights conflicts, a shrinking of the middle class, terrorism, and new challenges for leadership on the global stage. In uncomfortable times, people reach out to strong leaders who promise to bring stability. Trump famously said, "I alone can fix it" (Applebaum, 2016). Incidentally, America was not alone in turning to a leader who promised strength and stability; it happened in other places in the world also (Bremmer, 2018).

As the world has become more connected, some people have taken on a more global view, while others have wanted more barriers and walls to slow the rate of change and to maintain the status quo. For many reasons, the American presidential election of 2020 was viewed as the most important election in history—a point in which America could decide, in this decade of pandemic recovery and reset, to either continue its retreat from the global stage or resume its global leadership (Hirsh, 2020).

As school leaders in the 2020s sort through disruptions that range from COVID-19 to multiethnic curriculum issues, they are aware their local taxpayers are divided and more partisan in their vision of America's future. Schools are tasked with preparing students to be productive American citizens in this varied and unpredictable future, which means administrators now face an enormous task: serving a multitude of constituents with varying opinions, more than ever before, on how schools should function.

And it's all happening as the world changes more rapidly than ever before.

If School Leaders Are Going to Thrive, They Must Use Disruptions to Their Advantage

School leaders must pull these points together to understand why their environments have shifted and what they must do to move forward:

1. The Tofflers say history moves in waves, and we have entered the third wave of history, one where knowledge and individualism rule.
2. American school history is also moving in waves; we've passed through the fourth wave, the Disruption Wave, and have entered the fifth, the Hyper-Change Wave.
3. Gordon Moore predicted the increase in computer speed, which has resulted in an explosion of knowledge and more technology in our schools.
4. Buckminster Fuller looked at the growth of knowledge; it's doubling so quickly that current education systems are struggling to keep pace.

Education leaders must recognize what is happening, constantly adapt to a changing environment, and use the disruptions to their advantage.

How can school leaders do this? In the Understanding by Design (UbD) framework, we speak of keeping the end in mind and finding the essential questions to clarify our thoughts. Today, as technology continues to expand and knowledge doubles more rapidly in a landscape reshaped by COVID-19, the first essential question for educators is not about test scores or district accountability ratings. It's *What does it mean to be educated in the 21st century?* And this question must be followed by another: *How do we lead schools into this new era in the 2020s?*

The Tofflers assert that the transition period when one wave is ending and the new one is beginning is often the most difficult because we tend to view the world through the lens with which we are most comfortable, the one we already know (Toffler & Toffler, 1980). The world might be changing, but if we are still looking through yesterday's lens, we will not see what is occurring today. We will search for what we know and find it has transformed or is no longer visible.

This is where we are in education today—in the middle of a conflict between the old and the new. The second wave of machines is giving way to the third wave of technology and accelerated change. While

some school leaders recognize what is happening, too many of them still cling to the past and attempt to lead their schools through the most turbulent of waters with second-wave ideas.

Here's the critical epiphany for school leaders: We can drown between the waves—or we can grab 21st century surfboards and start riding the new one. We can't predict everything about the future, but because of the knowledge explosion and the advances in technology, we know school leaders will have to understand and adapt to disruptions to surf the new wave.

If they are going to surf, they will have to build a new sort of leadership surfboard with three critical parts.

THE NEW LEADERSHIP SURFBOARD

Part I: The Academic System

Will help students . . .

- Cope with the academic, emotional, and economic aftermath of the COVID-19 pandemic
- Adjust socially, vocationally, and academically in an age of disruption
- Apply knowledge in constantly shifting environments
- Prepare for hyper-change, where the world at the end of their lives will be very different from the world into which they were born

Part II: An Adaptive Mindset

Will help leaders . . .

- Assess how remote learning and other adjustments made during COVID-19 closures will have long-term effects on their schools
- Plan beyond a nine-month school year to help them envision what education can be five and 10 years into the future
- Understand today's schools don't have to look like the ones from the past—that educators should build learning spaces for today's students and not the students of the past century

(Continued)

(Continued)

Part III: The Steering Fin

Will guide school leaders' thinking to . . .

- Know that past disruptions led to present disruptions, which will lead to future disruptions
- Embrace change and the unknown—to be comfortable with being uncomfortable
- Understand that school disruptions are an unending part of their careers
- Cope with disruptive events in the hours after they occur, adjust their mindsets in the months following the disruptive events, and transform their long-term philosophy and actions around that disruption and future disruptive events
- Gaze into the future and predict the approaching disruptions—before the disruptions upend their schools in a post-COVID world

More than anything, school leaders must maneuver their surfboards to the front edge of the third wave. They must accept disruptions and then use them to the school's advantage to maximize education in the 21st century. That's what this book is meant to be: a way to build a surfboard and help school leaders move from the back of the wave—or from the rough trough between the waves—to the crest of the third wave of history.

As educators, we espouse lifelong learning for our students. The same applies to our school leaders; they will be learning for the rest of their careers. The days of mastering the profession are over; the days of constant adaptation are upon us. The ability to cope, adjust, and transform through disruptions will determine whether school leaders will remain relevant or be relegated to a few paragraphs of online history books. Their future is in their hands—as is their ability to develop a new mindset to lead their schools in disruptive times.

ACTIVITIES TO TRANSITION TO 21ST CENTURY LEADERSHIP AND HYPER-CHANGE

Tasks of the 20th Century Leader Versus the 21st Century Leader

List the percentage of your time on a yearly basis you spend on the following tasks that range from typical management duties to proactive 21st century leadership. Your percentages should add up to 100.

TASKS OF THE 20TH CENTURY LEADER	PERCENTAGE OF TIME SPENT ON TASK DURING A TYPICAL DAY	NOTES
Helping students with personal, discipline, or other school issues		
Communicating with stakeholders through face-to-face conversations, phone calls, email, or social media		
Managing staff issues		
Managing budget issues		
Planning professional development		
Studying data		
Leading professional development		
Other 20th century leadership tasks of your job:		
TASKS OF THE 21ST CENTURY LEADER	**PERCENTAGE OF TIME SPENT ON TASK DURING A TYPICAL DAY**	**NOTES**
Implementing global skills into the curriculum		
Examining the impact of the COVID-19 pandemic on the students, teachers, and school system		

(Continued)

(Continued)

TASKS OF THE 21ST CENTURY LEADER	PERCENTAGE OF TIME SPENT ON TASK DURING A TYPICAL DAY	NOTES
Studying how to prepare students to enter the global economy		
Planning ways to help teachers and students use the latest digital tools in teaching and learning		
Exploring ways to use social media to advance the school's message and image		
Employing initiatives that strengthen bonds between diverse groups in the school		
Finding new ways to enhance communication with parents		
Looking for proactive ways to improve student safety at school		
Implementing mental health initiatives for students and parents		
Understanding how millennial teachers think and how they are influencing the staff		
Researching Gen Z and Gen Alpha students and how they learn		
Designing new types of learning space and operations for Gen Z		
Sharing new ideas with staff to help them shift their thinking, especially in the aftermath of COVID-19		

TASKS OF THE 21ST CENTURY LEADER	PERCENTAGE OF TIME SPENT ON TASK DURING A TYPICAL DAY	NOTES
Studying societal and district trends to understand and predict future disruptions		
Other local global leadership tasks of the job:		
Total percentage of time should equal 100		

How did the COVID-19 pandemic affect you as a leader, both in your personal leadership philosophy and in how your school functions?

What do you notice about your time spent in each category? Do you wish you could spend more time in the 21st century domains?

Ideally, in which particular domain(s) would you spend most of your time?

If you are like many school leaders today, you probably are spending the majority of your time in 20th century categories—because those are still critical areas that must be addressed. But a goal should be to move more into the 21st century leader categories. It might not be done overnight, and it might be difficult with all the tasks that continue to take your time, but knowing those categories are there is part of moving from a state of future shock to a state of future awareness.