Chapter 1

Are we ready for disruption?

> "We owe it to all of the people—students, teachers, parents—who bring the best of themselves to the flawed systems of school every day to make those systems better tomorrow than they are today. But we also owe it to those people to make that evolution as painless as possible, so that the upheaval and disruption do not mean the loss of dignity and learning and care for the people who inhabit our schools."
>
> —Chris Lehmann and Zac Chase, *Building School 2.0,* 2015, p. 32

In this chapter, as we prepare to consider strategies to engage the wider community in school change, let's first review key arguments for why change is necessary for our students' success. Building common understanding among stakeholders—who likely bring different expectations, experiences, and perspectives about school—will lead to more productive discussions about potentially unfamiliar pedagogies and global education trends. The chapter concludes with a look at catalysts that are accelerating school change—any one of which may be the spark for disruption in your community.

Trends for Transformation

Ready or not, education is changing. The trends that are rapidly reshaping our schools go by many names—blended learning, personalized learning, project-based learning, deeper learning, maker education, connected learning, design thinking, and more. Each approach comes with its own champions, teaching practices, and even hashtags.

These 21st century pedagogies are more alike than different. Although distinctive, each approach promises to create opportunities for students to develop the capacities they need to thrive in a fast-changing world. They all incorporate digital tools for connecting and creating, extending learning from the classroom into the wider world. They all challenge students to take a more active role in their own learning and to solve problems in their own communities—and perhaps beyond. In different ways, each approach has the potential to disrupt traditional education. See Crib Sheet 101 for a short definition of the instructional practices mentioned previously. These practices will be discussed in many of the case studies to come.

CRIB SHEET 101

Pedagogies and Practices for Transformative Teaching and Learning

In an effort to transform education to better meet the needs of today's learners, schools are adopting a wide range of instructional strategies and classroom practices that differ in significant ways from traditional teacher-directed, textbook-based schooling. In coming chapters, you will hear educators refer to the following approaches as part of their strategies for school change. No single idea offers a perfect solution. Many schools mix and match these approaches to meet the needs of diverse learners.

It's only natural for stakeholders to compare emerging practices with their own experience of school. In different ways, the following approaches challenge the familiar model of education—the teacher in charge at the front of the room, students seated in rows, compliance and order valued over creativity and teamwork. Not only is that model familiar, but it may have worked perfectly well for many stakeholders. Teachers, parents, and other community members have good reason to question why the "old school" model that they know and trust is being replaced by something unfamiliar.

Avoiding jargon and using common definitions to discuss new ideas will help stakeholders have more productive discussions about potentially unfamiliar pedagogies. In the following paragraphs, you'll find brief definitions of key terms to help you build shared understanding. You will hear these terms throughout the coming chapters as communities in different contexts consider ideas for school transformation. Suggestions for additional resources to explore and a Twitter hashtag to connect with a community of practice are included for each practice or approach.

Blended learning. Students engage in a combination of online and face-to-face learning, allowing them to make choices about the pace, location, and timing of their learning experiences. To learn more, visit the Christensen Institute, which describes four models of blended learning (www.tinyurl.com/zrpyfot). Follow #blendedlearning.

Connected learning. Leveraging digital tools and peer-to-peer learning, connected learning is socially connected, interest-driven, and academically oriented, according to the Connected Learning Research Network (clrn.dmlhub.net). Connected learning occurs across the lifespan and leads naturally to network building (such as the personal learning networks that many educators rely on for personalized professional learning). To learn more:, visit Educator Innovator, a resource from the National Writing Project (www.educatorinnovator.org), or follow research discussions at www.clrn.dmlhub.net. Follow #connectedlearning.

Deeper learning. Students across the 500 diverse schools that are part of the Deeper Learning Network develop six core competences: master core academic content, think critically and solve complex problems, work collaboratively, communicate effectively, learn how to learn, and develop academic mindsets. Wall-to-wall, project-based learning is also a common feature of these schools, which include public district schools and charters. To learn more:, visit www.deeperlearning4all.org or follow #deeperlearning.

Design thinking. This open-ended problem-solving process that has wide use in commercial product design and social innovation is rapidly migrating to the classroom. Design thinking typically starts by identifying user needs through empathy-building experiences before moving to defining, ideating, prototyping, and refining results based on feedback. The process is iterative rather than linear, producing multiple drafts and prototypes en route to innovation. To learn more, visit the d.school Institute of Design at Stanford University (dschool.stanford.edu) or download a free toolkit, *Design Thinking for Educators* (www.designthinkingforeducators.com/toolkit). Follow #designthinking.

4Cs. The 4Cs, advocated by the Partnership for 21st Century Learning, EdLeader21, and others, is a shorthand for describing these four competencies that are considered essential for life and work in the 21st century: communication, collaboration, critical thinking, and creativity. To learn more, visit P21 (www.p21.0rg). Follow #4Cs.

Flipped learning. A modification of blended learning, flipped learning replaces traditional classroom lectures with video recordings, which students typically view as homework. To learn more, visit the Flipped Learning Global Initiative (www.flglobal.org) launched by flipped-learning pioneer and evangelist Jon Bergman. Follow #flippedlearning.

Genius Hour. Modeled on an idea from Google and other companies to free up 20 percent of employees' time for self-directed research projects, Genius Hour creates time and space within the school week for students to pursue questions that pique their curiosity. To learn more, study the principles of Genius Hour on *TeachThought* (www.tinyurl.com/pavknc2). Follow #geniushour.

Global education. In an increasingly interconnected world, students develop global competence by investigating issues of global importance, recognizing multiple perspectives, communicating their views, and taking action. To learn more, read *Educating for Global Competence* (Boix Mansilla & Jackson, 2011), published by the Council of Chief School Officers and the Asia Society (free download available at asiasociety.org/files/book-globalcompetence.pdf), or *Empowering Global Citizens: A World Course* (Reimers, Chopra, Chung, Higdon, & O'Donnell, 2016). Take part in global education events and find more resources at the Global Education Conference Network (www.globaleducationconference.com). Follow #globaled.

Maker education. Grounded in the philosophy of learning by doing, maker education provides students with access to tools and the time to solve problems that interest them. To learn more, find resources and connections at Maker Ed (www.makered.org), a nonprofit organization that supports educators and communities—especially those in underserved areas—in their efforts to facilitate meaningful making and learning with youth. Sylvia Martinez and Gary Stager, coauthors of *Invent to Learn: Making, Tinkering, and Engineering the Classroom* (2013), provide an overview of the tools and strategies that are fueling the maker movement in schools globally (www.tinyurl.com/hdn8rxj). Follow #makered.

Personalized learning. Starting from the belief that not all students learn alike, personalized learning encompasses a wide range of technologies, assessment and reporting tools, and teaching practices to help each student succeed. To learn more, explore the working definition of personalized learning developed by iNACOL (www.tinyurl.com/h3t8rpu), which describes four pillars: learner profiles describing each student's strengths and needs, competency-based progression toward mastery, personal learning paths; and flexible learning environments. Follow #personalizedlearning.

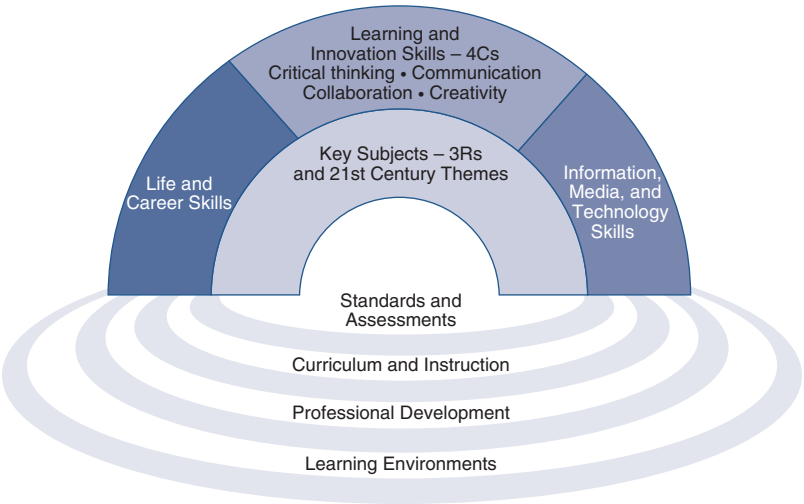
Project-based learning (PBL). Students gain academic knowledge and develop critical thinking, collaboration, and other skills by investigating or responding to an open-ended question, problem, or challenge (often with real-world connections). They typically apply their understanding to create something new, teach others, or advocate for a solution. To learn more, explore the elements of high-quality PBL defined by the Buck Institute for Education (www.bie.org/about/what_pbl). Follow #pblchat.

The Urgency of Change

The need for school change has been well established. As early as 1997, a year before the launch of Google, Roland Barth, founding director of the Principals' Center at Harvard University, urged educators to heed the new demands of the Information Age. Students in the mid-20th century graduated from high school knowing 75 percent of what they would need to know to be successful in the workplace. That number would plummet to 2 percent in the 21st century, he predicted, because of the explosion of information (and the advent of "Googling," which he had not anticipated). Well-prepared students would be those who possess "the qualities and the capacities of insatiable, lifelong learners, capable of framing questions, marshaling resources, and pursuing learning with dedication, independence, skill, imagination, and courage" (Barth, 1997, p. 56).

P21, the Partnership for 21st Century Learning, has been advocating a similar profile of well-prepared learners since its founding in 2002. This nonprofit consortium has made the "4Cs"—communication, collaboration, critical thinking, and creativity—a widely recognized shorthand for describing the skills that students need to develop, in addition to academic understanding, to be ready for the challenges ahead in college, careers, and citizenship.

Figure 1.1 P21 Framework for 21st Century Learning has made the 4Cs a commonly recognized shorthand for these essential skills: critical thinking, communication, collaboration, and creativity.



Source: P21, Partnership for 21st Century Learning.

We continue to hear variations on the same themes, both from within and beyond education. Yong Zhao, global education expert from the University of Kansas, adds to the preceding list of competencies an entrepreneurial mindset. He describes our traditional education model as "employee oriented" (Zhao, 2014, p. 185). It focuses on transmitting a body of knowledge and skills that have been predetermined to be valuable. Not surprisingly, this model values uniformity, consistency, standardization, and an emphasis on outcomes. Entrepreneur-oriented education, in contrast, aims to help students discover and build on individual passions. Instead of preparing them to be reliable employees for predictable jobs, an entrepreneurial education prepares students to be job creators and social innovators (Zhao, 2014).

Jaime Casap, global education evangelist for Google, offers more insights about how the world of work has shifted due to specialization and the need for collaboration:

> If I told [Google CEO] Larry Page that I had finished a project without consulting anyone else, I probably wouldn't keep my job much longer. Google is a project-based organization. We live in a project-based world. Collaboration is how we get things done. (Casap, 2015)

IBM's survey of CEOs from around the world echoes these familiar wishes for what employers want in employees: collaborative, communicative, creative, flexible thinkers (IBM, 2012).

Students themselves offer more perspective about what's missing from K–12 education. Data on student engagement paint a worrisome picture (Kuh, 2007). Only 50 percent of students feel engaged in school, according to the Gallup Student Survey of students in Grades 5 through 12. That leaves every other seat in our classrooms filled by a student who is either not engaged (29%) or actively disengaged (21%; Gallup, 2015). What's more, fewer than half of today's students report feeling hopeful about their own future; 34 percent feel "stuck"; the remaining 18 percent describe themselves as discouraged about their future prospects. Curiosity—a key attribute of the innovator's mindset—also shows a steady decline as students advance from elementary into secondary grades and focus more on getting correct answers than on asking good questions.

On the brighter side, students offer clues about the kind of education that does interest them. Students report they are engaged by projects that connect the classroom with the world outside school

(Taylor & Parsons, 2011). Some 45 percent aspire to create something that will improve the world (Gallup & Operation HOPE, 2013). After hearing countless students and teachers describe the motivation that comes from doing real-world projects, the Buck Institute for Education updated its definition of high-quality PBL to include "authenticity" as an essential ingredient (Larmer, Mergendoller, & Boss, 2015).

Not Fast Enough

Despite persistent calls for school change and an expanding research base about the effectiveness of more student-centered learning practices (American Institutes for Research, 2016), education is not shifting fast enough to prepare students for the future that's right in front of them. Nearly 60 percent of first-year undergraduates discover that, despite being eligible to attend college, they are not ready for postsecondary studies. Those caught in the so-called readiness gap must take remedial courses for which they earn no college credit, pushing up the costs and lowering the odds of college completion (National Center for Public Policy and Higher Education & SREB, 2010).

Schools that break from tradition remain relatively rare, despite more than two decades of advocacy for 21st century learning. To show what school transformation looks like nationwide, P21 invites schools and districts to apply for exemplar school status. Applicants are screened by experts who look for evidence of 21st century teaching and learning. This is not a search for cookie-cutter models. Instead, P21 celebrates the unique approaches that local communities are taking to create opportunities for learning (Brown, n.d.). By 2016, four years into this initiative, only 59 of the nation's nearly 100,000 public schools had made the cut as exemplars of transformed education.

School leadership expert Eric Sheninger has coined the term *uncommon learning* to describe the pedagogies that develop "skill sets that society demands, respond to student interests, empower students to be owners of their learning, and focus on ways to create an environment that is more reflective of the current digital world" (Sheninger, 2016). Initiatives such as blended learning and PBL are among the strategies known to increase engagement, but Sheninger finds them more likely to be isolated practices than systematically embedded as part of school or district culture.

Notable exceptions are the 500 schools that are part of the Deeper Learning Network. These schools are affiliated with 10 networks that differ in some particulars but share a consistent emphasis on student-directed learning. They are places where students routinely engage in problem-solving, collaboration, and critical thinking and develop the skills of effective communicators. They integrate technology in authentic, even transformative ways rather than as substitution for paper-and-pencil tasks. They develop academic mindsets that support their journey as learners.

Some schools, such as High Tech High in San Diego, California, began as start-ups, applying project-based learning with digital tools from Day 1. Others, such as Katherine Smith Elementary School in San Jose, California, were traditional schools that have made a wholesale transformation to the New Tech Network model. By building and supporting the Deeper Learning Network and hosting an annual Deeper Learning Conference to share best practices, the Hewlett Foundation, Alliance for Excellent Education, and other allies hope to build a critical mass of schools that will effect lasting change in education. Yet, to date, the network represents fewer than 1 percent of US public schools.

Change is also afoot among the nation's independent schools, some of which are challenging long-held traditions to remain relevant for 21st century learners. The National Association of Independent Schools (NAIS) launched its Schools of the Future initiative earlier this decade to help institutions manage the tension between tradition and innovation (Witt & Orvis, 2010). Citing shifts in everything from access to information to career trends, and acknowledging the different learning styles and motivations of digital natives, NAIS also profiles schools on the leading edge of change. Unifying themes among these institutions echo patterns found in many innovative public schools, including academic rigor, project-based learning, real-world learning that extends beyond the classroom, and the integration of digital technologies. Schools that succeed in introducing these approaches typically enjoy transformational leadership and a strong culture of collaboration among both educators and students (Witt & Orvis, 2010).

No one can predict how long it will take for most schools to make the shift to some version of 21st century learning. Technology integration is certain to be part of the future-of-learning story, but we know that tech alone won't be enough to transform teaching and learning. The Organization of Economic Cooperation and

Development (OECD) reports that investments in educational technology have failed to produce hoped-for gains in student learning or to bridge the achievement gap (OECD, 2015).

Pockets of school innovation remain more typical than wholesale reinvention, and for understandable reasons. Schools that perform well, according to standardized assessments and college admissions, are often reluctant to change. Instead of feeling pressure to innovate, they remain tied to traditions that have worked well in the past. Chronically underachieving schools, meanwhile, are more likely to feel pressure to catch up rather than to innovate, even though the goals they are chasing may already be outdated or insufficient to serve today's learners.

Fair Questions

When schools do start to prototype and tinker with tradition, they can face questions from all sides. Parents, potential allies from the business community, and other stakeholders may raise concerns or express skepticism. Teachers, too, can be resistant to change if they don't feel prepared to adopt unfamiliar pedagogies or integrate new technologies. Students who have succeeded at the old textbooks-and-tests model of learning may question why familiar routines are being upended.

When schools redesign traditional practices, policies, and facilities to better meet the needs of today's learners, they no longer look and feel the way that most of us remember. Questions naturally arise: *Why are classrooms so noisy and active? Why are students working in teams? Why don't report cards look the way I remember? Why are kids out in the community instead of sitting in class? Is all this technology use a good thing? And what about project-based learning—is it rigorous enough?*

A school superintendent recently told me about her experience of leading her community through a planning process to create a facility intentionally designed for 21st century learning. Participants on a design team began with a book study of *The Third Teacher* (OWP/P Architects et al., 2010), which describes the relationship between school architecture and learning. On a learning journey, they visited other reimagined schools as well as workplaces in their community. They asked hard questions and participated in a series of brainstorming charettes facilitated by architects.

The final product looks nothing like the familiar egg crate school layout that most of us know well, with long hallways leading to individual classrooms. Instead, classroom walls open like garage doors into a central learning commons. Furniture comes in a variety of shapes and can be rearranged in moments. Writeable walls capture students' thinking. Teachers share a collaboration space that fosters cross-disciplinary teaming. Everything about the multi-age building invites more active, collaborative, student-centered learning.

The superintendent told me she can tell within moments how visitors respond to this dynamic environment and the collaborative, active style of teaching and learning that it fosters. Parents and other visitors who had a hand in the design "get it" and lean in to see student-centered learning in action. Visitors who are unfamiliar with why and how education is changing often look perplexed. Some even stop short at the entrance, wondering if they're in the right place. This doesn't look like any school they ever attended.

Although questions remain about the best way to launch, lead, and sustain change, one conclusion is clear: School systems can't hope to make significant shifts in teaching and learning in isolation from their communities. The broader public, students included, must be engaged in conversations about how and why education is evolving. More than ever, schools need partners—inside and outside the building—who share and shape their vision. Buy-in from the entire community is essential if students are going to have opportunities to take part in meaningful, real-world learning that extends beyond the classroom. Having stakeholders on board not only accelerates change but may be the only way to sustain new ideas for the long game.

Catalysts for Change

Although the call for 21st century learning dates back more than two decades, new catalysts for change are accelerating the adoption of more innovative approaches to teaching and learning and setting the stage for increased stakeholder engagement. Let's examine the catalysts that are driving school change in communities around the globe, including many of the examples you will encounter in the following chapters. Some catalysts have to do with policy; others relate to facilities and technology access. In other instances, a local issue

such as a change in employment patterns or a brain drain of talented youth becomes a spark for reimagining school. As you consider these trends, think about which are most likely to concern or engage your stakeholders.

Rigor, readiness, equity. Perhaps the most consistently heard challenge for education today is the call *for all students* to be ready for college, careers, and citizenship. Achieving this ambitious goal means closing the persistent achievement gap and increasing high school graduation rates. It means expanding the college pipeline with students who may be the first in their families to pursue postsecondary education. It requires providing essential supports and alternative pathways for students at risk of disengaging from school. In communities that are taking up this challenge, the drive for rigor, readiness, and equity is proving to be a catalyst for school change. Examples in the coming chapters will illustrate why creating a climate of achievement can be a driver of wholesale school transformation (Brown, n.d.).

At both the federal and local level, expectations are changing when it comes to what students should know and be able to do. The federal Every Student Succeeds Act, reauthorizing the Elementary and Secondary Education Act (ESSA), is a catalyst for teaching and assessing more than content. ESSA calls for assessments of learning that emphasize higher-order thinking skills and understanding. It also specifically calls for family engagement to help students succeed in school.

The Common Core State Standards emphasize critical thinking, creative problem solving, and collaboration along with academic mastery. To become proficient at these skills, students need experiences that go beyond rote learning. At the same time, yesterday's bubble tests are being replaced by more comprehensive assessments—portfolios, projects, and extended performance tasks—that ask students to apply their understanding.

Technology integration. Fewer than 30 percent of US schools currently have the bandwidth they need to teach using today's technology. Federal and state efforts are expanding this capacity to ensure that at least 99 percent of the nation's students have access to high-speed Internet in their schools within the next five years, according to the Future Ready School initiative supported by the US

Department of Education and the Alliance for Excellent Education. Such connectivity has the potential to transform the educational experiences of all students, regardless of their background, but only if districts are strategic about instruction and professional development needed to take full advantage of technology.

Facility makeovers. School facilities are ripe for redesign in many communities. The Report Card for America's Schools ranks the condition of our public schools at a D+. The average age of public school facilities is approaching the half-century mark (Alexander & Lewis, 2014). There's an urgency to update or replace facilities designed for baby boomers with learning spaces that will remain relevant for the next 50 years. Initiatives underway to address infrastructure issues are a catalyst for redesigning pedagogy along with facilities.

We'll hear more in later chapters about Design for Learning, a national initiative to reimagine school, including everything from the style of instruction and integration of technologies to the design of learning spaces and furniture. Ron Bogle directs this effort for the American Architectural Foundation. His organization deliberately looks for district partners that are willing to lean into change, whether they are starting from scratch or remodeling an existing facility. "If a district leader or school board is happy with the way things are, then we can't have much impact," Bogle told me. "We look for systems where, from top leadership to the classroom, people are hardwired to do something innovative. The desire for change is shared by teachers, principals, parents, and other partners. They're all part of it." The goal of Design for Learning is to work with the willing to create "many examples of what school change looks like." Those reimagined schools will then become laboratories that others can learn from, catalyzing more change.

Not every school redesign effort requires a bulldozer. Increasingly, schools are tinkering with existing buildings by adding makerspaces, labs for hands-on STEAM (science, technology, engineering, arts, and math) learning, and media centers for creating digital content to augment library stacks. Each of these redesign efforts, when combined with a shift in instruction, offers another catalyst for change. The instructional shift, however, is more critical than the new spaces.

Design thinking. Design thinking, an open-ended process for problem solving, offers the potential to engage students as innovators in the classroom. Educators who become fluent in design thinking are also using this process to find innovative solutions to a wide range of challenges, from rethinking academic calendars to reducing high school dropout rates. Several of the examples in the chapters ahead incorporate design thinking as a strategy to better understand issues from the user's perspective. The focus on empathy, user-centered design, and rapid prototyping to overcome challenges makes design thinking another catalyst for school change.

External pressures. Pressures and questions from the larger community also can be catalysts for rethinking education. For example: How does a school remain relevant if a community's major employer closes its doors, changing job prospects for future graduates? How can school leaders respond to turbulent economic conditions, such as the recession and housing crisis at the end of the last decade? How can schools be agile enough to respond to demographic changes? How might a community prevent a brain drain or outmigration of talented youth? In future chapters, we'll hear about communities that have turned external pressures and even potential crises into opportunities for school change.

Worth Asking

Examples in coming chapters will illustrate how school systems are catalyzing change with the engagement of stakeholders. As you begin reading, consider these fundamental questions that are driving change in a wide range of settings:

- When a world of information is at our fingertips, what's worth knowing?
- Why are the basics no longer enough?
- How do we prepare students for success in a world marked by change and complexity?
- Why the increasing emphasis on teamwork and collaboration?
- Which approaches among the practices discussed in this chapter seem like the best fit for your community?

Takeaways and What's Next

Although the need for education change has been well established, school transformation has been a slow process. Several catalysts are now accelerating the pace of change. As schools consider potentially disruptive instructional practices, stakeholders need to understand the purpose and value of shifting away from traditional teaching and learning. Building common understanding of student-centered practices ensures more productive discussions and sets the stage for buy-in among diverse stakeholders. In the next chapter, we will look at stakeholder engagement strategies that have sparked widespread community support for school innovation.