



In Search of Deeper Learning

THE QUEST TO REMAKE THE AMERICAN HIGH SCHOOL Jal Mehta AND Sarah Fine

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Introduction

IT WASN’T UNTIL we stepped outside for a mid-afternoon break that the doubts became too serious to ignore.

On the surface, all was well. Our flights were on time. The West Coast weather was sunny and warm—a welcome respite from the New England winter. Adults and adolescents at Inspire Academy (a pseudonym) were gracious.¹ Leaders took the time to talk with us; teachers welcomed us; students didn’t balk when we joined them at lunch. When we said that we had come to Inspire as part of our research on how American high schools could create powerful learning experiences for more students more of the time, people nodded knowingly. Their school, they told us, was leading the charge on that front—using project-based learning to support students in developing both deep academic knowledge and “twenty-first century skills” such as collaboration and creative problem-solving.

By the middle of the second day, however, it was clear to both of us that something wasn’t right. Despite the time and effort that had gone into choosing Inspire as a site for our research, it was becoming hard to shake the thought that we had picked the wrong place. In a tenth-grade English class, students slumped their way through a scene from Othello, reading out loud only when threatened with detention and spending much of the period filling out a worksheet that told them to summarize what they had read. In an eleventh-grade biology course, students spent thirty minutes passively listening as their teacher read out the directions for a highly structured experiment, the outcome of which everybody already knew. In a ninth-grade social studies class, a young teacher shouted over her students’ side conversations, her voice increasingly shrill. When we asked students why they were doing what they were doing, their most common answers were “I don’t know,” “because

the teacher told us to,” or, in one memorable instance, “ask that girl over there—she’s the one who knows what’s going on in this class.”

There was one bright spot. In Ms. Ortiz’s eleventh-grade English classroom, tucked away in an upstairs corner of Inspire’s sprawling building, students had spent a month reading and analyzing Kate Chopin’s The Awakening. Now, drawing on the themes from the novel, they were working on a project that asked them to use original art to challenge narratives they found oppressive. The room hummed with purposeful activity. Some students clustered around tables, immersed in their creations, while others worked on the accompanying written analyses. When we asked them to discuss their work, they did so thoughtfully and articulately, explaining how, unlike Chopin’s protagonist, who saw suicide as the only escape from society’s expectations, they were using art to challenge the narratives they saw as constraining. Next week, they would exhibit and explain these creations to an audience of peers and teachers.

As we sat on a patch of grass near the school’s front entrance, we compared notes and tried to work through the questions that were bubbling up. Why were there such gaps between Inspire’s espoused values and its enacted practices? How could a school that had been recommended as a leader in the field—in foundation-commissioned case studies and by many educators and reformers—so dimly resemble its reputation? How did Ms. Ortiz learn to do what she did, and why was Inspire unable to spread such effective practices to more of its teachers? Was Inspire really among the best the United States had to offer when it came to engaging underserved high school students in powerful learning experiences? If it was, what did that say about our project—and about our field?



These were not the questions that had brought us to Inspire. We began 2010 in an optimistic frame of mind, having secured a small grant to study a range of successful American public high schools— particularly, but not exclusively, those serving disadvantaged students—and try to understand what made them tick. In an era when standardized testing reigned supreme, we wished to question the logic that labeled “good” schools as those whose students did well on tests, and instead study places that were not merely achieving academic minimums but helping students to flourish—to think critically, to become engaged in their learning, and, in a variety of ways, to prepare for the demands of twenty-first-century life.

Since we suspected that the answers to these questions might be multiple rather than single, we wanted to capture a variety of different approaches to achieving these goals. We would visit schools that varied widely in pedagogical approaches, governance, and design, including traditional comprehensive high schools, charter schools, magnet schools, pedagogically traditional and pedagogically progressive schools, urban schools, and suburban schools. Our plan called for us to immerse ourselves in these places using ethnographic methods—observing classes, talking with teachers and students, examining artifacts—to try to understand the varied approaches to bringing public high schools into the modern age.

The timing for such a study was ripe. While there had been a spate of studies on high schools in the 1980s—captured in classic works such as Sizer’s Horace’s Compromise, Lawrence-Lightfoot’s The Good High School, Powell et al.’s The Shopping Mall High School, and Goodlad’s A Place Called School—shifting trends in scholarship had moved away from the kind of holistic and humanistic perspectives that characterized this well-known work.² In addition, the creation of charter schools in the early 1990s, along with the small school movement in the late 1990s and early 2000s, meant that there was now a much greater range of institutions to study.

We also wanted to tap into the increasing public desire to improve high schools, which many had come to see as the final, and most challenging, frontier of K–12 school reform. While there has been

some progress in student achievement in math and reading in fourth and eighth grades over the past several decades, high school achievement in math and reading in the United States has been flat.³ The International PISA test, which asks high school students not only to recall information but also to apply knowledge and problem-solve, consistently places the United States at the midpoint, or lower, of international rankings.⁴ Data also consistently demonstrate that the longer students are in school, the less engaged they feel: 75 percent of fifth graders feel engaged by school, but only 32 percent of eleventh graders feel similarly.⁵ Since this range of indicators suggested that high school continues to be the hardest place to make progress, we were hoping to study “break-the-mold” high schools to understand what it would take to create engaging, equitable, and intellectually vibrant learning environments for all adolescents.

The problem was finding such schools. Inspire was not an exception. At school after school, as we shadowed students through their days, we found gaps between aspirations and realities. Most classrooms were spaces to sit passively and listen. Most academic work instructed students to recall, or minimally apply, what they had been told. When we asked students the purpose of what they were doing, the most common responses were “I dunno—it’s in the textbook,” and “maybe it’ll help me in college.” We had seen such lackluster classrooms before, of course, but these were in highly recommended schools where we had hoped to find a model that would transcend the norm. All too often, things looked the way they had at Inspire: big ambitions and significant struggles.

So, what to do? One option was to abandon the project. There would be some funding wasted and some time squandered, but, perhaps, better to accept the sunk costs and move on. A second option was to turn our project into an indictment of the American

education system. In the tradition of Jonathan Kozol, John Holt, Charles Silberman, and many others, we could write a scathing critique of American schooling, drawing on our observations to show the ways in which even schools that were meant to be innovative were falling far short of their aspirations. But this ground had been covered many times over—and part of why we wanted to write about good schools was that we sought an antidote to the pessimism that governs so many school reform discussions.

As we looked more closely at our data, we realized that there might be a third option. While the dominant patterns we had observed reflected a school system that was trapped by a “grammar of schooling” that was cast a century ago, there were exceptions— many different kinds of exceptions—which, cumulatively, perhaps could help to light a path forward. Often these exceptions were in classrooms, like Ms. Ortiz’s, where teachers had found interesting ways to engage students in intellectually complex subjects. If the bad news was that our recommended schools, as a whole, were struggling to achieve their ambitions, the good news was that at every site we found individual teachers who had found ways to transcend the norm. In fact, it became a predictable part of our research: if we spent a day shadowing a student, we would find one and sometimes two classes that were intellectually lively and demanding. Over time, these classrooms became their own data set. What were these teachers doing, how were they doing it, and how had they come to do it? There seemed to be much to learn from them.

Another bright spot came from widening our view. In many of the high schools we visited, much of the most powerful learning seemed to occur not in core classes, but rather at the school’s “periphery”— in electives, clubs, and extracurriculars. Hidden in plain sight, these peripheral spaces often had a very different “grammar” than the one that usually dominated core classes. In these spaces, students had real choices, learning by doing was the norm, there was time to explore matters in depth, and students were welcomed as producers

rather than receivers of knowledge. What made these spaces tick? How could they exist, almost entirely unnoticed, within the same schools in which core learning was so often passive and disengaged? Might there be lessons that the “core” could learn from the “periphery”?

Finally, as we continued our search, we did find a small number of high schools that consistently were able to translate their espoused values into enacted practices. In particular, we identified three very different schools—a project-based school, a “no excuses” school, and an International Baccalaureate-for-all school—that were able to actualize their visions in powerful ways. What enabled these schools to make such headway? How had they countered the classroom-to classroom variation in quality that was so prevalent elsewhere? Why were administrators and teachers in these places able to achieve their aspirations when many with similar ambitions could not? Viewed this way, our experiences at Inspire and other struggling schools became useful data: contrasting cases that could be lined up against our positive cases to help us identify exactly what enabled some schools to transcend the norm.

The profound differences across these three schools also allowed us to explore a range of approaches to the remaking of the American high school. During the course of our study, educators and scholars began to refer more and more often to “deeper learning,” an umbrella term evoking a range of ambitions that extends beyond rote learning.⁶ These goals were not exactly pathbreaking—many schools, particularly private schools, had embraced such ambitions for years—but the idea of bringing them to all students would be new. We saw close relationships between our study and the notion of deeper learning. In fact, as we considered it further, we realized that these three schools were each working on different parts of the deeper learning equation. The no-excuses school, which we call No Excuses High, was particularly focused on the challenge of equity; its leaders were trying to take the type of traditional learning that is often found in the upper tracks of affluent schools and make it

available to high-poverty students of color. The project-based school, which we call Dewey High, was focused on reimagining the grammar of schooling—on breaking down barriers between disciplines, on connecting the school to the broader world, and on having students create and contribute knowledge rather than just passively receive it. The IB school, which we call IB High, lay somewhere in the middle: drawing on an examination system created for highly privileged students, the schools’ administrators and teachers were striving to help students do authentic work within the traditional academic disciplines, while simultaneously seeking to extend such learning to a wide array of learners. These schools, then, provided three distinct visions of what the reinvented high school might look like, each with corresponding advantages and tradeoffs.

If these high schools offered starkly divergent possibilities for the future of schooling, we were also coming to recognize that our most successful teachers, electives, and extracurricular spaces, wildly varied as they were in methods, goals, and populations, all held one trait in common: they integrated different virtues of learning. In particular, we came to think that our own distinct vision of deep learning—not simply in school, but in life—emerges at the intersection of three virtues: mastery, identity, and creativity. In the spaces that teachers, students, and our own observations identified as the most compelling, students had opportunities to develop knowledge and skill (mastery), they came to see their core selves as vitally connected to what they were learning and doing (identity), and they had opportunities to enact their learning by producing something rather than simply receiving knowledge (creativity). Often these spaces or classrooms were governed by a logic of apprenticeship; students had opportunities to make things (newspapers, collections of poetry, documentary films, theater productions, debate performances) under the supervision of faculty and / or older students who would model the creative steps involved, provide examples of high-quality work, and offer precise feedback. Not coincidentally, the most successful teachers and extracurricular leaders whom we encountered had themselves been

apprenticed into their fields in a similar way—and these experiences had helped them develop a stance about what they were doing that differed from the “teaching as transmission” view that was so prevalent.

We widened our lens in other ways, too. While we initially planned to write about schools, it became impossible to make sense of what we were seeing without considering the interplay of external forces that

had shaped these schools. For example, Inspire and schools like it were working against the grain in so many respects: most teachers were teaching as they had been taught, short class periods inhibited in-depth explorations, district-mandated curricula and teacher evaluation systems were not aligned with efforts to emphasize critical thinking, and parental and college pressures mitigated against change. In fact, we came to think that many of the most successful classrooms, extracurriculars, and schools that we encountered were successful because they had found ways to buffer the expectations of the external ecosystem in order to create space to do something different. Thus, when we began to write about particular schools and learning spaces, we tried to move back and forth between describing practices on the ground and considering the broader forces that shape or constrain those practices. As we drafted our conclusion, we considered how these forces might be transformed to support, rather than inhibit, powerful efforts on the ground.

The good news is that there seems to be a growing interest in making these shifts. When we began in 2010, this project felt far outside of the mainstream; the attention of both the public and the K–12 world was still focused on the test-score emphasis of No Child Left Behind. During the intervening years, however, there has been a distinct shift. The Common Core State Standards initiative signaled a focus on more ambitious learning goals; policymakers and practitioners increasingly started talking about “twenty-first-century skills”; the Obama White House held a summit on high school reinvention; Apple funded XQ: The Super School Project to run a

nationwide competition to reinvent schools; High Tech High, a network of project-based schools in San Diego, now attracts more than a thousand practitioners to its annual Deeper Learning conference; and deeper learning is now part of many state and district policy strategies. At the beginning, we struggled to find funding for the project; now, we find ourselves increasingly invited to address gatherings of educators seeking to undo old systems and create powerful learning environments for the future. And while part of what motivated our research was the middling performance of U.S. schools on international yardsticks, many of those who attend our sessions come from other countries—they too, are trying to figure out how to integrate mastery, identity, and creativity into a twenty-first-century school system.

In the end, we visited thirty schools, spent more than 750 hours observing classrooms and other learning spaces, and interviewed more than three hundred students, teachers, administrators, parents, and other stakeholders. The picture that emerged is of an institution that is betwixt and between when it comes to deeper learning. Schools are actively trying to shed the long hand of the past, but have not yet arrived at the future. This effort is truly a quest: a journey that, as yet, has no clear path—but whose stakes make it well worth undertaking.



This is not the book we set out to write. We were seeking inspiration; we found complexity. Our friend and colleague Marshall Ganz, who teaches organizing, says that significant change is about urgency combined with hope. The story we tell here has elements of both. On the one hand, our research underscores the difficulty of deepening the work of most American high schools, given that their core designs are often unspecified and / or incoherent, and that their core programs of academic study are often fundamentally

disconnected from who students are and what they can do. In documenting these realities, we try to show, in unvarnished terms, the size of the problem; we argue that the change needed at scale is more one of kind than of degree. On the other hand, we show that there are already many classrooms, electives, and extracurriculars, as well as a few individual schools, that can light the path, showing what powerful and purposeful learning would look like. With humility, we suggest that if we wish to be neither paralyzed by the scale of the problem nor seduced by the promise of easy solutions, we need to look carefully at exactly what makes this work so hard—and also at why, and under what conditions, it is possible to achieve success. Our hope is that by sharing what we’ve learned we can spark an informed conversation about what it would entail to build a system in which deep learning is no longer the exception, but the rule.

1

The State of Deeper Learning in American High Schools

WHAT IS “DEEPER LEARNING” and why should it be a central goal for schools? This question is more complicated than it might seem. Deeper learning is an umbrella term that has emerged over the past decade to encompass a range of desirable attributes of schooling, attributes rooted in the premise that schooling needs to move beyond rote learning and shallow testing. The Hewlett Foundation, which helped to popularize the term, defines it as those combined characteristics of schooling that enable learners to “develop significant understanding of core academic content, exhibit critical thinking and problem-solving skills, collaborate, communicate, direct their own learning, and possess an “academic mindset.”¹ The National Research Council’s 2012 report on the term describes it as fostering “cognitive, intrapersonal, and interpersonal” competencies.²

Later in this chapter, we will explain what we see as distinct about our own view of what deeper learning entails. But for now, we will simply note that for the purposes of organizing our journey, we like the phrase “deeper learning” because the connotations of “deeper” are consistent with much of what we would hope for in a significant learning experience. When one goes deeper into a discussion, or explores a topic more deeply, or becomes more deeply versed in an area, one is moving toward the kind of learning that a serious education should enable.

While the term “deeper learning” is new, many of the aspirations it represents are longstanding. For instance, Paulo Freire, in 1970, decried the tendency of “banking” models of pedagogy, where children are treated as empty vessels in which teachers “deposit” knowledge, and argued for “problem-posing” as an alternative.³ Alfred North Whitehead, in 1929, discussed the difference between “active” forms of learning and “inert” knowledge.⁴ Joseph Mayer Rice, in 1893, contrasted “old education,” which emphasized drilling and recitation, with “new education,” which aimed “to lead the child to observe, to reason, and to acquire manual dexterity as well as to memorize facts—in a word, to develop the child naturally in all his faculties.”⁵ Modern scholars describe this contrast as between “ambitious instruction,” which asks students to reason and understand underlying conceptual structures, and “conventional instruction,” which does not.⁶ While there are some differences among these formulations, in a fundamental way they share an emphasis on “deep” versus “shallow” education, that is, on education that asks students to think versus education that asks them to follow directions, and education that has purpose and meaning for students versus education that does not.⁷

If the goals are not new, what is new are the external expectations of what the school system needs to produce. These expectations have changed for three fundamental reasons. The first is economic. Economic changes have hollowed out a large cadre of middle-class jobs that formerly could be claimed by high school graduates; these students increasingly need post-secondary credentials to be competitive in the job market. The types of skills that employers value have also shifted. In 1970, the top three skills employers asked for were reading, writing, and arithmetic; in 2015, they are complex problem solving, critical thinking, and creativity.⁸ Thus the education that would have sufficed in 1970 will not prepare students for the workforce today. A second reason relates to equity. To the degree that the goals of deeper learning have already been met, they have mostly been realized in affluent private schools and in the highest-track classes at the most advantaged public schools; what is new is the idea that these opportunities need to be extended to all students, regardless of color, economic status, or initial skill level. A third reason comes from the civic arena. Students now live in a world plagued by complex global problems, including climate change, massive economic inequality, ideological warfare, and a technological revolution marked by a chaotic proliferation of sources of opinion, fact, myth,

paranoia, and disinformation. The generation of students coming of age today will be asked to navigate, survive, and, if they can, help to heal the world they have inherited. Schools will need to do their part to develop skilled, creative, educated, informed, and empathetic citizens and leaders—the kind of people that our economy, society, and democracy demand.

**Perspectives on Deeper Learning**

Our vision of deeper learning builds on antecedents from various disciplines, fields, and traditions. We think that more conversation and integration across these strands will be helpful, because deeper learning generally emerges when a number of the associated elements come together. In particular, we think that three kinds of integrations—the cognitive and the affective, the short-term and the long-term, and the individual and the social—are important foundations for thinking about how to create deeper learning experiences.

To begin at the beginning: what does it mean to understand something deeply? Cognitive scientists think of deep learning—or what they might call “learning for understanding”—as the ability to organize discrete pieces of knowledge into a larger schema of understanding. Research suggests that deep learners have schemas that enable them to see how discrete pieces of knowledge in a domain are connected; rather than seeing isolated facts, they see patterns and connections because they understand the underlying structures of the domain they are exploring.⁹ For example, a shallow understanding of the biological cell might enable one to label its parts; a deep understanding would enable one to understand how a cell’s components function together as a system and, thus, to anticipate what might happen if a particular component was damaged. A related idea is that deep understanding allows you to transfer knowledge—not only to use it in the context in which it was taught, but also to understand or explain something in a related context.¹⁰

This example brings to the fore another aspect of deep understanding: it requires both a significant repository of factual knowledge and the ability to use that factual knowledge to develop interpretations, arguments, and conclusions. While “deeper learning” is sometimes critiqued in the popular press as the latest round of favoring “skills” over “content” or “concepts” over “facts,” research clearly demonstrates that people who possess deep understanding of a domain move with ease across this false divide.¹¹ The ability to offer a historical interpretation of the causes or consequences of the French revolution, for example, is rooted both in a detailed knowledge of the key players, structures, and events and in the ability to draw inferences, construct historical arguments, and use evidence to support one’s point.

Much of the work in this cognitive tradition draws its inspiration from research on expertise, which explores how people who are experts in a field construct their understandings. Studies of such experts reveal that they notice aspects of a situation that are not apparent to non-experts because they have cognitive schemas for understanding the domain; for example, expert teachers are more able to assess and respond to students’ thinking and adapt lessons midstream than are novice teachers, who tend to proceed more mechanically through more subject-centered lessons.¹² This idea relates to Jerome Bruner’s notion that to truly understand a domain requires understanding the structure of how that field organizes its knowledge.¹³ This kind of epistemological understanding, he argues, is critical to building the conceptual schemas that enable transfer within a domain.

This understanding of deep learning has also spurred a different vision of teaching. Scholarship in the late 1980s and early 1990s that advanced this perspective under the banner of “teaching for understanding” suggested the ways in which both learning and teaching would need to change if this perspective were embraced. Milbrey McLaughlin and Joan Talbert wrote in a 1993 introduction to the book Teaching for Understanding, “These visions depart substantially from conventional practice and

frame an active role of students as explorers, conjecturers, and constructors of their own learning. In this new way of thinking, teachers function as guides, coaches, and facilitators of students’ learning through posing questions, challenging students’ thinking and leading them in examining ideas and relationships.”¹⁴ In this new role, they continue, teachers would have to leave behind the longstanding view of themselves as “knowledge transmitters” and embrace the more constructivist notion of teachers co-constructing knowledge with learners.¹⁵ More recent writing by Magdalene Lampert on what she calls “ambitious instruction” or “deeper teaching” has taken a similar perspective, arguing that teachers need to teach in ways that bring to the fore student thinking, help students do work that parallels the work of professionals in the discipline, and create a collaborative culture in which this kind of thinking and learning can thrive.¹⁶

Lampert’s work begins to integrate what we think of as the cognitive and affective aspects of deeper learning. In other words, while deeper learning stems in part from increasing the level of rigor of the cognitive processes, it also relies in part on cultivating the motivation and identity of the students involved. Our experiences observing, teaching, and learning in powerful classrooms suggest that the “cool” descriptions of the cognitive dimensions described earlier must be married to “warmer” qualities such as passion, interest, and “flow”—qualities that give the learning life and create forward momentum. In their work on “intellectually authentic instruction,” Fred Newmann and his colleagues stressed the ways in which “engagement”—often dismissed as entertaining students without really teaching them—is, in its more substantial manifestations, actually a critical precondition for significant learning: “The most immediate and persisting issue for students and teachers is not low achievement but student disengagement. The most obviously disengaged students disrupt classes, skip them, or fail to complete assignments. More typically, disengaged students behave well in school. They attend class and complete the work, but with little indication of excitement, commitment, or pride in mastery of the curriculum. In contrast, engaged students make a psychological investment in learning.”¹⁷ They continue: “Meaningful learning cannot be delivered to high school students like pizza to be consumed or videos to be observed. Lasting learning develops largely through the labor of the student, who must be enticed to participate in a continuous cycle of studying, producing, correcting mistakes, and starting over again. Students cannot be expected to achieve unless they concentrate, work, and invest themselves in the mastery of school tasks. This is the sense in which student engagement is critical to educational success; to enhance achievement, one must first learn how to engage students.”¹⁸

This perspective is given a boost from retrospective studies of deep learners. This work looks at individuals who have become deeply knowledgeable and skilled in their domains and asks them how they arrived where they did.¹⁹ The general pattern is that people initially become interested in their domains by playing around in those fields (for example, by splashing in a pool or experimenting with a musical instrument); then they begin to engage in deliberate practice under the supervision of a coach or someone with more experience in the domain; next their identities gradually shift to reflect their participation in the domain (from “I’m someone who swims” to “I’m a swimmer”); they continue to practice; and then eventually “play” and “creation” reemerge, this time in a much more complex way. We could think of this process as a kind of spiral, in which one returns again and again to the same activities, but each time in a way that is more sophisticated.²⁰

This account of how individuals become deep learners is complemented by work that emphasizes the role that communities can play in this process. To that end, Jean Lave and Etienne Wenger suggest that much of the most powerful learning takes place in communities of practice; these are fields (like midwifery, sculpting, butchering, and many others) in which one begins as a “legitimate peripheral participant” (for instance, an assistant to a midwife) and through the process of observation, modeling, and emulation, is gradually apprenticed into understanding and skills in the domain.²¹ Allan Collins, John Seely Brown, and Susan E. Newman have applied similar insights to more classically academic subjects in their argument for “cognitive apprenticeship,” in which skilled readers, writers, and mathematicians gradually induct members with less expertise into their crafts.²² Such a process brings together many elements that are hypothesized to be important for deep learning: the field sets a standard for what good work looks like; there is a significant role for coaching, modeling, and feedback;

the desire to do what leading practitioners do provides direction and motivation; and the task is grounded in a human activity that has intrinsic value. The image of moving from a “peripheral participant” to a more central one is also consistent with the language of increasing “depth.” From this perspective, deepening one’s learning in a given domain happens in part by becoming more centrally enmeshed in a domain-specific community, which links one’s individual growth to one’s social position. It also suggests a shift in role from passive observer to active participant.²³

Taken together, we posit that deeper learning emerges at the intersection of the following three elements: mastery, identity, and creativity. Mastery captures the dimensions of deeper learning that are tied to substantive knowledge of content, transfer of this knowledge, pattern recognition and expertise, and understanding the structure of a field or discipline. Identity captures the way in which deeper learning is driven by intrinsic motivation, the way it is fueled by learners’ perceptions of the relevance of the content, and the way in which learning becomes deeper as it becomes a core part of the self. Creativity captures the shift from receiving the accumulated knowledge of a subject or domain to being able to act or make something within that field; taking this step builds on one’s understanding of a domain (for example, an analysis of how a play is written) and incorporates it into a creative act (writing a play). In later chapters, we will track how the schools we saw are faring in creating opportunities for mastery, identity, and creativity.

One terminological note: we refer to “powerful learning experiences” when we are referring to a particular classroom or moment—powerful learning can happen in an hour. We use the term “deeper learning” when we are discussing arcs of learning that develop over time, because we think that deep learning is best understood in terms of lengthy trajectories. Mastery, identity, and creativity intersect, Venn diagram style, in powerful learning experiences; they also act as a reinforcing spiral that accumulates over time to produce deep learning.

**From Effective to Ambitious Schools**

While there are multiple resources one can draw on to assemble a picture of the nature of deep learning, the literature on how to build public schools that would achieve those qualities is surprisingly sparse. There is a body of work that goes back to Ronald Edmonds and others in the 1970s, under the label of “effective schools,” describing the qualities of schools that have outperformed their contemporaries on standardized tests. This literature emphasizes the importance of high expectations; creating an orderly, safe climate; use of data to improve practice; and, in some versions, the right of the leader to make core decisions about the school.²⁴ Largely missing from these studies, however, is an account of how the described positive traits connect to the instructional core—the triangle connecting the teacher, students, and curriculum.²⁵

More recent work by Anthony Bryk and his colleagues on “organizing schools for success” seeks to build on this earlier literature and to connect it to the instructional core. They argue that developing both professional capacity and an “instructional guidance system,” which helps teachers to know what and how to teach, are critical to academic success, but so is integrating these components into a comprehensive package of school supports comprising school leadership, parent-community ties, and a student-centered learning climate.²⁶ This work builds on the now sizable literatures on professional learning communities, relational trust, organizational learning, and instructional leadership.

Missing from these studies, however, is an account of what it would take for schools to move toward deeper learning, or what the academic literature calls ambitious instruction. Much of the Bryk research was conducted in Chicago elementary schools in the 1990s, all of which, though they varied some on test scores, were subject to low-level state tests and were not seeking ambitious instruction. More

generally, as Paul Cobb and Kara Jackson point out, organizational researchers have largely avoided the discussion of what makes for good pedagogy, a gap that limits the utility of their conclusions:

Research on large-scale instructional improvement has traditionally been the province of educational policy and educational leadership. While much can be learned from these studies, most of this work does not take a position on what counts as high-quality teaching but instead operationalizes it in terms of increasing student test scores irrespective of the quality of the tests. In the course of our work … it has become increasingly evident that views on what counts as high-quality mathematics teaching matter when formulating strategies or policies for instructional improvement.²⁷

At the same time, there has been an increasing scholarly interest in “ambitious instruction”—instruction that moves away from low-level tasks, asks students to develop ideas and interpretations, and is otherwise consistent with much of what we have described as deeper learning. But although this literature has focused on describing good classrooms and, more recently, on implications for teacher preparation, there has not been an equivalent interest in schools.²⁸ In short, researchers have explored ambitious instruction and effective schools, but very little attention has been paid to ambitious schools, which were the focus of our study. (Note that while “ambitious” has been the favored term in the literature, in lay language “ambitious” is not necessarily a positive quality; in fact, we later critique some schools for being too “ambitious” in terms of credentialing and, thus, not focused enough on powerful learning. Hence, we will use “deeper learning schools” in this book.)

**An Overview of Our Six-Year Study**

How do American high schools stack up against the goals of deeper learning? As we alluded to in the Introduction, the overall picture is not pretty, although we did find some bright spots.

While we describe our sample and methods in more detail in the Appendix, a brief summary here is in order. In total, we visited thirty schools across the United States. All of these schools had been recommended as offering deeper learning, “twenty-first-century skills,” or particularly rigorous traditional learning. Recommendations had come from a survey we sent to leading researchers, district and state policy leaders, charter management operators, and other knowledgeable observers. We also scoured lists published by magazines or other venues that honor “top schools.” Our goal was to study the variety of approaches to deeper learning that schools were taking and to learn from those that were doing the best at this task.

Table 1.1 provides a summary of the schools that we visited. The group includes a heavy representation of progressive, project-based schools, and / or schools from the Hewlett “deeper learning” network (nine schools). We also visited four “no excuses” schools. While some see their controlling approach as the antithesis of deeper learning, they constitute one of the leading school-reform models in the United States and send large numbers of high-poverty students to college; thus, they seemed worthy of examination. We went to five International Baccalaureate schools, which seek to use IB as an anchor to create “deeper learning.” We also went to three comprehensive high schools. Table 1.1 describes the orientation, size, and demographics of each of the schools in our sample. While we tried to capture some of the range of diversity of the American high school, we oversampled on schools that served high-poverty, working-class, and minority students.

This is not a representative sample of American high schools. It is rather a strategically chosen sample designed to maximize the variety of contemporary approaches toward promoting deeper learning in public high schools. As such, it is heavier on charter schools, smaller schools, and schools that have a thematic orientation because these were the schools that had been granted the freedom to break the mold and innovate toward deeper learning. Since significant research has already been done on the comprehensive high school, we sought instead to examine in detail the different kinds of schools that have been developed in the past few decades, in part due to the charter movement. That said, we did include some traditional comprehensive schools in our sample, and we discuss one of them in detail in Chapter 5.

Table 1.1 Comparison of Schools in the Deeper Learning Study of the American High School Name (pseudonym) School Type

Deep Dive Sites (20–30 days of observation)

Dewey High Charter No Excuses High Charter IB High Charter Attainment High District-run

Medium Dive Sites (5–10 days of observation)

Inspire Academy Charter Midwestern Math and Science Academy State-run m Comprehensive High District-run N / A Charter N / A District-run N / A Charter

Shallow Dive Sites (1–4 days of observation)

N / A Traditional N / A Traditional N / A Traditional N / A Traditional N / A Traditional N / A Traditional N / A Traditional N / A Traditional N / A Traditional N / A Traditional N / A Traditional N / A Traditional N / A State-run p N / A Charter

N / A Charter N / A Charter N / A Charter N / A Private N / A Private N / A Private

In particular, our three deep dive thematic schools—a project-based school (Chapter 2), a no-excuses school (Chapter 3), and an International Baccalaureate school (Chapter 4)—offer ways to examine three of the most prominent approaches to re-envisioning American schooling for the twenty-first century. The project-based school was part of Hewlett’s “deeper learning” network, which encompasses ten progressive networks of schools, more than five hundred total, serving more than 227,000 students in forty-one states.²⁹ There is no similar network of networks of no-excuses schools, but when we totaled the students in ten of the largest no-excuses networks, we similarly found that there were more than five hundred schools, serving more than 223,000 students.³⁰ If either of these networks were districts, they would be larger than Dallas or Philadelphia, and more than twice as large as Baltimore, Denver, or San Francisco. A 2015 study measuring charter orientations across seventeen cities found that “no excuses” and “progressive” were consistently the two largest categories of charter schools.³¹ They represent opposing theories of action about what a good education entails, which makes them interesting poles for our study. It is also worth noting that almost all of these schools were created since 1994 (and most were created since 2000); if the goal is to examine new approaches since the last major studies of high schools in the 1980s, these schools provide that opportunity.

International Baccalaureate is an older approach that dates back to 1968. But it, too, has grown significantly in recent years in the United States: from three hundred schools using the IB program in 1999 to more than 1,800 today.³² Originally intended for elite students abroad who wanted to apply to American or British universities, it has increasingly become a model for public schools seeking to serve poor students; the latest statistics suggest that 46 percent of IB schools had a student body in which at least 40 percent of the students were receiving free or reduced-price lunch.³³ Substantively, IB stands somewhere between the progressive and no-excuses approaches, emphasizing mastery of traditional academic disciplines but favoring an inquiry-oriented approach.

At each of these schools, we utilized the standard tools of the qualitative researcher. We observed classes; interviewed students, faculty, and administrators; hung out in the hallways; and went to practices, rehearsals, games, and performances. In total, we spent more than 750 hours observing in schools and interviewed more than three hundred people. This was an active process—we started by getting a representative picture of a school by attending a variety of classes and interviewing the principal and some faculty and students; then we honed in on areas that were of particular interest. We also found that some schools had more to teach us than others. We did deep dives at three of our most successful schools and at one large comprehensive school, where we spent between twenty and thirty days at each. These became the subjects of Chapters 2, 3, 4, and 5. We did medium dives in six other schools—spending five to ten days at each—these were generally schools that were trying to do many of the same things as the more successful schools but were struggling; they became “negative cases” for our sample. We spent one to four days at the other twenty schools—short visits intended to marry the depth of our ten deep- and medium-dive cases with some breadth. We also did a deep dive on the theater program featured in Chapter 6—following the creation of a production from inception to performance. Finally, we spent extensive time with a subsample of seven of the most compelling teachers we found; they became the subject of Chapter 7. The Appendix describes our process in more detail, including the way we structured our classroom observations.

**The Gap between Aspirations and Reality**

The most striking overall pattern in our data was that our aspirations before beginning the study bumped up against a disappointing reality. We had hoped to be inspired; instead we felt profoundly disheartened.

Here is one representative example, which evokes the aphorism from the 1980s’ studies of high schools, “I pretend to teach, you pretend to learn”:

It is a Thursday morning and Mr. Picket’s tenth-graders are doing a round-robin oral reading of a scene from Romeo and Juliet. Mr. Picket has prompted the students to annotate their texts as they go; they are supposed to draw swords next to lines about hate and hearts next to those about love. Only three of the eighteen students appear to be marking anything. The rest sit quietly, some appearing to follow along in their photocopied text, others staring down at the floor.

Every few minutes, Mr. Picket pauses the reading and asks questions that require one-word answers: “What are most of these lines talking about—love or hate?” “Which family do these lines talk about— Montague or Capulet?” Although a few students mutter answers, Mr. Picket usually answers the questions himself. Eventually he notices that most students are not marking up their texts. “C’mon, you guys,” he says. “Somebody tell me: what’s one place you can draw a heart?” After a long silence, he sighs in exasperation. “Okay, I’ll give you a freebee,” he says, and reads a few lines out loud. “Everyone draw a heart there,” he says when he is finished.

After the group has finished the scene, Mr. Picket hands out a worksheet with some follow-up questions: “What happened in the fight scene between Mercutio and Tybalt?” “What did the characters say about hate and love?” Each question has two lines provided for student responses. The students are mostly quiet and about two-thirds of them appear to be working on the task. The rest sit quietly. Mr. Picket sits at his desk, frowning down at what appear to be some ungraded tests. After fifteen minutes, a student loudly falls out of her chair; she and three girls nearby burst into laughter. Mr. Picket frowns and prompts the girls to “get started,” after which they quiet down.

Eventually, the bell rings. Mr. Picket collects the worksheets but says nothing to those students who hand in blank pages. While the students pack up their bags, I ask one girl what the purpose of today’s class was. She hesitates before answering. “I don’t know—I don’t really see a point. It’s English class so we just read stories and stuff,” she says. Then, after a minute, she gestures toward a male student at another table. “You should ask him,” she says. “He knows stuff like that.”

To be specific, one part of the problem was the level of cognitive rigor. In classroom after classroom, students were not being challenged to think. Roughly speaking, about four out of five classrooms we visited featured tasks that were in the bottom half of Bloom’s taxonomy, asking students to recall, comprehend, or apply, rather than to analyze, synthesize, or create. Another way of putting this: if we stapled ourselves to a student for a day, we likely would encounter one class, or occasionally two, that presented genuine opportunities for critical thinking or analysis. Consistent with prior studies, teacher talk far outran student talk; the modal task for students continues to be to take notes on teacher delivered content about pre-established knowledge. Math tasks continued, on the whole, to be algorithmic, asking students to apply existing formulas to a series of practice problems.

What we observed in our “recommended” schools with respect to cognitive rigor was consistent with national evidence about the nature of tasks in classrooms. The largest ever videotaped study of American classrooms, grades four through eight, in which more than seven thousand videos were scored by multiple observers across four different validated instruments, found that American teachers scored high in “behavior management” but were weakest at “analysis and problem solving, regard for student perspectives, quality of feedback … and content understanding.” Of these competencies, “analysis and problem solving” was the least frequently observed, seen in only about 20 percent of lessons (similar to our one in five estimate). In math, only 1 percent of lessons scored in the top rating for analytic complexity, while 70 percent received the lowest rating.³⁴ Similar findings were reported in a large-scale analysis by Education Trust, which focused on the tasks that middle-school students are

asked to carry out. In evaluating nearly 1,600 tasks at six middle schools, analysts used Webb’s depth of-knowledge scale to examine the complexity of the tasks that students were asked to complete. They found that “only 4 percent of assignments asked students to think at higher levels.” Conversely, “about 85 percent of assignments asked students to either recall information or apply basic skills and concepts as opposed to prompting for inferences or structural analysis.”³⁵

Another frequent pattern we observed was the tendency of teachers to undermine potential opportunities for higher-order thinking. Teachers sometimes asked questions that could elicit open ended responses; for example, in an English class a teacher might ask students about themes or symbols they noticed while reading. But once students began to respond, teachers would appropriate the early shoots of what students were trying to say (often only a few words) and incorporate them into their own longer comments. We seldom heard students speak more than a sentence or two at a time. This is consistent with prior research by Martin Nystrand and Adam Gamoran, which found, in a study of 224 lessons across nine high schools, that free-flowing discussion in ninth-grade English classrooms averaged fewer than fifteen seconds a day!³⁶

A related issue was what we came to call the “Waiting for Godot” pattern. Typically we would visit a classroom as part of what was announced to faculty as our “deeper learning” study. We would see a class like the ones just described, then the teacher would tell us, on our way out, that she or he knew that this class wasn’t deeper learning but it was building the foundation for a deeper task that would come later in the unit. We would then go back, day after day, to the same classroom, but find that the “deeper” day never came. While there is no world in which there isn’t some time spent in learning new skills or building basic factual knowledge, it was notable that the best teachers we saw often started with a puzzling question or authentic overall task, then integrated the content and skill building into the unit. As one observer quipped, most teachers saw the process as “Bloom as ladder”—basics now, higher-order skills later—whereas the most compelling teachers we saw seemed to have a “Bloom as web” approach, meaning that they were moving back and forth between lower-order and higher-order tasks.

We also saw differences across tracks, consistent with prior research. Students in AP and honors tracks more frequently were given some opportunities to discuss texts, look at primary sources, and engage in discussion. Students in the lower tracks (now often euphemistically relabeled as “college prep” or “advanced college prep”) spent more time simply reading texts aloud and copying notes from PowerPoint presentations. Because these tracks were often sorted along class and racial lines, they also reproduced inequalities in what students were being offered. There was one memorable occasion when we, separately, each observed a history class in the morning—one was filled with documents and primary-source analysis, and the other featured one of the dullest lectures you will ever hear on the Industrial Revolution. Later that day, as we were discussing our respective history classes in a small lunch area, a woman walked in to grab her food out of the fridge, and we realized we had seen the same woman teaching in different tracks. This suggests that the problem is not so much with the teachers who teach low-track students as with the existing knowledge base about how to do so. We did encounter some teachers who had found more successful ways to teach students in the lower tracks and some schools that had moved away from tracking entirely. We will discuss both later.

Another pattern was mistaking faster for deeper. We saw this in classrooms across curricular levels, but it was particularly prevalent in honors and AP courses. Teachers felt responsible for meeting external pacing expectations—whether they came from districts, state tests, SAT IIs, or APs—and the result was that they felt obligated to move through material quickly but not necessarily deeply. In science in particular, labs were often rushed efforts to demonstrate what the textbook said rather than opportunities for real investigation. In math or chemistry classes it became about learning more rules or molecules. Students who wanted to do well in school (or whose parents wanted them to) would comply with teachers’ requests and do the expected homework and in-class tasks, but the goal was the grade and not the subject. “Is this going to be on the test?” is alive and well in American high schools.

If one dimension of the problem was cognitive rigor, another major dimension was engagement. In many of the schools we observed, students who had been chattering excitedly in the hall only a moment before sat stone-faced in class. Students told us over and over that they couldn’t see the point of what they were doing, that there was little connection to any real-world application, and that they came to school mainly to see their friends and participate in extracurriculars, or to get to college. A 2015 Gallup poll of nearly a million U.S. students paints a similar picture. The Gallup poll finds that engagement decreases the longer that students are in school: while 75 percent of fifth graders report being engaged by school, the number drops to 41 percent by ninth grade, and 32 percent by eleventh grade. Since students have to be at school to take the poll, even the 32 percent underestimates the level of disengagement, because the most disengaged students have dropped out of school and are not in the data.³⁷ The Gallup poll is consistent with earlier studies that similarly suggest declining engagement as students get older.³⁸

The 2009 High School Study of Student Engagement (HSSSE) offers the most detailed recent examination of engagement patterns in American high schools. The survey, which sampled more than 42,000 students from 103 schools in twenty-seven states, found that 66 percent of students say they are bored daily at school, and one in six say they are bored in every class.³⁹ Students gave a range of familiar reasons for this boredom, including that the “material wasn’t that interesting” (82 percent) and “lack of relevance” (42 percent). Teachers’ pedagogical choices were another reason for their disengagement.⁴⁰ Pedagogies that we know to be most common in high schools, like “teacher lecture,” were rated as engaging by only 26 percent of the students. Conversely, modes that are less frequently used, like “discussion and debate,” were seen as engaging by 61 percent of the students.⁴¹ While it is certainly possible for material to be superficially engaging without going “deeper” (as we will discuss shortly), it is notable that the most frequent pedagogical mode has students sitting passively, a mode they themselves overwhelmingly report leads to disengagement and boredom. Conversely, research on more positive classrooms—ones that were described by observers as meeting the criteria for what Newmann called “authentic intellectual work”—suggests that such practices are correlated with higher levels of engagement.⁴²

According to the HSSSE study, levels of engagement also varied along axes of stratification: girls reported more engagement than boys; white and Asian students were more engaged than black and Latinx students; students who did not receive free or reduced-price lunch were more engaged than those who did; students in honors and advanced classes were more engaged than those in lower academic tracks.⁴³ These patterns were consistent across three dimensions of engagement, including cognitive / intellectual, social / behavioral / participatory, and emotional.

The HSSSE study also found that students felt largely disempowered by their education. In the free response portion of the study, students wrote things like:

“This survey is pointless and stupid. Nothing will be done based on anyone’s answers.”

“Why would we fill these out and find no change when you get others’ hopes up by doing this, and it fails?”

“Most of the questions are self-explanatory just by walking into the school.”

“This is pointless. Nobody is going to look at this.”

“If this school has taught me anything, it is that my opinion matters not here.”

“This school does not allow students to have a voice in decision-making, even though they say they do.”⁴⁴

Teachers in our study were well aware that students were disengaged from their subjects, but many were baffled by how to respond. Some tried the “you need to learn this because you will need it for college and beyond” approach, but this strategy made little headway with adolescents who tended to think mostly in terms of the now. We also saw the frequent use of hooks that were intended to promote engagement—“write about your weekend”; multiple references to pop culture; and some sharing by teachers about their own lives—but, in our observation, unless these devices were linked to a way to get deeper into the subject, they rarely went anywhere. Further, at times we thought they undermined the teacher’s credibility with respect to the subject, as in the case of a young history teacher who ended a class otherwise devoted to the Crusades by asking students to name their favorite cartoons.

Many of the reasons for this disengagement seemed to lie less with the teachers than with the constraints imposed by the overall grammar of schooling. We were struck that despite the formal freedoms granted to many of the charter schools we visited, forces of inertia, isomorphism, or lack of imagination made them look not that different from other high schools. If students are going to be asked to move across 1,500 years of history in one ninth-grade year, with dynasties and emperors changing weekly, it would be difficult for Socrates himself to make that subject engaging. It was not a coincidence that many of the most compelling classes we found were electives, which had in some way altered this core grammar—focusing on one subject in more depth and examining it from multiple angles; moving away from batch processing to individualized pathways of learning; doing more hands on work; or connecting student effort and energy to a product or project that would be presented to an outside audience (we discuss this further in Chapter 5).

At the same time, a different kind of problem emerged in progressive or project-based schools or classrooms, where we sometimes thought that teachers were mistaking student-centered learning or active learning for deeper learning:

It is a Wednesday afternoon and the ninth-grade students enrolled in Mr. Cohen’s and Ms. Lattimer’s co taught physical science course are sewing stuffed-animal versions of endangered animals. They have been sewing for three straight class periods, and for many the end is finally in sight. Soft music from a student-generated playlist fills the room. Most students hunch over their stuffed animals, but a few early finishers work together on laptops, finding photos of their animals to print out and use to decorate the room during the upcoming exhibition.

Ms. Lattimer sits in the corner with a small group, demonstrating how to add embellishments such as buttons. Mr. Cohen circulates, talking with individuals and asking partners to explain how they have divided responsibilities. At some point, he makes an announcement to the whole group: “Before you sew everything closed, make sure that you’ll be able to access the circuits to turn them on and off.” He is referring to the circuit boards that students made the previous week by sewing LED lights to small circuits with conductive thread. The LEDs will become the stuffed animals’ eyes.

Since the project is designed to draw together science and maker education, we ask students to talk about their learning across each of these domains. Students talk animatedly about how they got to choose their animals and about how they have never cared this deeply about making sure that a handmade artifact comes out just right. They are particularly excited about next week’s exhibition, where they will sell their stuffed animals to visitors in order to raise money for animal advocacy organizations of their choice. When we ask about how the circuits inside the animals work, however, they falter. One admits, “I know how to make the LEDs light up, but I don’t really know why—I just followed the teachers’ directions.” Similarly, when we ask what they learned about their animals, many of them have very little to say. “We have to choose pictures that will make people care about them and want to donate to help keep them from going extinct,” a student explains. “We didn’t really do much other than that.”

This class was typical of some of the more “fun,” “progressive” or “maker space” classrooms we encountered. Here the problem was confusing “hands-on” for “minds-on” and it involved doing in ways that did not help students see the underlying conceptual structures of their fields or disciplines. While, as we will see, good project-based learning can be very “deep,” there was definitely a tendency among some teachers we observed to mistake student-centered or activity-heavy learning for deeper learning.

**Bright Spots**

The bad news coming out of our study, then, is that American high school education is not as far along as some accounts might suggest when it comes to enacting deeper learning at the whole-school level. The good news is that such learning is happening somewhere in virtually every school that we visited— including regular public schools that were not especially known for “deeper learning.” This became a predictable dimension of our work: we knew that if we shadowed a given student over an entire six period day, we inevitably would encounter one or perhaps two standout practitioners who had figured out how to infuse their classrooms with rigor and vitality. This finding is consistent with the Gates Foundation Measures of Effective Teaching study, which estimates that one out of every five middle school classrooms features at least a moderate amount of critical thinking and analysis.⁴⁵ This statistic can be seen as disheartening—only one in five!—but it also can be construed as a source for hope. After all, if there are 3.7 million teachers working in the U.S. public schools, then there are more than 700,000 who have some degree of capacity to teach for deeper learning. It is also good news in that it suggests that these classrooms do not exist solely in schools that are somehow “special”—charters, private schools, magnets—but can and do occur in regular public schools throughout the United States.

Further, to categorize it this way—some teachers are offering deeper learning and some are not— invokes firm boundaries, whereas a continuum of skill would be a more accurate image. It also implies that teachers’ level of skill is fixed rather than being a developmental journey from which we observed a particular moment. Another piece of good news, if you would consider it such, is that virtually all of the teachers we interviewed aspired to create classrooms that are intellectually lively places, where students make sense of complex questions and where there is spontaneous energy rather than forced compliance. Thus while there was a huge gap in realizing this vision, reflecting the absence of an important set of mechanisms in the field, the vast majority of teachers we interviewed were at least aspiring to desirable classroom qualities.

Relatedly, if, as is frequently posited, the new three Rs are “rigor, relevance, and relationships,” while many teachers we observed were struggling with rigor and relevance, they were stronger on the relationships piece. Virtually all of the students we talked to said that at least one of their teachers cared about them, and they often defined their best teachers as “she is the one who took an interest in me; she is the one who will stay after school and help us.” The HSSSE survey referred to earlier reflects similar findings—two out of three students believed that “most” or “all” of their teachers wanted them to do the best work they could; 88 percent said that there was at least one adult in the school who cared about them.⁴⁶ The classrooms that we visited were often friendly if not intellectually rigorous places—teachers not infrequently shared information about their own lives, sometimes inquired about students’ lives, and often used humor to lighten the mood.⁴⁷ There was a class gradient to this—the more affluent the students, the looser and more relaxed the culture, with the no-excuses schools being the most disciplined and least relationship-oriented in our sample. Even in the no-excuses schools, though, students said that teachers cared about them, and that they displayed that care by putting in extra time planning their lessons and in other ways, such as trying to get them to college. On the whole, at least in this recommended sample of schools, students consistently reported that teachers

cared quite a bit about them; those teachers were just struggling to find ways to translate that care into rigorous and engaging instruction.

If our overall story is about inconsistent patterns of deeper learning across different schools, we did find some departments and programs that consistently embodied some or all of its qualities. And among the thirty schools that we visited in total, we did encounter a few that were moving toward the consistent realization of deeper learning practices that we sought at the outset. We describe three of these schools in detail in Chapters 2, 3, and 4.

Visiting a range of schools also helped us to see that some schools were excelling on at least one corner of the mastery, identity, and creativity triangle, and thus could offer something to their students and to the field, even if they were struggling to bring all of the elements together. Such schools, we realized, can be clustered into rough groups that share a set of underlying values, as well as a theory of action about how these values can be instantiated through organizational structures and classroom pedagogy. For example, a number of the schools and networks in the Hewlett deeper learning network share an aspiration to support students in developing the general competencies that Tony Wagner describes as the “seven survival skills” necessary for the twenty-first century.⁴⁸ These schools emphasize the development of original work through engagement in interdisciplinary, collaborative, real-world-aligned projects—a model that often entails block scheduling, cross-subject teaching, and the use of performance or portfolio-based assessments. By making these changes to the grammar of schooling, these schools, we thought, were better able to give students opportunities to exercise creativity and to form deeper identities connected to their work. They were weaker on traditional forms of academic mastery as measured by tests or by the levels of intellectual power and academic fluency that we observed among their students.

A second group of schools sits much closer to the mastery node of the triangle, organizing themselves around the goal of supporting students in developing deep knowledge, skills, and competencies within the traditional academic disciplines. These schools, which include some that have adopted the Advanced Placement (AP) program, some that have adopted the International Baccalaureate (IB) program, and a few that have developed their own inquiry-based approaches, aspire to help students learn to do what David Perkins calls “playing the whole game” of the traditional academic disciplines—not just superficially learning about historical events, for example, but emulating the processes of historical inquiry through analyzing primary sources, debating competing interpretations, and conducting original research.⁴⁹ (Whether Advanced Placement courses constrain or support deeper learning is a complex question that we discuss in more detail in Chapter 5.)⁵⁰

Schools organized around the International Baccalaureate program are trying to go even one step further, striving to help students understand how the core epistemologies (“ways of knowing”) for each discipline compare to others. These processes could sometimes inspire students’ creativity and help them develop academic identities, but they frequently did not result in the energy and vitality we observed in some of the project-based approaches described earlier.

A third group, which notably includes schools in the Big Picture Learning Network, focuses primarily on the identity node of the deeper learning triangle, striving to help students develop a stronger sense of themselves as learners, citizens, and soon-to-be professionals by offering them ongoing opportunities to learn from out-of-school mentors and to make extensive choices in their in-school course of study. These schools tend to bank heavily on structures that support individualized pathways to graduation: online courses, student-chosen internships, elective courses, and “looping” advisories. These schools, many of which were designed for students who had not fared well in traditional high schools, seemed to have succeeded in building warm, purposeful communities that had re-engaged students in their education. This was no small achievement. At the same time, they were lacking when it came to conventional academic mastery.

How to view these thematic schools is a matter of perspective. We choose to see the glass as half-full: schools in each of these three veins have understood something important about how to stimulate their

charges. Part of the goal of this book is to think about how we might put these pieces together, and, in so doing, generate classrooms and schools that include all three corners of the deeper learning triangle.

The outlook gets brighter still if we widen the lens to include elective classes and extracurricular activities. Counterintuitively, at a number of the schools we visited the deepest learning seemed to be concentrated in these so-called “peripheral” contexts. Spanning the gamut from visual art and film scoring to theater and model United Nations, such contexts often harness the power of an apprenticeship model in which real-world domains of professional practice provide standards for good work, teachers model expertise and conviction, and students gradually are inducted into more and more complex aspects of the professional activity. This constellation of qualities infuses the learning with depth, meaning, and a palpable sense of momentum—the very qualities that are often lacking in mainstream academic classes. While we recognize that electives and extracurriculars are structurally “special”—students self-select into them based on interest and / or ability, there are rarely external pressures for coverage, and so on—we also think that there is something powerful to be learned from them about how to engage adolescents in deep learning. By extension, we believe that a critical question moving forward is how schools might be able to infuse more of what happens at their “peripheries” into their core programs of academic study. We discuss in detail aspects of the relationship between the periphery and the core in Chapters 5 (electives) and 6 (extracurriculars), and again, from a wider perspective, in our concluding chapter.

**Why Is There So Little Deeper Learning in Schools?**

As David Cohen notes in his essay, “Plus ça change,” the traditions that promote knowledge as certain and given, teachers as tellers, and students as passive recipients are millennia old. These assumptions continue today, not only in American public schools, but also in public schools around the world, in many private schools, and in universities, all of which, despite their very different organizational contexts, fundamentally subscribe to the notion of teaching as knowledge transmission. These assumptions emerged at a time when adult and religious authority was gospel; very few people had the resources, time, or opportunity to participate in the construction of knowledge; and children were expected to conform to the expectations of adults. The contrary image offered by John Dewey and others—of the student as an active sense-maker, and thus of teaching as an act that stimulates thinking and helps students gradually unfold for themselves the mysteries of science, literature, and other fields —is, as Cohen points out, only a little more than a century old, a late and weak newcomer onto the educational terrain.⁵¹

If the first part of the story is historical and epistemological, the second part is structural. In the United States, the older conception of teaching, knowledge, and learning was reinforced by the creation of what David Tyack and Larry Cuban have called the “grammar of schooling.”⁵² This grammar was established by bureaucrats who built at the end of the nineteenth century the American school system that persists to this day. Key elements of that grammar are age-graded classrooms, division of the curriculum into discrete academic subjects, the creation of different academic tracks, and a teacher centered pedagogy that expects all students to absorb knowledge and skills in lockstep.⁵³ Much of what we saw in classrooms in the early twenty-first century still bears the heavy imprint of this century-old organizational design.

A third factor is the under-professionalization of American teaching. As one of us has argued in a previous book, one of the fateful decisions made when creating the American school system was to place power in a small, mostly male, administrative class, rather than to develop the mostly female teaching force as a full-fledged profession. Professional fields, like law, medicine, engineering, and many others, recognize that the work they are doing is complex and thus have developed professional value

systems and structures appropriate to knowledge workers: they are selective in whom they recruit, develop a knowledge base that undergirds their work, provide lengthy training in that knowledge, and then require those who enter the field to demonstrate this knowledge and skill. By comparison, education in the United States took a different path by placing power in the administrative class and under-developing the needed professional mechanisms: teaching is an unselective field, featuring short training and low entry requirements, which are frequently waived altogether when there is a teacher shortage. The result of this non-system is wide variation across classrooms, just as we observed. Teaching in the United States also does not have a career ladder that includes opportunities for advancement and for the establishment of highly paid master teachers, which some other countries have. The consequence is that it is hard to draw a talented, capable, and diverse workforce into teaching, which, in turn, only exacerbates the desire for administrative control, perpetuating the downward spiral.⁵⁴

**The Hand of History**

Observational studies of American classrooms from the 1880s to the present have repeatedly shown the ways in which these forces have produced and reproduced a status quo of teaching as transmission, or what Paulo Freire called “banking” education. For example, in 1893, Joseph Mayer Rice, a pediatrician by training, conducted a tour of American school districts that in many ways paralleled the journey we took 120 years later. He found that the vast majority of classes focused on drilling facts into the minds of children and on recitations of what they read in textbooks. He found few examples of “new education,” in the form of experiments, creative writing, or opportunities for students to think critically.⁵⁵ Larry Cuban’s famous study of teaching from 1880 to 1980 found that similar patterns persisted across the twentieth century: while there was some softening of classroom practice toward becoming moderately more child-centered (especially in elementary schools), on the whole the pattern was subject over students, teacher talk over student talk, and most teaching from the textbook.⁵⁶ When researchers returned to high schools in the 1980s, they again found similar patterns. For example, John Goodlad’s large-scale study of high schools in 1984 found that “75 percent of class time was spent on instruction and that nearly 70 percent of this was ‘talk’—usually teachers to students. Teachers out-talked the class of students by a ratio of about three to one.… The bulk of this teacher talk was instructing in the sense of telling. Barely 5 percent of this instructional time was designed to create students’ anticipation of needing to respond. Not even 1 percent required some kind of open response involving reasoning or perhaps an opinion from students.”⁵⁷ As Dan Lortie famously argued, most teachers teach as they were taught, and thus the school system has a built-in mechanism for its own reproduction.⁵⁸

There have been some exceptions to this dominant pattern, but they have been concentrated in “niches” and have been largely bastardized when tried across whole public systems.⁵⁹ For example, Dewey’s rich vision of progressive education—an interdisciplinary hands-on curriculum that links theory to practice, and students to subjects—has been realized in full-throated ways in small private schools and occasionally in public elementary schools in affluent areas where there is sufficient parental support.⁶⁰ But when these ideas have been transported into public schools, particularly large high schools serving a more diverse array of students, they have tended to be radically watered down: home economics classes, life-adjustment education, and vocational education, all of which have drawn on the practical but eschewed the academic.⁶¹ Schools have taken the part of it that was easier to do—offering more practical courses to less academically inclined students—but not the harder part: using the practical as a springboard to academic content. In many ways, the problems with life-adjustment education are the ancestors of the “fun-but-not-rigorous” progressive schools we described earlier.

Throughout this history, the dividing lines of race and class have played a critical role in determining who has had access to deeper learning experiences. Faced with massive immigration and a rapidly growing high school population at the beginning of the twentieth century, reformers built a school system that created separate pathways for students of different abilities and / or family backgrounds. Emboldened by the then new science of intelligence testing, these reformers created an explicitly differentiated school system that funneled more advantaged students into more conventionally academic tracks and poorer, immigrant, and working-class students into vocational or less demanding academic tracks. In the second half of the twentieth century, these inequalities were exacerbated by the growth of residential segregation and the deindustrialization of cities, developments that led to increasing disparities between city and suburban schools.⁶² The result, according to both quantitative evidence and closely observed ethnographies of classrooms, is that schools and tracks that serve upper- middle-class students more frequently feature interactions in which students are given opportunities to express their thinking and grapple with complex or open-ended questions, whereas schools or classes serving working-class or high-poverty students tend to be dominated by teacher talk and to feature worksheets and other low-level tasks.⁶³ Some scholars have argued that there is a correspondence between the ways in which students are treated in school and the occupational positions they are expected to hold, with upper-middle-class students learning the managerial skills of assessing information, weighing options, and making decisions, and working-class and high-poverty students learning how to follow rules and comply.⁶⁴ In recent years, well-meaning efforts to close the achievement gap have sometimes unintentionally reified this divide, as disadvantaged students who are in danger of failing state tests get increasing amounts of test prep and a narrowing of the curriculum, whereas more advantaged students get a more varied and stimulating curriculum.⁶⁵

Finally, this history also underscores perhaps the most important reason that there has not been more deep learning in American schools: limited public demand for it. The qualities associated with deep learning—thinking critically, grappling with nuance and complexity, reconsidering inherited assumptions, questioning authority, and embracing intellectual questions—are not widely embraced by the American people.⁶⁶ For example, the 1960s National Science Foundation curriculum, Man: A Course of Study (MACOS), which invited students to study another culture as part of an anthropological examination of what it means to be human, died at the hands of a fundamentalist backlash.⁶⁷ MACOS is just one example among many of the ways in which efforts to have students confront difficult questions have been rebuffed by the more conservative elements of our electorate. Thus creating deeper learning is not only about improving pedagogy but also about building demand for a different approach to learning.

**Constraints and Omissions**

Another way to understand the paucity of deeper learning is to think in terms of the negative forces that shape American high school classrooms today. We categorize these as constraints and omissions. To start with barriers at the school level, engaging students in sustained, authentic, high-cognitive demand tasks requires structures and supports that many high school teachers simply do not have. Compared to their elementary-school counterparts, they teach many more students and see each student for many fewer hours each day, making it difficult to build relationships and to create opportunities for sustained inquiry.⁶⁸ As one eleventh-grade science teacher ruefully reported, “Forty seven minutes is just enough time to get the kids really interested and engaged in whatever you want them to be learning, and then the bell rings and you have to start pretty much from scratch the next day.” Organization into disciplinary subjects can compound this sense of fragmentation, limiting opportunities to support students in drawing connections and transferring knowledge across disciplines. Large classes and high teacher loads (the total number of students each teacher teaches across his or her classes) also work against individualized attention and substantial teacher feedback on student work. Beyond such systemic constraints, at a subtler level, high schools seem to reflect the profound

dis-ease that characterizes our society’s stance toward adolescents. Teenagers are expected to sit for hour after hour passively listening and following directions but are seldom engaged in tasks that involve real choice and latitude—likely, in part, because doing so would involve ceding some of the rigid control that often characterizes teacher-student relationships in secondary schools, especially secondary schools serving poor and / or minority populations.⁶⁹

Another major structural constraint—the one most frequently cited by teachers themselves—is the pressure for content coverage associated with external assessments such as state tests, SAT IIs, and even some Advanced Placement exams. This pressure has intensified in recent years, accruing particular urgency in low-performing schools, where administrators worry about making adequate yearly progress as measured by state standardized tests, but it is also being felt in upper-middle-class schools, where students are competing for acceptance to top-tier colleges. Similarly, district-mandated scope and sequence expectations emphasize breadth over depth, asking teachers to move quickly through large swaths of material with little opportunity to pause for more in-depth investigations. Finally, teacher evaluation systems can also constrain opportunities for deeper teaching by focusing on surface aspects of teaching—such as whether objectives are on the board—and, depending on the rubrics, can be misaligned with more inquiry-oriented teaching approaches.

The presence of these traditions and pressures is certainly a key reason that so few teachers even try to reorganize their practice around deeper learning goals. An equally powerful reason, however, is the absence of structures and processes that could help them to do so. Chief among these are sufficient time, resources, and professional learning opportunities to learn how to teach in new and different ways. For example, in the 1950s and 1960s, spurred by Sputnik, reformers, including Jerome Bruner and others from higher education, tried to retool the teaching of core subjects to align with how scholars in the disciplines actually investigated those subjects. Much of what they were attempting to do parallels our discussion of deeper learning. With support from the National Science Foundation, they developed new curricula to match. But accounts of this effort show that the reformers did not make a compelling enough case to teachers about why they should change, nor did they acknowledge that the shift would greatly increase the complexity of their work. There was also no sustained effort to build teacher capacity for the new ways of teaching.⁷⁰ The result: evaluations of the reforms a decade later showed that a small number of ambitious teachers were using the new math, the revised science, and the new social studies curricula, but, once again, most teachers were still teaching as they always had.⁷¹

Similar omissions plague the contemporary education sector as a whole. Essentially, current teacher practice is the product of a vicious cycle that has yet to be disrupted and reversed at any kind of scale. The realities that we described earlier in this chapter mean that, during their own experiences in high school, teachers were unlikely to have experienced much deep learning, especially in their core academic classes. Similarly, the widely acknowledged weakness and incoherence of American teacher preparation programs mean that, as they begin their careers teachers are unlikely to have learned anything substantive about teaching for deep learning.⁷² Finally, while we saw some progress in breaking down the isolation that historically has plagued teaching as a profession, we did not see much evidence that teacher collaborations were leading to more rigorous instruction.⁷³ On the whole, we observed that even if teachers yearn to infuse their classrooms with greater vitality and depth, they lack rich models for what these qualities might look like and what it might take to generate them—so they default to teaching in the ways that they themselves were taught.

**How to Support Deeper Learning: A Preview**

Against this backdrop, it becomes easier to understand what we witnessed in schools. Schools that were trying to create challenging, rigorous, purposeful education had to combat a series of historical and contemporary forces that were working directly against their objectives. That these forces included omissions as well as constraints meant that, in order to achieve their goals, schools had to supply themselves much of what was missing.

We develop our arguments in more detail in later chapters, but as a preview, we found that:

To close the gap between espoused values and enacted practices, schools need a specific and granular vision of deep learning and a carefully crafted organizational design that enables them to realize it. Because teachers are not typically trained for deeper learning, schools have to organize much of this learning themselves if they are going to create consistent levels of quality across classrooms. Specifically, we found that the schools most successful at realizing their visions, while varied in their pedagogical approaches, had generated a specific and finely detailed vision of learning, developed extensive opportunities for adults to learn that vision, organized that adult learning in ways that were symmetrical to the ways in which they expected adults to teach students, made student and teacher work visible to create some accountability, developed a collective identity that engendered teacher and student ownership of the vision, and aligned organizational processes to support all of these efforts. Even for schools working within external systems, like International Baccalaureate, that could provide the external “exoskeleton” to support deep learning, a parallel internal “endoskeleton” with these features was required.

Achieving deeper learning is challenging because it requires significant unlearning. For traditional teachers, moving toward giving their students deeper experiences in their domains entailed substantial loss: of some breadth in pursuit of depth, and of control, as teachers realized that being a teacher didn’t always mean talking in front of the class. Making these shifts was difficult and painful, and even for our most successful teachers it often took many years. Thematically organized schools faced another version of this challenge at the organizational level: No Excuses High was trying to figure out how to reboot its culture of control to prepare students for the more open-ended environment of college; Dewey High was trying to find ways to continue to mount authentic and meaningful projects while integrating the building of foundational skills. For each of these schools, their core DNA, organizational processes, and culture were coherent and oriented in one direction. Integrating new goals was challenging because doing so would require undoing much of what had brought them success in the first place.

Powerful learning experiences integrate seemingly opposing virtues: mastery, identity, and creativity. Whether in classes, extracurriculars, clubs, or elsewhere, students identified their most powerful learning experiences as those that gave them opportunities to develop knowledge and skill (mastery), become intensely connected to a domain (identity), and have an ability to enact their understandings by trying to make something meaningful to them (creativity). Apprenticeship models, in which students tried (and often failed) to do something under the watchful eye of more experienced teachers and students, were particularly well aligned with this integrated mode of learning.

The periphery is often more vital than the core; outside the core classes is a second “grammar of schooling” that is better aligned with powerful learning. The so-called peripheral aspects of school— extracurriculars, clubs, and electives—had a very different grammar than core classes. Here students could make significant choices, they saw purpose in their work, learning by doing was common, depth was privileged over breadth, students were apprenticed to older students, and learning frequently integrated head, hands, and heart. While what happened to students during these peripheral activities was still dependent on the knowledge and skill of the people who led them, the core assumptions that guided these experiences seemed to support rather than constrain their efforts.

Some teachers were able to bring deeper learning to their core classes by taking a very different stance toward learning than most traditional teachers. Because schools are loosely coupled organizations, even though the dominant patterns were grim, there were pockets of deeper learning in almost every school.

The teachers who led these compelling classrooms differed from most of our teachers on a number of interrelated dimensions, which we call their stance toward teaching: they saw the purpose of what they were doing as less about covering material and more about inducting students into the work of their field; they privileged depth over breadth; they saw students as creators and not simply receivers of knowledge; they saw failure not as something to be avoided but as a necessary part of learning; and they tried to create an atmosphere of rigor and joy rather than compliance.

Those teachers who were able to provide deeper learning experiences for students had themselves had a “seminal learning experience” that had inspired them and helped them to see what it would entail to induct the next generation into their fields of study. These teachers could each point to experiences during the latter part of college, in graduate school, or in the real world, when they had begun actually doing the work of the field or domain that they would teach. While they had had many mediocre learning experiences as students, they drew on these rare but powerful learning experiences to generate a different vision of their goals and practices. The implication for teacher preparation as well as for ongoing teacher learning is that more teachers need to have these kinds of experiences if they are going to create something similar for their students.

While some have posited that these methods are appropriate only for advantaged students, our research suggests that students who are most disaffected from school are the ones most in need of new approaches. The teachers who were most effective at providing deeper learning experiences saw the approaches they were developing as particularly important for their most disadvantaged and disaffected students, because they were the ones who were least well served by traditional schooling. The teachers made sensible alterations for students with weaker skills—shorter texts, more careful scaffolding—but their core stance was the same for all students: inducting students into a domain by creating experiences that linked mastery, identity, and creativity.

The system is not oriented toward deeper learning; our most successful examples had to buffer themselves from external pressures. If we want more deep learning, we need to change the system. Because the external environment—including testing, parental expectations, college pressures, and district scope and sequence—is not aligned toward deeper learning, our most successful classrooms, teachers, schools, and extracurriculars had to find ways to buffer themselves from these pressures in order to make space for the powerful learning environments they were trying to create. It is not a coincidence that electives, extracurriculars, and clubs—chosen and untested domains—were often these deeper spaces. If deeper learning is to move from the periphery into the core, the external environment will need to shift its assessments, culture, and other expectations to align with deeper learning.

2

The Progressive Frontier: Project-Based Learning

IT IS ELEVEN O’CLOCK on a bright West Coast morning and Dewey High (a pseudonym) is humming with activity. It is June, a month that in many schools brings lethargy and distraction. Not here. Instead, the tone is one of focused anticipation as students finalize their spring projects and prepare to present them as “Transitional Presentations of Learning,” the public presentations that are the school’s version of final exams.

In a small classroom at one end of the building, Davon and Isabel are working at opposite corners of a rectangular wooden table. Isabel, a Mexican-American tenth grader with a round face and jet black hair, leans over a magazine article. Her face registers something between interest and confusion as she pauses to reread a passage of text. “I think we should include this,” she says softly. She barely lifts her eyes from the page. Davon, Isabel’s project partner, appears at first not to hear. Black, tall, and wearing calf-high combat boots, he is as flamboyant as Isabel is soft-spoken. He sprawls in a metal chair and looks sidelong at an interview transcription on a laptop, glancing every few moments toward the glass that separates the classroom from the sunny “great room” beyond. After a moment, he trains his gaze on his partner. “What’d you find?” he asks. “We definitely need more statistics.”

The two are making a video documentary that argues in favor of condom distribution at high schools, and they are trying to finish their script. The twelve-week project was developed by Mr. Quinn, an energetic young humanities teacher, in collaboration with his teaching partner, a Spanish teacher from El Salvador. At the

beginning of the process, the students studied fear-based rhetoric, reading The Communist Manifesto and learning about McCarthyism during the Cold War. They then formed groups and began working on the project’s performance task, documentary films that must make use of the “paranoid style” (a term famously coined by historian Richard Hofstadter) in order to make arguments about issues of current public concern. To fulfill the requirements, each group must choose and research a topic, write an informative memo and an argumentative essay about it, conduct filmed interviews with stakeholders, draft and revise a script that integrates these interviews with other sources, and produce the movie itself. Finally, each group has to add music and Spanish subtitles to their film before screening it for their teachers, parents, and peers at the class’s exhibition night. Shortly after, they need to reflect on their work as part of their Transitional Presentations of Learning.

It is no accident that Isabel and Davon have chosen the topic of condom distribution for their project. Isabel has several teenaged peers who already have had children; Davon has a cousin who is HIV-positive. For both students, fear—along with sorrow, anger, and even tenderness—is an appropriate emotion to frame their film. It is also no accident that they have chosen to be partners. Their collaboration reflects the intimacy of close friends: periods of comfortable silence are punctuated by serious dialogue as well as by squabbles and play. When Davon comes back from an extended trip to the bathroom, Isabel chides him, warning him that they might need to work through lunch in order to meet the end-of-day deadline. “No way, girl,” Davon counters. “I’m gonna get this done in a snap.”

Around the room, other groups are working with similar fluidity and self-direction. Some students sit on top of tables discussing their ideas; others float in and out of the room carrying video cameras. A group of girls confers about the sequencing of images in their film, moving easily between working and socializing. For his part, Mr. Quinn is an energetic but understated presence in the room. He

spends most of his time sitting with groups, listening to their conversations and asking probing questions. He allows students to make their own decisions about task division and time use, but when he senses that a group is getting off track, he directs them to useful resources. With one set of advanced students who are making a film about terrorism in the post-9/11 world, he reminds them in a wry tone that he expects “nothing less than perfection.” With Isabel, he is gentler, affirming her decision to open the film with one of the statistics she discovered. He and his students seem profoundly comfortable with each other; there are few traces of the strained power relations that often characterize high school classrooms.



On the other side of the school, the forty students that comprise Ms. Johnson’s and Mr. Davis’s ninth-grade team are preparing to present their “20 percent” projects. Inspired by Google’s practice of encouraging employees to spend a fifth of their time pursuing ideas of their choosing, these projects share a single core requirement: use the last ninety minutes of each day to design and create something that will benefit the Dewey High community. After exploring the idea of intrinsic motivation by reading Daniel Pink’s Drive, students formed groups and began brainstorming, prototyping, refining, and then actualizing their products—a process that involved far less supervision than anything they had done earlier in the year. “The idea was that we wanted the kids to get a feel for what it will be like next year, when they have a lot more autonomy,” Ms. Johnson explains. Tall, poised, and dressed in flowing clothes, her calm authority is well suited to the school’s youngest students. “We figured if they made bad decisions, they would learn from those, too, so one of the main things on the presentation rubric is about being self-reflective,” she adds.

In contrast to Mr. Quinn’s classroom, the feeling of Ms. Johnson’s room on this particular day is one of frenetic preparation. The project groups will present their work together, but individual members must each spend five minutes describing their specific contributions and reflecting on the lessons they learned in the process. This five minutes factors into their grades for both the project and the year. A number of students sit individually at tables around the room, looking over the presentation rubrics that Ms. Johnson handed out at the beginning of class. Others have already found a critique partner and are immersed in practicing their presentations. For the roughly half of students who did not attend one of Dewey High’s middle schools, Transitional Presentations of Learning represent uncharted territory; they have had multiple opportunities to present publicly over the course of the year, but this is the first time that something as large as academic promotion is riding on their work. To compound this pressure, one of the project requirements was that all students had to invite at least three people from outside the school community to their presentation.

“When working on a darkroom, one of the most important things is to be preemptive,” begins Kieran. “What I learned is to plan things out, to draw things out along the way.” Tiny, intense, and dressed in tight black clothes that stand out against his white skin, he uses the open space outside of the classroom to practice his presentation in front of his friend Susan. He shifts his weight back and forth while he talks, gazing down intently at his notecards. For his project, he explains, he and his two partners constructed a moveable darkroom. He describes how the previous summer he had taken a film photography class, after which he and his friends “got really into it” and used a corner of his parents’ garage to create a darkroom where they could develop images. With the start of school, however, they abandoned the hobby, until the 20 percent project came along and they decided that their contribution to the Dewey High community would be to create a darkroom, so that the school could have a film photography club. Unable to convince the principal to dedicate a permanent space for the purpose, they drafted and implemented a

plan for a rolling wooden structure that is light-sealed and outfitted with the necessary supplies for film development, blogging about the process as they did so.

After a few more sentences, Kieran abruptly stops and crumples the notecards from which he has been reading. “When I have cards, I just look down at them nervously and they actually make me talk worse,” he says. “I think I’m extra freaked out because I invited practically the whole school to come.” Susan, a petite Asian student who transferred to the school halfway through the year, uses the pause as an opportunity to ask Kieran some general questions about the presentation process. “Is it more important to talk about what you did or what you learned?” she asks. “Both, really,” Kieran responds. “They don’t just want to know what you learned but how you learned it—and that’s connected to what you did.” He pauses, reflecting on what he had just said. Susan jots down some thoughts on her own notecards.

By noon, when the lunch hour begins, Kieran and Susan have each practiced their presentations twice, incorporating feedback from Ms. Johnson as well as from each other. Kieran has decided to talk openly about his tendency to take on too much of the work out of fear that his partners will not deliver; Susan has decided to emphasize how this project helped her to trust her own ability to contribute good ideas. They linger well past the point that most of their peers have spilled out of the building’s open doors and into the ubiquitous sunshine. As he packs up, Kieran tells Susan that he is going to skip lunch in order to finish painting an image of a camera on one of the darkroom’s external sides. “With this project, it’s about taking something from inside yourself and saying, ‘I want to get this done because I want to get this done, not I want to get this done because I want to get an A-plus,’ ” he explains. “Not all projects are like that, but this one definitely is.”



The Dewey High charter network, founded in the year 2000, serves in one region more than five thousand students across fourteen schools: six high schools, four middle schools, and four elementary schools. By relying on a zip-code-based lottery system, all of these schools serve racially, socioeconomically, and linguistically diverse populations. All follow a project-based model of instruction that strives to integrate technical and vocational elements with a liberal arts curriculum. The network’s results on a variety of metrics are consistently impressive. On conventional measures, such as the state’s standardized assessment, most of its schools outperform their district counterparts; in addition, 100 percent of Dewey High students graduate having completed the coursework required to enter the state-run university system in comparison to 57 percent in the surrounding district and 41 percent statewide. By other measures they do even better: 96 percent of graduates matriculate into two- and four-year colleges, with a third of these students being the first in their families to pursue higher degrees. Unlike at some high-achieving charter schools, these successes are not the result of “pushing out” students who do not perform well; more than 90 percent of entering ninth-graders graduate from Dewey High four years later. Locally, in communities spanning from blue-collar neighborhoods to some of the most affluent suburbs in America, Dewey High has become a household name, with many more students entering each school’s admissions lottery than there are available seats. Nationally, and even internationally, the network has become a leader in the universe of public project-based progressive schools; the network hosts more than five thousand visitors a year, as well as many annual gatherings of national and international educators seeking to learn more about project-based learning.

The student work emerging from Dewey High also often has influence outside the walls of the school: a student-created field guide to the city’s bay sells in local bookstores; a student-authored economics book—in which each spread features students defining an

economic concept with a facing page illustrating that concept—was praised by President Clinton as one of the most lucid and incisive books on the subject that he had ever read. A feature-length movie about the school has played across the nation, often screened specifically with the aim of stimulating other communities to think about the possibilities of a twenty-first-century education. In addition to this external acclaim, another positive sign is that many teachers and administrators at Dewey (as well as the chief executive officer and chair of the board) have chosen to send their own children through the Dewey High system.

To many visitors’ surprise and occasional dismay, however, those who flock to the school’s original campus—ourselves included—often find that an initial tour leaves them feeling disoriented rather than enlightened. On the one hand, the school’s innovative character is abundantly clear. The building is as impressive as it is striking: high ceilings with exposed piping offset concrete-and-glass walls that showcase a plethora of student-made artifacts. On the other hand, it is often very difficult for visitors to gauge the nature of the teaching and learning that is taking place. It is clear enough what is not happening in classrooms such as Mr. Quinn’s and Ms. Johnson’s: students are not sitting in rows taking notes, content is not organized along conventional disciplinary lines, standardized assessments are not guiding the curriculum, bells are not determining the flow of the work. Less immediately clear, however, are the principles and practices that have replaced the conventional grammar of schooling. This leads to a host of questions about the school’s model—questions that connect to enduring debates about the promises and pitfalls of the more radical instantiations of progressive education. How did Dewey High come to have such distinctively different aspirations, and how does it achieve them? Why do similar schools struggle to do the same? What are the tradeoffs associated with this form of project-based learning? And, finally, would we as a society want schools like Dewey High for all students if we could manage to create them?

As we will see, the debates surrounding these questions date back at least to the beginning of the twentieth century. It is only recently, however, that these debates have involved nonselective urban public schools—because it is only recently that a number of such schools have taken up the cry of educational progressivism. We encountered many of these schools in our work: project-based schools, inquiry based schools, even a Montessori high school. All were aspirational places striving to enact deep learning, but most tended to have the familiar “aspirations gap” with respect to achieving their visions. Among them, Dewey High stood out as the only system of public progressive schools we researched with not only a thick set of answers to the questions posed earlier, but also a powerful design that consistently translated these answers into the daily work of teaching and learning.

**Origins**

The way Chief Executive Officer Lorenzo Friedman tells it, Dewey High owes its existence to a series of serendipitous events. Slim, spry, and tirelessly talkative, Mr. Friedman—now in his mid-sixties—is the kind of leader who is best understood as a force of nature. Although he spends his days doing everything from overseeing day to-day operations to fundraising and speaking at conferences, he always seems to have time to stop in the hallway to chat, and he always seems to know which projects are under way, which students have recently made breakthroughs in their work, and which topics teachers are gossiping about at lunch. Listening to him riff on these things as he tells the story of the school’s evolution, it is clear that the character of the institution mirrors that of its creative and eclectic founder.

The first critical event in the birth of Dewey High, according to Mr. Friedman, was his unorthodox choice at the age of thirty-three to quit a nascent law career and take a series of positions teaching carpentry. What would become a life-changing shift of focus began as a side job: in order to support himself through law school, he had engaged in various carpentry projects, one of which involved constructing a darkroom in the attic of a settlement house serving low-income families. While he worked, the students who came to the house after school would come upstairs to chat and to learn how to use his tools. Initially, Mr. Friedman made little of this. As time wore on and an increasing number of students regularly showed up for carpentry lessons, however, he realized that there was something striking about the scenario. “It was a revelation for me: these kids were out of school for the day and they could do whatever they wanted, but making stuff was equivalent to, if not better than, play,” he remembers. “I looked in the mirror one night and decided I wanted to teach.”

Mr. Friedman’s commitment both to teaching carpentry and to the field of education deepened as he learned the ropes during four years when he worked first at a psychiatric hospital’s residential treatment program and then as a teacher at a newly created high school. In 1981, he was persuaded to take a position teaching vocational education in a large racially and socioeconomically diverse comprehensive school housed in a town with several highly regarded universities. Large, diverse, and heavily tracked, the school fell far short of actualizing the espoused progressive values of the community that it served:

Back then, you had six schools within a school, five of them in a five story building and then a separate building for the Technical Arts program. The kids of high socioeconomic status were on the fifth floor, the lowest on the ground floor. The Technical Arts building had the Cape Verdeans and the Haitians … all of whom were Gulagged

there in a building which they not-so-ironically called “the island.” So you had this stark social stratification which was architectural.

Mr. Friedman found himself increasingly frustrated by this de facto segregation. How could any school, much less one in such a progressive university community, systematically exclude poor and minority students from academically rigorous classes?

As the year passed, he began to believe that the inverse held true as well: elite students, except for a handful “pushed down” to him by friendly colleagues teaching on the school’s upper floors, were being denied opportunities for the kind of powerful learning that can accompany hands-on work. After all, the experience of learning carpentry as it played out in his classroom was animated by a set of intangibly powerful forces—the same forces that had drawn the settlement house kids up to the attic. Students learned by doing, not just by listening. The artifacts that they produced had both utilitarian and aesthetic value. There was space for both routine practice and creative expression. Perhaps most importantly, these things occurred in the context of a potent form of apprenticeship. Mr. Friedman, an accomplished craftsman, modeled excellent work and helped students to add new skills to their repertoire as they engaged in increasingly difficult tasks. In turn, the more accomplished students modeled good work for newcomers and helped to induct them into the community.¹

Within a few years, Mr. Friedman had begun to more vocally promote the power of hands-on work both in and out of the classroom. In 1990 he became head of the School for Technical Arts —a position from which he piloted new endeavors, such as an internship program, and advocated for greater integration of vocational and academic work. He also joined the faculty as a lecturer at a top education school in the same university town,

where he taught courses on Dewey, the law, and the American high school.

The authorization of the School to Work Opportunities Act of 1994 set the stage for a second critical event in Dewey High’s development. The policy, designed to lower the dropout rate by funding programs that incorporated career exploration curricula into “regular” academic programs, encouraged educators to reimagine the role of vocational training in high schools. In 1996, Mr. Friedman, as well as his colleague, friend, and collaborator Bill Sexton, accepted an invitation to work on a federally delegated committee tasked with identifying outstanding examples of such efforts. Alongside education philosopher Ted Sizer and progressive school reformer Deborah Meier, they traveled around the country observing schools and building a theory about the elements that made for success—a theory that featured design elements such as personalized learning, connections to the local community, and teacher-design curriculum. For Mr. Friedman, the experience served to consolidate and deepen his thinking, affirming the potential of bringing together “minds on” and “hands on” work. As the accountability movement began to gain momentum, however, the School to Work Opportunities Act lost steam. By the late 1990s, vocational education was decidedly out of fashion while the call to equip all students with basic skills in the core disciplines grew louder.

Against this backdrop, a coalition of forty local business leaders in the region that Dewey High now calls home began meeting to discuss their dissatisfaction with the quality of the local labor force. At heart the dilemma was a financial one: legislation prohibited their companies from hiring more than a fixed quota of international employees, but local hires almost always required intensive (and expensive) training. After talking with several education experts from around the world, the group decided that the most promising way to address the problem would be to establish a school in the tradition of Danish Erhvervsskoler: upper secondary institutions that merged vocational apprenticeship with general education. Not knowing how

to go about the task of opening a school, however, the group called in Mr. Friedman—who had recently moved west to work for a locally based philanthropist—to outline the options for governance structures. Within a few hours of Mr. Friedman’s presentation, the group had decided that their new institution would take advantage of state charter legislation. Within a day, they had convinced Mr. Friedman to serve as the school’s founding principal.

The vision for the new school was ambitious but nebulous, and the task of specifying a design fell almost entirely to Mr. Friedman. He turned to several longtime collaborators, including his friend Bill Sexton. Unassuming, humble, and more of a listener than a talker, Mr. Sexton made for a stark contrast to his gregarious colleague. Despite their temperamental differences, the two had long ago recognized that their skills and perspectives were deeply complementary. They quickly picked up where they had left off, drawing on their earlier work to come up with what they now refer to as Dewey High’s three “integrations”: integrating students from different racial and socioeconomic backgrounds, integrating school with the community beyond, and integrating technical and liberal arts studies. Fueled both by their own experiences in the classroom and by what they had seen during their travels five years earlier, they also arrived at the idea of “teacher as designer”; teachers, they believed, would best be able to actualize their potential if they were empowered to craft curricula that reflected their unique knowledge, skills, and passions.

The school’s design principles were elegantly simple, but the process of planning an institution around them was complex. In the year leading up to the school’s opening in 2000, Mr. Friedman, Mr. Sexton, and the founding team worked on assembling a group of teachers who had experience in their fields and would be willing to teach through projects; setting up a zip-code-based lottery system that would ensure a diverse student body; and forging partnerships with the local business community. The task was exhausting but energizing. “I realized then that all the work I had been doing for

the last twenty years had been pointing in the same direction,” Mr. Friedman says. “This was our chance to build a school around what we believed.”

**Dewey and Dewey High**

Mr. Friedman and Mr. Sexton’s vision was heavily foreshadowed, as well as influenced, by philosopher-educator John Dewey’s vision of what schooling could be. Coming of age just as the second wave of industrialization was gaining momentum across the country, Dewey

was deeply troubled by what he perceived to be the decay of American social and cultural life.² He looked nostalgically back to the country’s agrarian past—a time when, in his eyes, even the most humble farming families had been engaged in work that was purposeful and cooperative. In the context of such families, Dewey believed, children organically learned how to be productive citizens: as they observed and increasingly participated in the routines of daily life, they developed practical skills and knowledge along with the ability to function interdependently. Now, in the age of urbanization and industrial capitalism, an ever-increasing number of adults spent their days completing rote tasks on the assembly line while their children sat in rows and recited their times tables in strict unison. How could the United States guarantee the survival of a cooperative and empowered populace in the face of such dehumanizing realities?

This, Dewey believed, is where the public schools came in. As the country’s one truly common social institution, schools could serve to rebuild American culture, thereby insulating society from the dangers of industrial capitalism.³ To do so, however, they would need to reject the factory-inspired model of organization and pedagogy that had become dominant. This model, which had emerged as rural one-

room schoolhouses were consolidated into urban institutions serving large numbers of immigrant children, relied on several core “efficiencies”: age-graded classrooms, separation of academic subjects by discipline, and an authoritarian pedagogy that required students to master knowledge—usually rote knowledge—in lockstep.⁴ To the new class of bureaucrats whose job it was to run America’s burgeoning city school-systems, these practices were the latest in cutting-edge design, drawing on popular principles of “scientific management” in order to streamline the process of educating the country’s youth.⁵ To Dewey, these practices were inhumane and undemocratic. Separating younger students from older ones, drawing artificial boundaries between subject areas, and allowing adults to predetermine the pace and substance of knowledge acquisition: in Dewey’s view, these practices all but guaranteed that the learning process would be devoid of meaning and depth.

What Dewey proposed was not to re-form the schools that already existed, but to create a different kind of schooling entirely. His plan was counterintuitive: the “schools of to-morrow,” rather than modeling themselves after modern factories, should look backward, emulating the values of agrarian households and artisans’ workshops by adopting an interdisciplinary, hands-on, collaborative curriculum.⁶ This would allow children and teachers to engage jointly in learning that was both practical and “adventurous”—learning that engaged mind, hands, and heart in equal measure and built important social skills as well.⁷ In one of the lectures later published as School and Society, for example, Dewey described how children could build core understandings of history, culture, industry, and science, all by engaging in manual activities such as cooking and weaving. The teacher’s role in this context would be to serve as a guide, posing questions and suggestions to ensure that the activities children chose to undertake served as platforms for deep inquiry rather than digressing into mere “utilitarian” exercises.⁸ By adopting this model, Dewey argued, schools could become places where students completed real work—work that not only built the dispositions

required for successful participation in the country’s social, economic, and political life down the road, but also carried deep meaning for children in the here and now. “Much of present education fails because … the value of [the lessons learned in school] is conceived as lying largely in the remote future; the child must do these things for the sake of something else he is to do; they are mere preparation,” he wrote.⁹

Despite Dewey’s profound and lasting influence on educational thinking, his vision did not penetrate very deeply into the nation’s schools. Throughout the twentieth century, the dominant mode of instruction, particularly in secondary schools, remained transmission of knowledge in teacher-centered classrooms. Portions of Dewey’s vision took hold in pockets; for example, there were a number of independent schools that embraced the idea of students as capable sense-makers and positioned teachers more as guides than as knowledge dispensers, and in the 1980s Ted Sizer’s Coalition of Essential Schools engaged in advocacy for organizational features such as portfolio assessments and internship programs. But many of these schools took up Dewey’s ideas within the confines of traditional academic disciplines and college expectations; they left intact subjects, school walls as the boundaries of learning, and many other core efficiencies of modern schooling. Few schools have been audacious enough to draw on the more radical parts of Dewey’s vision, integrating academic and vocational work, moving away from conventional disciplines, and making the world itself the laboratory for learning.

Dewey High aimed to get closer to Dewey’s original vision. Mr. Friedman and Mr. Sexton wanted to extend their model beyond inquiry-based pedagogy—they wanted to build a school where students engaged in interdisciplinary projects in order simultaneously to develop core competencies, pursue their passions, and prepare for higher education. In these respects, there was no blueprint for the kind of institution that they aspired to build, and as

a result there were more questions than answers when it came to organizing the school.

In trying to answer such questions, Dewey High had two key assets. First, it had the deep repository of practical wisdom that its leaders brought to the table. Mr. Friedman and Mr. Sexton may have had an unusually ambitious and even utopian vision of what school could be, but they were not mere dreamers; rather, their vision was rooted in years of experience working with non-elite public high school students. Second, the school had a clear and elegant design—the set of principles that the founding team had identified at the outset. It is this design, and the convictions in which it is grounded, to which the leaders of Dewey High have returned again and again in their endeavor to improve their school. And ultimately, it is this design that has helped them to resist the temptation to drift back toward more conventional practices.

**A Difference in Kind**

If John Dewey were to find himself wandering around the school that we have given his name, he might at first be perplexed by what he saw. There certainly are few traces of the preindustrial realities that he had remembered and drawn from as he outlined and refined his philosophy of education. Most of the student-created posters that adorn the hallways are digitally produced. Most of the school’s classrooms have an array of computers, all of which are loaded with the latest versions of the Adobe Suite and are linked to a server that allows students and teachers to upload work onto their publicly accessible “digital portfolios.” Toward the center of the school is a robotics lab. In the corner of a biology classroom is a genetics lab. Even the school’s art classroom has a wall of desktops, which students use to work on tasks ranging from creating prototypes

using computer-aided design software to blogging about their progress. There is decidedly little cooking and weaving.

What makes the school distinctive, however, is not the presence of twenty-first-century technology but rather the reimagining of schooling’s purposes and processes—a reimagining that draws on deeply Deweyan ideas about how learning should be organized and what it should entail. Eschewing conventional notions about the roles of teachers and learners in relation to knowledge, the school draws on one of Dewey’s primary models of inspiration—the artisan’s workshop—and on one of the workshop’s modern instantiations, the startup, in its attempt to support work that is creative, meaningful, and socially productive. Dewey High thus looks simultaneously backward and forward, bringing many of the key elements of progressive education into the present and demonstrating a model of schooling that represents a dramatic departure from convention.

**A New Grammar of Schooling**

One of the things that Mr. Friedman and Mr. Sexton carried into the planning process was the recognition that pursuing a different set of goals would require rethinking what Larry Cuban and David Tyack call schooling’s core “grammar,” the interrelated organizational features that characterize the vast majority of high schools around the country. Everything from lockers and bells to academic departments and final exams was on the table for reconsideration— and the vast majority of these features did not survive. Instead, the school is set up to support endeavors that are collaborative, interdisciplinary, flexibly structured, and sustained over long periods of time.

The most obvious sign of this reorganization is the school’s physical plant, which has something close to an open floor-plan. The “commons” area at the center of the building serves by turns as a student lounge, a theater, a staging area for large projects, and an auditorium. Although most classrooms do have doors and walls, almost all have large glass windows on multiple sides, and it is not uncommon to find students, teachers, and administrators in rooms other than their own, observing each other at work or serving as impromptu audience members or critique partners. The fluidity with which students cross among spaces in the school sometimes results in a sense of disorder, but it is also important; combined with the more formal public exhibitions and presentations of learning, it helps to shape a shared culture and shared standards. Finally, the building’s many doors are often propped open throughout the day, a visible sign of not only the school’s commitment to integrating schoolwork with the broader world, but also the trust that it places in students.

The school’s reorganization of human resources is not as immediately obvious as its reorganization of space, but it is equally important. For teachers, working at Dewey High means that instead of teaching alone and occasionally meeting in subject-specific departments, they enter into yearlong partnerships (sometimes trios) that bring together the disciplines: biology with media arts, humanities with Spanish, math with physics and carpentry, and so on. With ongoing support provided by colleagues, these teams design and teach semester-long projects that sit at the intersection of their interests and areas of expertise. In some cases, each member of a teaching team takes on distinct pieces of the project; in others, co-teachers choose to blend their roles more fully, taking the lead when it makes sense. Regardless of the form that the collaboration takes, the belief is that teachers together will create richer projects than they would on their own. To that end, teachers with more experience often partner with those newer to teaching or to the school, creating apprenticeship-style relationships where novices gain skill by working under the guidance of veterans.

Students, for their part, are organized into grade-level teams of fifty and assigned to a primary set of collaborating teachers for the year. By design, each of these teams includes students of differing races,

socioeconomic statuses, linguistic backgrounds, special needs, and prior achievements. In keeping with the first of the school’s “three integrations,” teachers treat this diversity as an asset and a source of learning, often assigning students to partners whom they would not have chosen themselves. Given the sustained nature of the projects, these assignments are no trivial matter. Like their teachers, students have to learn to play to each other’s strengths, to manage and persevere through conflict, and, ultimately, to produce work that represents a productive blend of their ideas and skills. In some cases this process results in surprising friendships—bonds, such as the one between Davon and Isabel, that transcend boundaries of race, class, geography, and personality. In other cases it is less successful, but, at least in the eyes of the school, this too results in important learning outcomes. As one eleventh-grader reflected, “Working with other people is something that is important not only because it can help build your character … but also because it prepares you for working with co-workers and other people later on.”

Dewey High is organized differently from many conventional high schools in several other ways. Aside from traveling together in grade-level pods, students are placed into multi-age advisory groups that meet four times per week to build community and provide social and academic support; students stay with the same adviser for all four years. In addition, in the winter, regular instruction pauses for two weeks. During this period teachers lead groups of mixed-grade students in intensive explorations of topics outside the scope of regular instruction: nature photography, horror films, sailing, yoga and Eastern religions, mountaineering, and so on. In the spring, all eleventh-grade students complete a six-week internship that culminates in a high-stakes Transitional Presentation of Learning. On the adult side of the equation, rather than hiring in a piecemeal fashion, the school begins its hiring process with what it calls a “bonanza” day, during which new teaching candidates participate

together in a project design challenge, then are vetted by panels of administrators, teachers, and students. Finally, many of the school’s staff take advantage of (and in some cases teach in) the teacher credentialing, master’s degree, and professional development programs offered by the school’s associated Graduate School of Education, located a few blocks from the school’s campus.

**School as Workshop, School as Startup**

In the traditional artisan’s workshop, the goal of producing beautiful, unique, useable objects guides the structures and rhythms of the work. Master craftsmen conceptualize the artifacts to be produced, lay out detailed plans for making them, then oversee and / or participate in the process of doing so. Apprentices observe the goings-on, assist along the way, and, with gradually fading supervision, undertake their own projects. The work is methodical and sustained, with intense attention to detail and a communally held sense of what constitutes quality. Both the process and the products are public; everyone sees what everyone else is making in various stages of completeness, and the best work, which is judged not only by utility and customer satisfaction but also by its adherence to the aesthetic standards set by the field, serves as an example toward which others can aspire.¹⁰

In the startup environment, the goal is to produce something new in response to a gap in the market, or, in Dewey High’s progressive version of this vision, to address a social problem. By definition, the designers of a given project cannot predict what they will produce before they have produced it. Long before they begin to draw up plans for the work, they engage in sustained “problem finding” to pinpoint the issue they are trying to tackle. Later, after brainstorming, they create prototypes and bring them to users,

refining (and sometimes ditching) their concepts in response to feedback. The ethos of such work is playful, casual, and often irreverent. In theory, and often in practice, there is not an elaborate hierarchy of expertise; everyone is seen as capable of contributing a good idea. Failures are treated as normal and necessary parts of the process. Collaboration is integral. Ultimately, the artifacts that are created live and die based on their usefulness and marketability in the real world.

As these descriptions suggest, these two contexts are in some ways markedly different. The workshop looks backward toward a tradition of accumulated wisdom; the startup steers toward an uncertain future. The routines of the workshop are measured and rhythmic; those of the startup are breathless and ever-changing. Artisans find room for improvisation within frameworks that already exist; designers seek to “disrupt” existing realities. The learning that transpires in both spaces, however, hits on all three dimensions of the deeper learning triangle: the opportunity to develop something new (creativity), the imperative to build knowledge and skills while doing so (mastery), and the space for bringing one’s unique experiences and vision to the process (identity). In this light it makes sense that Dewey High’s vision of deeper learning draws on elements from both models—though in the end, as with the other distinctive cases described in this book, the school incorporates these elements into a model all its own.

**Creating Products of Lasting Value**

As with both the workshop and the startup, the vast majority of work at Dewey High is organized around production. From documentary films and the moveable darkroom to science museum exhibits, bentwood furniture, and original historical plays, students

at Dewey High are consistently engaged in the process of designing, manufacturing, revising, exhibiting, and / or performing original work. The momentum generated by such processes is a key part of what makes the school distinctive. As Mr. Friedman discovered at the settlement house, there is something inherently motivating about “the idea of making something that wasn’t there before.” Thanks to the impressive array of student work on display, new students and parents pick up on this energy as soon as they enter the building. For their part, teachers talk about how important it is to complete each new project themselves before launching it with students—not only because doing so helps them to identify key learning opportunities and potential pitfalls, but also because it enables students to see right away a sample of what they are working toward, which generates interest and purpose. Mr. Quinn, the teacher of the documentary film project, learned this lesson the hard way. Describing a project that his students completed during his first year at the school, the aforementioned economics textbook with linocut illustrations, he reflected on how his choice not to make an example that included a linocut had had some unfortunate consequences. “Some of my best kids didn’t end up with their work in the book because they didn’t do the linocuts,” he said. “They were like, ‘I didn’t do it because I didn’t realize it would look so cool!’ ”

The school’s emphasis on producing original work has cognitive as well as affective advantages. After all, knowledge utilization and creation—which are central to virtually all of the projects that students complete—sit at the top of traditional learning taxonomies. By framing instructional activities with the imperative to develop something new, Dewey High insulates itself from the pitfall of teachers continually intending to incorporate higher-order tasks into their instruction but rarely delivering on that objective. At Dewey High, students are creating and using tools within their fields, and learning in a contextual way that creates thick and integrated knowledge. When students develop a field guide to the local bay, for example, they are learning about ecology, ornithology, and the local landscape; in addition, the act of synthesizing this learning for a real

audience forces a kind of deep integrated understanding that a similar worksheet-based approach to the same topic would not achieve.

These projects are most powerful, in the eyes of the school’s architects, when they are harnessed to the broader aspiration of making a positive contribution. It is no accident that Mr. Quinn’s sophomores were creating films that made persuasive arguments about issues of public concern while Ms. Johnson’s freshmen were striving to actualize ideas about how to improve the school community; in both cases, the key idea was to produce artifacts with real social utility. Mr. Sexton sees this vision as their contribution to building a democracy, “We’re trying to create a context where people are collaborating together to create products of lasting value, which often morph into products of use to the community,” he said. “That’s what civil society is about.”

This ethic—what we have come to think of as an ethic of contribution—is arguably the most distinctive and radical element of Dewey High’s vision. As Michael Fullan and colleagues say, in reference to our work on the deeper learning triangle, “What gives humans meaning in life is a strong sense of identity around a purpose or passion, creativity and mastery in relation to a valued pursuit, and connectedness with the world and others.”¹¹ These properties are not apparent in every classroom at every moment, but they suffuse the best projects and, as such, shape the aspirations of its teachers and students. They are also deeply Deweyan, reflecting the belief that schools should function as mini societies where students engage not only in meaningful discourse but also in productive work. To ask teenagers to strive, with whatever degree of success, to create “products of lasting value,” after all, is to communicate deep respect for who they are and what they can do—to honor what they can achieve in the present instead of focusing only on equipping them for the future. Of course, teenagers are still teenagers, and the school deals with occasional episodes of peer-group drama, illicit drug use, and student-teacher

conflicts. In the broadest sense, however, the school’s positive assumptions about students tend to be self-fulfilling; students are treated as people who can contribute and they respond mostly by striving to meet those positive expectations.¹² As one parent reflected, “There’s just this tremendous amount of respect for the kids … and the kids respond by stepping up to the plate.”

**Divergence by Design**

Dewey High’s students are not the only ones afforded latitude and respect. Rather than trying to codify and disseminate a school- or system-wide curriculum, the school operates on the belief that teachers do their best work when they are conceptualized as craftsmen and designers: professionals whose work reflects their unique perspectives, passions, and skills. Teachers also are encouraged to involve students in the design process; it is standard practice at Dewey High for teachers to engage students as consultants who help to “tune” existing project plans, and in a few cases, teachers have used the first few weeks of each semester to gather and refine students’ burning questions about the world as part of creating a unit plan. This emphasis on design and co-design leads to projects that are often startlingly different across classrooms. Students in one classroom might be learning genetic sequencing while those next door are rehearsing scenes from an original play. This also means that when teachers acquire new interests, new teaching partners, and / or new students, their projects change accordingly. While the most successful endeavors are sometimes repeated from year to year and / or adopted by teachers at other campuses, innovation is prized. In radical contrast to the mantra of most of American schooling, at Dewey High “standardized” is all but a dirty word when it comes to matters of curriculum.

As a jumping-off point for exploring this element of the school’s model, it is worth returning to the two projects evoked at the beginning of this chapter: the “paranoid style” project and the “20 percent” project. In certain ways, the two endeavors are as distinct from each other as the teachers who planned them. The former, while its key outcome was a film, included a healthy dose of conventional humanities content: students read and analyzed a number of canonical historical texts including The Communist Manifesto, conducted original research, and worked on appealing to human “pathos” (in this case fear) to make persuasive arguments. In designing this kind of work, Mr. Quinn was playing to his strengths. As a self-described news junkie, he felt that his students should understand how fear-based rhetoric worked so they could avoid being manipulated by the media. On the skills front, he also wanted his students to practice synthesizing data from a range of sources and revising their ideas in response to counterarguments and critiques—desires grounded in intuitions he had developed during five years teaching English at a conventional middle school.

The “20 percent” project, by contrast, was much less recognizably academic. Although Ms. Johnson’s classroom is a text-rich space, with a carefully curated library and a number of rituals around reading, this particular project involved comparatively little shared literacy content. Instead, the project’s core focus was its process. By writing blog posts, conferring with their teachers, and revising their completion strategies at key junctures in the project, students began to develop both the executive functioning skills and the self knowledge necessary to thrive under conditions of autonomy. Given Ms. Johnson’s background working with juvenile delinquents in the context of wilderness therapy programs, it is no surprise that she co created such a project; supporting the development of metacognitive skills reflects her strengths just as supporting the construction of paranoia-driven documentary films reflects Mr. Quinn’s.

While Dewey High’s teachers generally relish the latitude that the model gives them with respect to planning, it is easy to imagine the

critiques that skeptics might level against it. Allowing for extreme differences in terms of curriculum is well and good, they might say, until the “clients” of such variety encounter a high-stakes exam, a college class, or an employment context that requires mastery of skills that they lack. Doesn’t the school’s model leave instruction too vulnerable to the idiosyncrasies of individual teachers? What guarantee is there that students will develop core literacies and numeracies?

In one sense, these questions cut to the heart of the tradeoffs that Dewey High chooses to accept in the course of pursuing its vision— tradeoffs to which we will return at the end of the chapter. The school does, however, have a number of features that are more conventional. Although projects constitute the main organizing structure for the curriculum, students all take discipline-specific (though untracked) math classes, and they all receive extensive one on-one college counseling. Furthermore, as high-stakes assessments like the state test and the SAT approach, many teachers choose to devote some time to tested content. The school’s instructional leaders strive to make sure that all projects incorporate ongoing opportunities for reading across genres, writing across genres, revising work in response to critique, and giving oral presentations— skills that appear in virtually all state curriculum frameworks as well as in the Common Core State Standards. Finally, as we will elaborate at the end of the chapter, Dewey High’s teachers and leaders recently have begun to use the tools of continuous improvement to ensure that deliberate and differentiated academic skill-building is integrated into all projects.

**Steering into Uncertainty**

Dewey High’s model also requires teachers to embrace an underlying orientation that links together even the most apparently divergent projects. Reflecting the broader beliefs associated with one strand of educational progressivism, this orientation requires that teachers reject conventional ideas about what it means to teach. Traditionally, Americans have long thought of teachers as content experts who deliver knowledge to those who know less than they do.¹³ To critics of that stance, taking seriously the proposition that the teacher should be “a guide, not task-master”—a proposition central to how early twentieth-century progressive educators talked about education—means asking teachers to abandon their primary responsibilities with respect to both content delivery and disciplinary control. Organizing instruction around open-ended tasks also risks exposing what teachers do not know, because, as one loosens controls, students are increasingly likely to venture into unfamiliar territory. At Dewey High, as in earlier experiments in progressive schooling, guiding students toward such territory is precisely the goal. Teachers are encouraged to draw on their areas of expertise, but the school’s emphasis on creating original work means that one of their primary tasks is to help students explore the unknown, leaving behind the security of being the one who defines all the questions and knows all the answers.

While this orientation is a key element in empowering students to produce original work, it has its downsides. Without the certainty of predetermining the form and / or substance of what students pursue in their projects, teachers do not always have deep understanding of the content their students are exploring. They may have generally relevant expertise that allows them to guide the process and set standards for good work—in the case of the paranoid-style projects, for example, Mr. Quinn had thought a lot about what constitutes powerful rhetoric—but they are unlikely to be experts in everything that students choose to pursue in their projects, and thus they partially forgo the ability to employ pedagogical content knowledge.¹⁴ When students venture too far from the domains that their teachers know, they must turn to others or fend for

themselves. While this might help students to become more resourceful, it also can be construed as a failure to make use of teachers’ carefully cultivated expertise. How, some might ask, could Ms. Johnson and Mr. Davis competently support Kieran, given their lack of knowledge about carpentry? And why weren’t they making use of their respective understandings of how to engage students in the study of literature and physics?

**Embracing Different Views of Knowledge**

Taking this line of argument to its extreme would suggest that teachers who work within this progressive model need not have any content knowledge at all. This, however, is far from the truth. Dewey High’s instructional vision does require teachers to accept a different view of knowledge from the one that tends to dominate the field: rather than seeing knowledge as something preexisting that can be transmitted as a whole, it holds knowledge to be provisional and imagines students to be active participants in its development. To teach with this view in mind, however, arguably requires more rather than less expertise. Teachers must be able to think not only in a given discipline but also about a given discipline—to think about how knowledge is created and to invite students into the process of doing that work. The stance of the paranoid-style project, for example, brought students into the world of historical interpretation; they learned not only about the Cold War, but also about a particular way in which Cold War rhetoric was mobilized by powerful stakeholders. Mr. Quinn needed to be willing to allow his students to venture into unknown territory as they worked on their films, but it was his rich understanding of historiography that gave a frame and shape to the endeavor.

Dewey High’s teachers also have to rethink how students best can acquire basic knowledge and skills. In most high schools, the dominant paradigm dictates that students should master a large corpus of basic disciplinary knowledge before moving to more applied work. In a conventional physics class, for example, students might spend months mastering basic concepts around kinetic energy before being asked, as a “performance task,” to design a mousetrap car. At Dewey High, however, this paradigm is inverted: the belief is that basic knowledge- and skill-building should happen through attempts at applying that knowledge and skill. When Mr. Quinn’s students pored over articles about the topics they had chosen for their films, for example, they did so in the context of needing a knowledge base out of which to craft their central arguments. Reflecting its Deweyan roots, this “part to whole” paradigm of learning mirrors the world of the workshop, where apprentices, assigned to increasingly difficult projects, turn to their mentors when they run up against challenges that require skills they have not yet developed. It also maps onto the world of the startup and other contemporary job environments, where people acquire new skills as the need arises. This approach has significant advantages, because it puts students in the mode of seeking to produce real things from the start.

Adopting this stance presents a challenge for new hires at Dewey High because it requires them to unlearn deep-rooted instructional behaviors. As such, it is one of the things that Mr. Sexton, in his capacity as a staff developer, spends extensive time helping teachers to understand. “We try to caution teachers not to assume that kids have to have skills before they can embark upon a project—that, if skills are required to do a project, that they need to learn those skills before they embark,” he says. “There’s been a constant, ongoing conversation about that issue over the years.” Mr. Sexton’s work on this front is reinforced by the students, who over time become experts in their own right on Dewey High’s vision of learning. As one articulate student noted, “There are some projects where you learn content for a long time and then you do a project to present it, and

there are some where you learn by doing the project. When you are actually learning through the project-based methods, the learning is way deeper.”

**Trusting the Time**

In his essay “The School and Social Progress,” Dewey contrasts the rigid social control that characterizes traditional classrooms to the “confusion” and “bustle” that punctuate learning spaces that adopt a more hands-on approach.¹⁵ “There is a certain disorder in any busy workshop,” he writes.¹⁶ Although this description predates Dewey High by almost a century, it could as easily have been included in the notebook of someone visiting the school. Among other things, the school’s “disorder” takes shape as a constant ebb and flow of productivity that characterizes the days. At some points, students are working with intense focus, and at others they are just hanging out. Students affirm that this accurately represents their experience. “Some days we’re doing projects and going psycho … other times we’re just walking around the school talking to people,” one freshman girl describes.

This is no accident. While teachers do not celebrate wasted time, they accept uneven productivity as the inevitable result of giving students real latitude. Mr. Sexton explicitly connects this stance to the rhythms of professional life. “Project time doesn’t divide itself neatly into hours of the day,” he says. “Deadlines loom and you see incredible bursts of energy and activity, and deadlines pass and there are lulls—just like you see with adults.” He continues:

I think that schools now are in thrall of Taylor and efficiency—the more kids are on task for more time, the better; 100 percent is the goal. That’s not the way adults work. If you walk around and look at the adults here, they’re engaged in being adults and in adult conversations while getting their work done. Kids need that too.

Mr. Sexton is not the only one who explicitly connects the school’s stance toward time use with its underlying humanism. Bob Eagle, an art teacher who was part of the school’s founding team, talks about how his experiences working as a waiter helped him to recognize the counterproductive effects of micromanagement. “What adults have to remember is that kids want to be treated right,” he says. The key to making sure that students do not systematically exploit the latitude that the school affords them, Mr. Eagle explains, is to set high expectations and to build in extensive grading structures along the way—to balance autonomy and accountability. He uses one of his endeavors, a project that combined “bent wood” carpentry with calculus, as a case in point. Every Wednesday each group had to complete a graded check-in, demonstrating what they had accomplished, reflecting on their process, and setting goals for the coming week. “I gave them flexibility but I let them know that not doing the project well wasn’t an option,” Mr. Eagle says.

Giving students so much flexibility in terms of time use sometimes backfires—especially when teachers fail to break projects into stages and provide interim deadlines. One student who attended the school in the years just after it opened remembers how his biology teacher took an entirely hands-off approach to a yearlong project:

We had no instruction. We had no models for what her expectations were, and she didn’t regulate us. We wasted about fourth-fifths of the entire year not doing a single thing. Then when it came crunch

time—because we were so young, and we knew that this particular teacher would let us get away with it—we all pretended that we were incapable and didn’t understand how to find different color rocks, or paint this, or how you do papier-mâché, when most of us were fully competent and capable of doing it. The teacher enabled us to work the system and not do anything.

This kind of spectacular failure happened more in the school’s early years than it does now; veteran teachers help to make sure that novice teachers do not fall into the more easily avoided “traps” of project-based work. On a smaller scale, however, there are periodic debates among the faculty about whether giving students so much autonomy is worth the inevitable loss of productive time. “Most projects that take four months could take two months,” one teacher admits. “But that would mean we were micromanaging the heck out of the kids, and part of the point is that we don’t want to do that.”

**Normalizing Failure**

Another result of giving students so much autonomy is that, despite the motivating power of graded check-ins and public exhibitions, some come up short in producing high-quality projects. This was especially apparent in the “20 percent” project. For some students, such as Kieran and his two partners, the unstructured nature of the process stimulated momentum and resulted in sophisticated work. In other cases, however, students floundered, making poor choices about which and how many peers to work with, struggling to organize their time, and failing outright to complete their projects by the deadline. The most exaggerated example was a group of eleven students—a mixed-sex clique of sorts. The idea for the project was

solid: after hearing from administrators that the school was struggling to accommodate its many visitors, the group set out to create a self-guided tour of the school that would rely on smartphone “tag reader” technology. But after spending several weeks procrastinating and several more struggling to delegate responsibility for the various tasks involved, the group was unable to complete what they had set out to accomplish.

On the morning of their Presentation of Learning, the group’s members had to stand in front of an audience of parents, peers, teachers, and community members, describing the project and reflecting on what had happened. The first student to present was Andrea, a high-achieving student who had become the group’s de facto leader. Her father sat impassively in the front row; as she talked, she glanced tentatively toward him, at times appearing to be on the verge of tears.

Eleven is a huge number, and it’s really hard to give everybody a task and to get organized. For the first two weeks my group messed around. We thought we couldn’t do anything because there was always “something else” to do. We should have just moved forward. We should have had group meetings twice a week to check in. We should have done a lot of stuff that we didn’t do. Also, one of the problems is I’m a control freak; if I have to get something done, I feel like I have to do it all myself. This project taught me that I need to learn to be a leader but also let go of control and use my partners’ skills.

After Andrea finished talking, Ms. Johnson and several other audience members asked her to talk about how she would approach the task differently if she could do it again. What strategies for role delegation would she use? How would she make sure that each

group member was using time wisely? How would she keep herself honest about being truly collaborative? Andrea answered these questions thoughtfully and precisely, some of her confidence returning as she explained how she would come up with a detailed plan of action at the start.

This process is indicative of the school’s broader stance toward students falling short of the expectations held for them. The teachers at Dewey High do not relish such situations, but they also do not take them as evidence that the school’s model is flawed. Instead, they treat failure as an inevitable part of engaging in tasks that are open-ended and uncertain—and, as the case of Andrea demonstrates, they treat such failures as opportunities for reflection and metacognition. In this, Dewey High explicitly shares an ethos with the world of the startup, where the importance of failure is almost a mantra. Industrial product designers talk about “failing faster” and “failing forward”; inexpensive prototypes are created in the belief that while the first version is unlikely to succeed, the process will force the inventor to develop a better product down the line. Related to this is the belief that innovation entails risk-taking— and the acknowledgment that real risks necessarily involve the possibility of real failures.

Teachers, encouraged as they are to experiment with developing new projects, experience periodic failures as well. Mr. Davis, the rangy and self-deprecating physics teacher who works with Ms. Johnson, talks about a project that the two of them attempted to lead in their first year at the school:

The idea was to learn about circuitry by making the toys that were electric, and then we would donate them to the local children’s hospital. We had it all set up, so that the hospital knew they were coming. Then it turns out that ninth graders can’t solder! They were leaving the soldering iron on for too long, and some of these

electronic components melted, and [the toys] didn’t work anymore. It was so embarrassing.

Like Andrea and others, Mr. Davis and Ms. Johnson found the experience of failing to be a powerful source of learning: the disappointment that their students felt when their work could not be actualized, as well as the humiliation of having to renege on a public promise, motivated the teaching pair to think much more carefully about the skills that students would need to learn in order to complete a given project: the next year they exercised a good deal more foresight. Their ability to “fail forward” in this way reflects the powerful symmetry built into the school’s design: just as teachers accept student failures and strive to help them learn from their mistakes, Dewey High’s leaders take teachers’ thwarted projects in stride, assuming that such failures (so long as they result in better work down the line) are a normal part of doing work that is original and uncertain.

**Cultivating Playfulness and Joy**

Another part of what allows Dewey High’s teachers and students to be safe to fail is the school’s broader ethos, which, like that of the tech startup, is infused with a spirit of playfulness. Students and teachers are frequently “playing around” and “trying stuff out,” engaging in the kind of low-stakes improvisation that is known in the design world as ideation. As described earlier, this use of time might be construed by some as unproductive, but it also helps to create and sustain the palpable sense of joy that strikes so many visitors. The grim “sense of urgency” that characterizes so many schools serving high-poverty urban students is nowhere to be found;

instead, the open-ended nature of the work, combined with the trust and latitude afforded to students, creates a platform for sustained positive engagement. As one parent recalled when describing her first time walking into the campus, “It was just so alive with creativity and energy and enthusiasm.”

Students at all grade levels affirm that their experiences at Dewey High, while not devoid of tribulations, are overwhelmingly positive. They attribute this quality not only to the school’s markedly inclusive social scene, but also to the experience of engaging with its unique curriculum. As one recent graduate remembers:

My favorite memory of a project is junior year, when [our three teachers] set up a crime scene for us. And it included—for math, it was trajectory and ballistics. And then for biology, it was DNA. We did gel electrophoresis and we had to like match up whose DNA was at the crime scene.… I never really thought about [crime] in the terms that they’d given us. But also it was just really fun to walk into school one day and there’d be a crime scene set up with a fake body and blood, and the blood actually had DNA in it. And then we spent like a month trying to solve the crime.

The widespread reports of engagement that we heard in our interviews are substantiated by the school’s performance on YouthTruth, a nationally validated survey that the school administers twice yearly to students. Based on students’ responses to the YouthTruth survey, Dewey High is in the ninety-second percentile for student engagement, the ninety-eighth percentile when it comes to relationships with teachers, and the ninety-ninth percentile when it comes to relationships with peers.

Of course, “fun” is not always a necessary ingredient in deep learning; such learning can emerge out of experiences that are

grueling and even painful. The quality of pleasurable engagement that characterizes the best work at Dewey High, however, is a key element in its distinctive vision of what it means to learn deeply—a vision where the boundaries between work and play are highly permeable. In some ways this vision reflects the particular contribution made by Mr. Friedman, shaped as he was by the experience of leaving the “serious” profession of law in favor of teaching carpentry, the activity he had always treated as a pleasurable hobby. In addition, however, it reflects enduring commitments associated with educational progressivism, which, in all of its various instantiations, seeks to eliminate the boredom and anxiety associated with rigid adult control and to replace it with learning experiences that are “as real and vital to the child as the life which he carries on in the home, in the neighborhood, or on the playground.”¹⁷

**The Pork Chop Dilemma**

Reflecting on the wave of attempts to create “child centered” schools in the second quarter of the twentieth century, historian Patricia Graham likens the dilemmas of enacting educational progressivism to those of making a pork chop—a dish that can be exquisite, but which if even slightly undercooked (the lore goes) can lead to trichinosis poisoning.¹⁸ “[The vision for progressive schooling] was a grand aspiration, marvelous when fully realized, but catastrophic when only partially achieved,” she writes.¹⁹ To put it differently, the joyfulness and depth that characterized the learning in the most successful progressive schools were mirrored by the chaos and intellectual barrenness of those that tried but failed to organize along similar lines.