Discovering and Supporting

Deeper Learning

INTRODUCTION

In the year 2015, practitioners working in the American public education sphere are tasked with an ever-increasing set of ambitions. Create classrooms that support critical and creative thinking. Focus on 21st-century skills. Cultivate authentic inquiry. Teach reflective habits of mind. Place students at the center of instruction. Teachers, principals, or district leaders across the country could readily add to this list.

These various ambitions differ in some important ways. At heart, however, they are all rooted in the desire to create formal learning experiences that are powerful and empowering for all students—in other words, *deeper* learning than what most schools have offered most of their charges to date. Calls for this kind of transformation are by no means new, but in recent years they have grown dramatically louder, giving deeper learning oriented practitioners, policymakers, researchers, and philanthropic organizations a sense of common purpose.

Why are so many convinced that reorganizing schools around deeper learning is particularly critical at this moment in history? To take a wide lens, it is due to the recognition that successfully navigating 21st-century adult life requires far more than basic academic knowledge and skills. This holds true across a range of domains. On the personal front, adults need to be able to navigate among plural identities, to confront complex ethical questions, and to make informed decisions in the face of uncertainty (Kegan 2003). On the civic front, they need to be able to articulate and advocate for their perspectives, to engage in productive dialogue across ideological divides, and to decide among imperfect options (Levinson 2012). On the professional front, they need to be able tackle open-ended problems in critical, creative, and collaborative ways (Murnane & Levy 1996; Trilling & Fadel 2009), and to engage in ongoing learning that allows them to adapt to the needs of a rapidly changing job market (Wagner 2008). All of these domains require not only "hard" skills but also the disposition to make use of such skills in an ongoing and context-sensitive way.

As the nation's one truly "common" institution, public schools play a critical role in helping students to build the capacities that will allow them to thrive as adults. Troublingly, however, a large body of evidence suggests that the current system falls short of preparing most (or even many) students for the realities depicted above. A rich literature describes the dominance of low cognitive demand tasks as a mainstay of American public education (Cohen 1988; Lynd & Lynd 1929; Rice 1893). High schools in particular tend to ask only the most capable students to engage in ambitious thinking; students in lower tracks and in higher-poverty schools are least challenged (Anyon 1981; Oakes 1985). On international tests, American 15-year-olds from all but the top quartile of socioeconomic status fall behind on problems that require higher-order skills (America Achieves 2013; Fleischman et al. 2010). The National Survey of High School Student Engagement

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reveals year after year that almost three-quarters of adolescents find their classes lacking in challenge, authenticity, or relevance (Yazzie-Mintz 2010). Overall, as Perrone (1998, p. 14) argues: "[L]arge numbers of students are not receiving an education of power and consequence—one that allows them to be critical thinkers, problem posers, and problem solvers who are able to work through complexity, beyond the routine, and live productively in this rapidly changing world."

In the years immediately following passage of the No Child Left Behind Act (NCLB) in 2001, the misalignment between what schools were teaching and the realities of modern life was rarely a part of public conversations about education reform. Instead, reflecting the priorities of the test-based accountability movement, the emphasis was on providing a system-wide guarantee of basic literacy and numeracy—a return to the three "Rs" with an intensified focus on serving students from all backgrounds. By the time the decade came to a close, however, a growing number of stakeholders had begun to voice their concerns about the limitations posed by focusing exclusively on preparing students for tests of basic ability. Propelled in part by the work of forward-looking business groups and foundations, including CISCO as well as Hewlett-Packard, many of these actors framed their aspirations for schools using the language of 21st-century skills—a term that refers to competencies such as creativity, problem solving, and collaboration (CISCO Systems 2008). Around the same time, a number of district and school leaders began referring to "the new three 'R's'" of school reform: rigor, relevance, and relationships. The sector's growing commitment to moving beyond the basics was reinforced by the widespread adoption of Common Core State Standards, which, despite the controversy around increasing federal control over education, place an unprecedented emphasis on critical thinking.

Skeptics who take the long view might dismiss this change of focus as yet another swing of the pendulum in an endlessly repeating pattern of ideological shifts. It is certainly true that American school reform efforts have tended to cycle back and forth between "basic" and "higher-order" goals (Cuban 1993, Wirt & Kirst 1982). In the 1960s, for example, educators and policymakers talked a great deal about the importance of fostering curiosity and creativity through student-centered instructional practices—only to change their tune as "back to the basics" once again became the mantra in the 1970s. It is also true that this shift, as well as those that preceded it, existed mostly at the level of rhetoric and policymaking; research suggests that teaching practice in American classrooms has remained fairly stable over time (Cuban 1984), with a majority of classrooms remaining teacher-centric, and with teachers focusing more on surface-level knowledge rather than deep understandings (Kane & Staiger 2012). We will look at more closely at this history later in this paper; for the moment, suffice it to say that if one takes the long view it is all too easy to argue that the recent calls for deeper learning are unlikely to gain long-term traction.

Despite this history, we believe that there are some reasons to be hopeful. Today's deeper learning advocates also share the conviction that deeper learning can and should be the province of all types of schools and classrooms, not just those serving elite and/or highly skilled students. Extending the equity-focused rhetoric of the NCLB era, they argue that students from all backgrounds are capable of engaging in critical and creative thinking—and that schools have a moral imperative to support such work across the board. To substantiate these claims, they point to a growing number of "existence proofs": schools, programs, and classrooms that have made significant progress toward enacting deeper learning with historically underserved populations (Vander

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Ark & Schneider 2014). This line of argument represents a significant departure from previous eras. In the past, those who argued for deeper learning tended to focus on raising the bar only for the best and the brightest, so that the United States could retain its edge with respect to creativity, entrepreneurship, and scientific innovation. This narrow perspective was reinforced by the reality that the vast majority of schools (and tracks within schools) that emphasized critical problem-solving, student self-direction, and creative thinking catered to children from wealthy families (Graham 2007). Against this backdrop, the recent rhetoric of "deeper learning for all" is a striking new development.

Perhaps the most powerful reason to believe that deeper learning is more than a passing fad lies in the rapid and irreversible transformations to the landscape of modern life. Even to those who are not involved in the work of school reform, it is clear that today's kindergarteners will graduate into a world that is dramatically more complex—and likely quite different—than the one that they inhabit at the present. By the same token, it is also unclear what role conventional "schoolbook" knowledge has to play in such a world. Even now, digital technologies have made self-directed learning opportunities so accessible that some already are predicting the death of the brick-and-mortar school (Elmore & City 2011). Many remain more optimistic

about the future of formal learning environments, but they agree that if schools are to retain any semblance of utility, they *must* reorient their work around the goal of preparing students to navigate a complex and uncertain future; to do otherwise is to doom themselves to obsolescence (Mehta, Schwartz, & Hess 2012). Thus, while in previous eras it might have been possible to construe deeper learning as an optional supplement to the core work of schools, it is becoming hard to see it as anything less than the central imperative around which the entire K-12 system must reorganize itself in the coming years.

In the rest of this paper, we will engage with this perspective by exploring some of the key issues and questions that surround it. First, we will examine the various terms, definitions, and strands of research that are associated with deeper learning at the high school level. Second, we will discuss in greater depth how the current movement for deeper learning fits into the broader arc of American school reform history. Third, we will draw on the results of our multiyear research project to discuss where deeper learning is (and isn't) happening in contemporary American high schools. Finally, we will illuminate the barriers to teaching for deeper learning and theorize about the political, organizational, and cultural conditions that would need to be in place to move "deeper learning for all" from aspiration to reality.

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PERSPECTIVES ON DEEPER LEARNING

There is no consensus on exactly how to define deeper learning. One prominent definition argues that deeper learning results when learners are able to develop significant understanding of core academic content, exhibit critical thinking and problem-solving, collaborate, communicate, direct their own learning, and possess an academic mindset (Hewlett Foundation n.d.). Our research has led us to emphasize a related approach that suggests that deeper learning often emerges at the intersection of *mastery*, *identity*, and *creativity*. In either case, what is notable is that the definitions coming to the fore today draw together antecedents from different disciplines, fields, and traditions. We argue that more conversation and integration across these strands would be helpful, particularly because deeper learning generally emerges when a number of the associated elements come together. In particular, we think that three kinds of integrations are important for understanding deeper learning: the cognitive and the affective, the short-term and the long-term, and the individual and the social.

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 *transfer* knowledge (Pellegrino & Hilton 2012; Bransford, Brown, & Cocking 1999; Wiske 1998). The idea here is that knowledge becomes deeper when you can use it not only to address a problem in the context in which it has been taught, but that you can also use it to understand or explain something in a different, but related, context. 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. 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 what might be expected to happen if a particular component were damaged.

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 is clear that people who possess deep understandings of a domain move with ease across this false divide. The ability to offer an historical interpretation of the causes or consequences of the French revolution, for example, is rooted both in detailed knowledge of the key players, structures, and events and in knowledge of how 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 widely seen as 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 (Borko & Livingston 1989). This idea relates to Bruner's (1960) notion that to truly understand a domain requires understanding the structure of how that field organizes its knowledge. This kind of epistemological understanding, he argues, is critical to building the conceptual schemas that enables transfer within a domain.

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Missing from these accounts of what it would mean to deeply understand something are the reasons why someone would seek such understanding in the first place. Our experiences in observing, teaching, and learning in powerful classrooms suggest that the "cool" descriptions of the cognitive dimensions described above are married to "warmer" qualities such as passion, interest, and "flow"–qualities that give the learning life and create forward momentum. Studies show that the longer students have been in school, the more their levels of reported engagement decreases (Wexler 2013), which is a very worrying sign for those seeking to promote highly engaged learning in formal education settings. From this vantage point, the goals in pursuing deeper learning need to connect building understanding with motivating interest, as it is this combination, that will yield the kind of virtuous cycle that will build toward deeper learning.

This synthetic 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 (Bloom 1985; Coyle 2009). The general pattern is that people initially become interested in their domains by playing around in those fields (e.g., 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; 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.

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, Lave and Wenger (1991) 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" (e.g., an assistant to a midwife) and through the process of observation, modeling, and emulation, one is gradually apprenticed into understanding and skills in the domain. Collins, Brown, and Newman (1989) have applied similar insights to more classically academic subjects in their argument for "cognitive apprenticeship," in which skilled readers, writers, and mathematicians gradually induct less expert members into their crafts.[2] Such a process bring 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 which 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 with one's social position. It also suggests a shift in role from passive observer to active participant.

Finally, there are the perspectives that have emerged out of our observations of deeper learning classrooms across the nation. While their goals may be quite various (disciplinary understanding, interdisciplinary problem-solving, experiential learning), the *qualities* of these classrooms tended to be quite similar. They were environments where learning often took on characteristics of "flow"; the challenge of working at the edge of their knowledge and skills led students to become deeply absorbed. By the same token, this learning involved grappling with uncertainty, ambiguity, and the real possibility of failure. The motivation to persevere through such obstacles was rooted in the intellectual vitality that characterized these classrooms as a whole–the intangible quality, which infused the work with meaning and momentum.

Taken together, we suggest that deeper learning often emerges at the intersection of the following three elements: mastery, identity, and creativity. Mastery captures the dimensions of deeper learning that are tied to knowledge of substantive content, transfer, pattern recognition and expertise, and understanding the structure of a field or discipline. Identity captures the way in which deeper learning generally is driven by intrinsic motivation, how it is fueled by learners' perceptions about the relevance of the content, and by the way that learning becomes deeper as it becomes a more 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 the field; taking this step builds upon understanding a domain (e.g., analyzing how a play is written) and incorporates it into a creative act (e.g., writing an original play).

Seen this way, aspirations for deeper learning pose a multi-pronged challenge to current practice. At minimum, they suggest the importance of a long-called-for but thus far unachieved increase in the cognitive demand of the tasks that most students, particularly high-poverty students, are asked to complete. From this vantage point, the kind of rigor present in the Common Core and related assessments is a critical step for realizing deeper learning because those standards increasingly call for fewer topics, more depth on each topic, and more opportunities to integrate knowledge and make conceptual connections than previously has been the case. More radically, some advocates of deeper learning are questioning many of the industrial-age structures that organize today's classrooms. From this perspective, a commitment to deeper learning would entail a shift from disciplinary-specific age-graded classrooms based on Carnegie units and seat time toward a system that is more interdisciplinary, problem-based, and organized around demonstrations of mastery. Metaphors of coach and producer would replace teacher and student, and

there would be many opportunities for such "producers" to become part of different kinds of communities that would gradually induct them into more sophisticated levels of work. In either of these conceptions, a serious commitment to deeper learning would require a significant departure from current practice, and particularly for the practices that tend to characterize instruction in schools and classrooms serving disadvantaged and minority students.

A Short History of Deeper Learning: Powerful Antecedents, Shallow Imprints

The history of deep learning is one of powerful intellectual backing but limited imprint on the practices of the majority of American schools. The most careful studies of teaching and classrooms have revealed pendulum swings of "policy talk" but limited impact on underlying practice, which has changed slowly, fitfully, and, in many cases, not at all. Modern deeper learning advocates should understand this history if they want their efforts to be more successful than those of their predecessors.

Deeper learning has had no shortage of prominent intellectual supporters. From Socrates in Classical Greece to Rousseau in Napoleonic Europe to Bronson Alcott in 19th-century America, educators and philosophers long have insisted that powerful learning hinges on the facilitation of ongoing inquiry rather than the delivery of static knowledge. Despite these examples, however, the evidence suggests that schooling in the early United States was on the whole a rote activity, focused more on teaching children the "three R's" and on socializing them to be productive citizens than on cultivating creativity or independent thought (Tyack 1974; Rice 1893).

As the system of publicly funded, publically provisioned, coeducational "common" schools came to encompass the secondary grades in the early 20th century, the landscape shifted—but not in the direction of deeper learning. To the

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contrary, accounts of a prototypical midwestern public high school suggest that instruction in the core academic subjects was focused largely on the development of rote knowledge and basic skills (Lynd & Lynd 1929). Not coincidentally, this period of time is the same one that cemented the core organizational "efficiencies" that have persisted through to the present: age-graded classrooms, the division of the curriculum into discrete academic subjects, and teacher-centered pedagogy, which requires students to master knowledge and skills in lockstep (Tyack 1974; Graham 2007). To the new class of bureaucrats whose job it was to run America's burgeoning city school-systems, these practices were the latest in industrial-inspired design, drawing on the popular principles of "scientific management" in order to streamline the process of providing a full 12 years of education to the country's youth (Callahan 1962; Mehta 2013). To others, however, these practices were troublingly misguided. Foremost among these voices of dissent was philosopher John Dewey, who insisted that the existing model of schooling all but guaranteed that the learning process would be devoid of meaning and depth. Rather than modeling themselves after contemporary factories, he argued, schools—including high schools—should look backward, emulating the values of agrarian households by adopting an interdisciplinary, hands-on, collaborative curriculum which, drawing on Pestalozzi, engaged the head, hands, and heart in equal measure (Dewey 1956).

Dewey's ideas had a profound influence on the aspirations of reform-minded contemporaries and many who followed (Cohen 1988). His work, along with that of other celebrated school reformers such as Maria Montessori, provided a powerful warrant for rejecting the efficiency model of schooling and striving instead enact a more progressive approach to education. At first, those calling for such changes found themselves well outside the mainstream. By 1920, however, they had banded together to form the Progressive Education Association, whose first act was to develop and widely circulate its seven core principles, which included, among others, "Interest the motive of all work," and "The teacher a guide, not a task-master." Posing a clear challenge to the schools of the day, these principles together asserted that the role of schools was to foster individual growth rather than to cultivate mastery of predetermined content.

Over the next several decades, members of the Progressive Education Association experimented with putting their beliefs into action. The result was some relaxation of the rigidities of the rote learning of the previous era, as well as a significant expansion of vocational and "life adjustment education," which were non-academic courses in fields like shop and home economics that were intended to prepare non-college going students for life beyond schools. The progressive impulse resulted in some extraordinary education in small private progressive schools, which drew upon the social and cultural capital of their students, paired with highly skilled teachers, to produce creative and individualized education that retained significant academic content. In the larger sphere of public schools, however, a bastardized vision of progressive education emerged, as vocational and life adjustment education sacrificed academic content in their search for relevance. Critics have seen this failing as a reason to criticize the progressive movement (Ravitch 2000), whereas supporters have argued that the problem was that public schools did not instantiate the original tenets of Dewey's vision (Dewey 1938). Both sides agree that to the degree that progressive education did penetrate mainstream public schools it did not bring about the kinds of complex and integrated learning envisioned by Dewey and others.

This is not to say that the progressive education movement failed to have an impact on secondary schools at all. To the contrary, a small number of private schools and elite "academies" embraced inquiry-based methods for engaging

students in deep study of the academic disciplines (Powell 1996). In the public sphere, by the time the United States emerged from the Second World War, most high schools across the country had adopted a number of elements of educational progressivism—at least at eye level. To enable collaborative work, desks were no longer nailed to the floor. To support students in "adjusting" to the non-academic dimensions of life, high schools offered an array of vocational classes along with an expanded program of elective courses. Finally, in formal recognition that academic learning is informed by social and emotional development, many schools added social workers to their payrolls (Brewer 1918; Cremin 1961). None of these changes represented the more radical of the Progressive propositions, however, and few had the kind of impact that reformers hoped. Collaborative work often meant that one student completed a task while others passively looked on. Technical education and elective programs often devolved into mechanisms for excluding poor and minority students from rigorous academic classes, and in so doing denied them access to more cognitively challenging instruction. Finally, despite widespread talk about cultivating authentic engagement, many schools continued to rely on a model of top-down behavioral control (Cuban 1984; Mehta 2013). In short, the "containers" of progressive education, especially when they were imported piecemeal into large high schools serving non-élite students, were by no means sufficient to foster the spirit of inquiry that the best progressive private schools cultivated in their students.

The impact of progressivism on teaching practice was no less dubious. Although the 1940s and 1950s saw increasingly heated debates about the relative merits of "modern education," Cuban's (1984) study of instructional practice throughout the twentieth century suggests that in reality the modal version of teaching at all grade levels was largely unchanged. In many cases, teachers assimilated discrete elements such as group-work and tangible "props" into their pedagogical repertoires, but continued on the whole to be "knowledge-centered," "subject-centered," and "teacher-centered" in their teaching (Semel & Sadovnik 2005, p. 14).[3] In other cases, teachers tried to institute more substantive changes but did so with limited success. The latter pattern played out with particular clarity when curriculum reforms in the 1960s created opportunities for teachers to engage students in a program of guided inquiry. The aspiration of the new curriculum was decidedly "deeper": teachers would facilitate while students engaged in exploration of open-ended problems, constructing deep

understandings of mathematical concepts. This aspiration, however, was rarely actualized. In the absence of rich content knowledge, ongoing professional development, and broader changes in school culture, most teachers were unable to realize the aspirations of the program's designers (Dow 1991). This pattern of deep aspirations and shallow implementation is one that can be seen across a number of curricular reform efforts, past and present (Cohen 1990).

The third quarter of the twentieth century saw yet another swing of the ideological pendulum, with an increasing number of educators urging the field to reject what they saw as the academic vapidity of progressive education. If America wanted to maintain its economic dominance, they argued, its schools needed to get "back to basics" by focusing on providing students with a consistent baseline of skills and knowledge. Such calls waxed and waned throughout the 1960s and 1970s, but they grew exponentially louder when the publication of the *A Nation at Risk* report in 1983 suggested that American high school students lagged far behind their international peers (National Commission on Excellence in Education 1983), refocusing the field on core content and sowing the seeds of the modern accountability movement. Although traces of progressivism could still be seen in widespread classroom practices such as group-work (Cuban 1984), the dominant policy logic once again favored core knowledge and the development of baseline literacy and numeracy. The passage of No Child Left Behind in 2001 inscribed this vision into federal law, and it remained the dominant thrust up until the past five years, when the emergence of the Common Core and a growing push for 21st-century skills, which may suggest yet another swing of the pendulum.

Throughout this history, the dividing lines of race and class have played a critical role in who has had access to deeper learning experiences. Faced with massive immigration and a rapidly growing high school population at the beginning of the 20th century, reformers built a school system that created different pathways for students of different ability and/or family background. Emboldened by the then-new science of intelligence testing, these reformers created an explicitly differentiated school system, which funneled more advantaged students into fairly rigorous academic tracks and poorer and working class students into much less academically demanding tracks. In the second half of the 20th 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

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schools (Wilson 1987; Massey & Denton 1993). 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 where students are given ample 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 feature worksheets and other low-level tasks (Anyon 1981; Oakes 1985). 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 how to assess information, weigh options, and make decisions, whereas working class and high-poverty students learn how to follow directions compliantly (Bowles & Gintis 1976; Kohn 1977). Thus, while the overall enthusiasm for progressive or inquiry-oriented education has waxed and waned across decades, to the degree that it has been taken up, it has frequently been for the most advantaged students.

Finally, this history also underscores perhaps the most important reason why there has not been more deep

learning in American schools: limited public demand for it. The qualities associated with deep learning—critical thinking, grappling with nuance and complexity, questioning authority, and embracing intellectual questions—are not ones that are widely embraced by the American people (Hofstadter 1963). For example, the 1960's 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 (Dow 1991). MACOS is just one example among many of the ways in which efforts to have students ask difficult questions have been rebuffed by a more conservative electorate. It is perhaps not surprising that the examples we do have of deeper learning—some private schools,[4] Advanced Placement, International Baccalaureate, and some honors track classes in large comprehensive high schools, exam schools, and some other magnet schools— tend to involve niches of interested students, supportive parents, and teachers who are willing and able to teach in such environments. As the following sections will argue, attempting to expand these niches to the whole would require a seismic shift.

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MAPPING THE CONTEMPORARY LANDSCAPE: OBSERVATIONS FROM OUR DEEPER LEARNING STUDY

Four years ago, the two of us set out to "map the landscape" of non-élite public high schools that are enacting deeper learning for all of their students. Our plan was to use our professional networks to identify a range of such places and then to immerse ourselves in them, studying their work using ethnographic methods and emerging with sparkling case studies to inspire and guide others in the field. When we described the work to others, we referred to it as an antidote to the often negative portrayals of schools, calling it by turns the "good schools beyond test scores" project and the "varieties of excellent schooling" project.[5]

Twelve months later found us in a very different state of mind. As planned, we had solicited names of leading non-élite deeper learning high schools from an array of stakeholders in the field: teachers, parents, school and district leaders, policymakers, foundation heads, and researchers. We had driven and flown to see those that consistently were recommended. At school after school, however—including at many of the places included in the Hewlett deeper learning network—we found that as we shadowed students throughout their days, there were startling gaps between aspirations and realities. Most classrooms were spaces to passively sit and listen. Most academic work was comprised of tasks that asked students to recall or minimally apply what they had been told. Even in schools that actively were striving to organize instruction around authentic tasks, when we asked students about the purpose of what they were doing, the most common responses were "I dunno—the teacher told us to," and "I guess it might help me in college." We had hoped to be inspired but instead we felt profoundly disheartened. Perhaps we should not have been surprised; even at these recommended schools, what we saw was consistent with the history described above, as well as with qualitative accounts of secondary schools in the 1980s (Sizer 1984; Goodlad 1984; Cohen 1990) and more recent quantitative assessments of classroom practice (Kane & Staiger 2012).

A central part of the problem, we came to think, was that schools on the whole do not have the mechanisms to translate their espoused values to their enacted practices.

This underscores one of the key findings that emerged from our project: it is not simply the "containers" of the work that allow a given school to translate its aspirations into consistently powerful teaching and learning. Just as two teachers teaching the same curriculum to the same level of students in the context of the same school community can diverge dramatically in their instructional prowess, so too can schools pursuing similar goals using similar theories of action part ways in terms of the quality and consistency of the learning they produce. This holds true even for schools whose structures reflect a particularly innovative or student-centered vision; our work suggests that it is by creating dense and mutually supportive connections among elements such as curriculum, assessment, pedagogy, school culture, and teacher learning, rather than by merely adopting a promising framework, that some such schools are able to make headway while others struggle to create any kind of consistent depth from classroom to classroom (Mehta & Fine forthcoming).[6]

This is not to say that we did not encounter any deep learning at all. To the contrary, even in the schools that had made the least amount of headway as whole institutions, we found *individual classrooms* that were joyful, engaging, and/or intellectually rich places to teach and learn. In a few cases, we found entire departments and programs that consistently embodied some or all of these qualities. And, among the 30 schools that we visited in total, we did encounter a few that were moving toward the consistent depth that we sought at the outset—though even those were

still somewhat uneven from classroom to classroom. Finally, it is worth noting that while the main focus of our work was on high schools, we did visit a handful of elementary schools as well, and on the whole they embodied many more of the qualities that deeper learning advocates aspire to: a commitment to leveraging students' natural curiosities into learning, an emphasis on active thinking and reasoning, and an overall sense of warmth. This is not to say that deep learning was present in every classroom, but rather that the structures and values characterizing elementary schools and elementary school teaching tended to be more promising than those of their secondary counterparts (Cuban 1984).

As we tried to come to terms with what we were seeing, the stance of the project began to shift. By synthesizing the glimmers and glimpses of deep learning that we encountered in the field with the existing research literature, we identified the elements of the deeper learning triangle described above: mastery, identity, and creativity. A large number of 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 kinds of general competencies that Wagner (2008) describes as the "seven survival skills" necessary for the 21st century. These schools, which include those in the High Tech High and Envision networks among others, 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. We see these schools as sitting closer to the *creativity* node of the deeper learning triangle with respect to their aspirations.

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,[7] 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 Perkins (2010) calls "playing the whole game" of the traditional academic disciplines—not just superficially to

learn about historical events, for example, but to emulate the processes of historical inquiry through analyzing primary sources, debating competing interpretations, and conducting original research. Schools which are organized around the International Baccalaureate program are trying even to go one step further than this, striving to help students understand how the core epistemologies (e.g., "ways of knowing") of each discipline compare to and differ from others.

A third group, which notably includes schools in the Big Picture Learning Network and the New York City I-School, focused more 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 extensive choices in terms of their in-school course of study. These schools tend to bank heavily on structures that support individualized pathways toward graduation: online courses, student-chosen internships, elective courses, and "looping" advisories.

Of course, to describe schools by their central tendencies ignores that a number of schools aspired to multiple priorities. Schools in the Expeditionary Learning Network, for example, aspire to involve each element of the deeper learning triangle in relatively equal measure. Likewise, many of the schools described as solidly at one or the other node of the triangle have programs that suggest plural priorities; High Tech High, for example, has an internship program intended to support eleventh graders in exploring possible professional identities, and International Baccalaureate schools require seniors to write an extended essay that reflects their personal interests. But, overall, we were struck by the difficulty of finding the sweet spot—looking across these schools was like looking at a microcosm of the historical debates between progressive and traditional forms of education. Specifically, the schools that were more progressive sometimes struggled to ensure that students consistently mastered basic academic content, whereas the more traditionally academic schools struggled to make their material authentic and connected to students' interests.

The bad news coming out of our study, then, is that field 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 schools that were heavily focused on standardized

testing and schools that had made no commitments to deeper learning whatsoever. This became a predictable dimension of our work: we knew that if we shadowed a given student over the course of their 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 classrooms features at least a moderate amount of critical and/or creative thinking (Kane & Staiger 2012). 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 that means there are more than 700,000 who have some degree of capacity around teaching for deeper learning.

The outlook gets brighter still if we widen the lens a bit to include elective classes and extracurricular activities. Counterintuitively, at a number of 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 complex aspects of the work. This constellation of qualities infuses the learning with depth, meaning, and a palpable sense of momentum— the very qualities that are often lacking from 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, etc.—we also think that there is something powerful to be learned from them about how to engage adolescents in deep learning (see also Halpern 2009; Intrator & Siegel 2014). 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.

The Nature of the Challenge: Constraints and Omissions

Why is deeper learning so rare in contemporary schools? Our observations have led us to think that there are a number of powerful and interconnected forces that mediate against teaching for deep learning in secondary schools. Most readily apparent are the forces that manifest as *constraints*—the barriers that have received widespread treatment in the research literature and popular press and which practitioners name as reasons that they and their colleagues find it difficult to make deeper learning a core goal of their work. These constraints are real and important, and, in aggregate, they pose a significant obstacle to making progress at scale. Equally important, however, are the forces that can best be described as *omissions*— structures, processes, and institutions which could help to support the growth and spread of deeper learning in secondary schools, but which remain largely absent from the sector. Seen as a whole, these constraints and omissions paint a fairly bleak picture with respect to the conditions for making headway toward deeper learning in secondary schools. To build on the strand of optimism from the previous section, however, this picture also suggests that there are many promising levers that might help to loosen the grip of the status quo.

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 total and see each student for many fewer hours each day, making it difficult to build relationships and to create opportunities for sustained inquiry. As one eleventh-

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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." The convention of allocating each block to a separate subject area–a core piece of the conventional "grammar" of American secondary schools–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 number of students a teacher is teaching across their classes) also work against more individualized attention and high-levels of teacher feedback to student work. Beyond this, at a more subtle level, high schools also 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 they are seldom engaged in tasks that involve real choice and latitude–perhaps 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 (Fine 2014; Anyon 1981).

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 amplified in recent years, accruing particular urgency in low-performing schools where administrators worry about making Adequate Yearly Progress as measured by state standardized tests, as well as in upper-middle-class schools where students are competing for acceptance to top-tier colleges. More broadly, however, they are part of a longstanding cultural tradition that emphasizes coverage of disciplinary content as the central value of secondary schooling. This coverage comes at the expense of the more in-depth investigations that would permit genuine understanding (Gordon 2009). Nevertheless, a large body of evidence affirms that secondary teachers continue to rely heavily on lectures, textbook-based teaching, and other forms of direct instruction as a means to "efficiently" cover material (Cuban 1984; Kane & Staiger 2012).[8]

The presence of these traditions and pressures is certainly a key reason for why so few teachers even venture to try reorganizing their practice around deeper learning goals. An equally powerful reason, however, is the absence of

processes that could help them to do so. Essentially, the status quo of 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 paper 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 means that as pre-service professionals, teachers were unlikely to have learned anything substantive about teaching for deep learning (Levine 2006). Finally, while we saw some progress in breaking down the norms of isolation that historically has plagued teaching as a profession (Lortie 1975; McLaughlin & Talbert 2001), we did not see much evidence that the growth of professional learning communities and other forms of teacher collaboration was frequently oriented toward increasing rigor or depth of instruction. On the whole, we observed that even if teachers yearn to infuse their classrooms with greater vitality and depth (a sentiment shared by many we interviewed), they lack rich models for what it might look like and what it might take to do so–and so they default to teaching in the ways that they themselves were taught.

It is not just individual schools that lack processes by which teachers can learn from and participate in the development of a rich and evolving knowledge-base about deeper practice–it is the system as a whole. Unlike most countries whose students score at the top of the PISA distribution, the United States has a fragmented system that fails to attract and retain high-performing teaching candidates (Tucker 2011), rarely capitalizes on the potential synergy between research and practice (Lagemann 2000; Walters 2009), and lacks strong mechanisms for capturing, vetting, and disseminating usable knowledge (Burkhardt & Schoenfeld 2003; Cohen et al. 2013). At the root of the problem lies a constellation of deeply value-ridden arguments about the means and the ends of schooling–arguments that a few individual schools, networks, and/or districts have managed to solve through inspired leadership and bold actions, but which thwart the system as a whole from building the kind of infrastructure that it would need in order to make headway toward deeper learning at scale (Cohen 2013; Mehta & Fine forthcoming). As a result, some of the most intractable and high-leverage problems of practice–for example the question of how to engage low-performing students in deeper learning while

simultaneously helping them to build "basic" foundational skills–remain unaddressed in any kind of systematic way.

It is not a stretch to imagine the interconnected web of constraints and absences that mediate against the spread of deeper learning as an impenetrably dense thicket of thorns. In one sense this is profoundly disheartening–for example, to think along these lines is to acknowledge that simply removing constraints such as fragmented scheduling and high-stakes testing would by no means be sufficient to guarantee significant changes in the status quo. From another perspective, however, the interconnected nature of the barriers to deeper learning can be seen as a boon. After all, making significant headway on any one of them will necessarily involve the others. We have seen examples of this on a small scale in some of the schools that we visited: once they arrived at clear and "thick" shared agreements about the kind of teaching and learning that they were aiming to produce, they were able to make strategic choices about how to use space, time, and personnel; to make choices about which external pressures to downplay or resist; to begin developing the kind of materials and processes that would support teachers in learning and growing; to build a usable and continually evolving knowledge-base of best practices; to curate examples of excellent work that helped students and parents to understand the nature of the school's vision and standards; and, throughout, to develop an organizational culture that reinforced all of these things (Mehta & Fine forthcoming; Brown & Berger 2014). As we will discuss shortly, if such a process could be mimicked at the system level, the vicious cycle could be turned into a powerful positive feedback loop that would go a long way toward changing the status quo.

BUILDING A SYSTEM TO SUPPORT DEEPER LEARNING

While the case for deeper learning is clear, it is similarly apparent that the industrial age architecture inherited from the early 20th century needs to be re-envisioned if we are to make headway. A full account of this reimagining is beyond the scope of this paper, but we will highlight some of the major dimensions that need to change and describe how existing assets could support those shifts.

The first and most basic change needs to come in what we ask of students. By all accounts, the cognitive tasks posed to students are, on average, neither cognitively challenging nor personally engaging. The Common Core State Standards and its aligned assessments are one possible lever for making such a shift; research on the nature of the tasks on the new assessments has suggested that on the whole they do ask substantially more of students than previous state tests (Herman & Linn 2013). In turn, these changes need to be supported by substantial changes in the nature of curriculum; at the moment there is a rush to stamp "common core aligned" on to existing materials without making substantive changes to what students study and what they are asked to do with it. We need both reliable mechanisms for sorting new materials, and new materials, which are developed with teachers that would support the more ambitious goals of the Common Core.

Of course, increasing disciplinary rigor is only one vision of what it might mean to engage all students in challenging, meaningful, work. Many deeper learning advocates are calling for reformers to rethink the underlying nature of academic curricula, particularly secondary curricula, with the goal of moving away from disciplinary silos and toward more integrated problem-based investigations. In this vision, the key questions and problems that confront 21st-century adults necessarily cross disciplines; thus, being an informed citizen and critical thinker means being able to grapple with these difficult questions. Disciplinary knowledge is integral to addressing these questions, but the questions themselves draw their authenticity and power by being rooted in the world. For example, a teaching team in one school that is organized along these lines asked sixth grade students to brainstorm questions they had about the world and themselves. Students organized these questions into categories, and then developed a single

essential question. The students, being adolescents, chose the rather macabre: "How might the world come to an end?" Students then worked in teams to research different possibilities—famine, nuclear war, infectious disease, among others—and then they each presented these possibilities in a culminating symposium to a mixed group of parents and community members. Problems like this draw on adolescents' intrinsic interests and curiosities, and then use those as a way to connect to different parts of the web of knowledge.

This more problem and project-based vision might also imply more significant changes in the social organization of schools and the policies that govern them. Problem and project-based work generally require longer blocks, enabling students to go through the process of grappling with difficult questions, experiencing dead-ends, and eventually finding workable approaches. With longer blocks also come fewer subjects in the course of a given day; it is hard to imagine that if we were starting from scratch and aiming for "deep learning" we would embrace a schedule of students having six to seven 50-minute blocks to study different subjects. Schools address this problem by adopting block scheduling, which is a partial fix, in that it lengthens the blocks and allows students to study fewer things at a time. More radically, if we really wanted to support more interdisciplinary inquiry, policy could support this shift by revising its approach to Carnegie Units, which require a certain number of instructional hours in disciplinary subjects, and instead develop a more flexible way of offering credit for integrated problem or project-based work.

Schools interested in authentic problems would also become more porous in their boundaries with the real world. At one math and science magnet school that we

studied, schools did not offer classes on Wednesdays and instead placed their students to work in nearby college labs, with an end of the year culminating event back at the school where students needed to demonstrate what they had learned from their research. A number of the project-based schools and teachers we studied routinely brought in outside experts to help guide students in their projects and to serve as panelists for final presentations. Many of the schools in our sample routinely placed their students in internships; whether this resulted in "deep learning" was highly variable and depended greatly on the quality of the placement and whether there was supportive oversight on the part of the partner with respect to the student's learning. Policy could support this shift by creating a more formal way of providing credit for these "extended learning opportunities," which would presumably include establishing criteria for when these field-based placements met suitable academic goals and when they did not (Donohue 2013).

Making these changes in learning experiences for students will also require significant learning on the part of adults. The most important priority, by far, in creating a system that would support deeper learning is to develop teachers and leaders who themselves have experienced some version of deep learning, and to give them opportunities to continue to grow and extend their practice (see Mehta & Schwartz 2014 for more details on restructuring teaching as a profession). Achieving this would in turn require changes at every stage of the teacher pipeline. The selection of new teachers would need to be more stringent, as is the case in

a number of PISA leading countries, which would increase the level of academic preparation and content knowledge on the part of prospective teachers. Learning how to teach would need to become much more intentional; new teachers would need to see and have named for them the various elements and routines that are part of ambitious teaching (Lampert, Boerst, & Graziani 2011).

Prospective teachers would also need significant immersion in deeper learning environments, places that routinely demonstrated in their daily practice what it is that teachers are trying to achieve. Part of the challenge here is historical; because most people in the system do not have much experience with deeper learning, it is difficult to find enough mentors and schools that would demonstrate what we want the next generation of teachers to do. This challenge will presumably lessen with time; for the moment, we should work to incentivize the best of traditional public schools to take on mentoring and training of new teachers; we also should draw on leading charters and private schools to serve as incubators for new deeper learning teachers. We also might have new teachers rotate through other types of learning environments—Montessori schools, architectural design studios, conservatories, theater troupes—to expand their vision of the different ways that learners can be inducted into their fields (Learning Designer Lab 2014).

Changes in preparation need to be accompanied by changes in opportunities for adult learning in schools. There are two obvious reasons for this: 1) efforts to improve teacher training will be largely wasted if the ways

> **Research is unequivocal that teachers learn best when they are working on a problem of practice, with colleagues, that relates to their students.**

in which teachers are trained to teach are not reinforced by the schools in which they work; 2) unless many existing teachers change their practices, it will take a very long time to see appreciable changes in the vast majority of schools. To become spaces that foster deep learning for teachers and administrators, schools will need to make structural changes as well as institute more intentional designs around adult learning. Teachers need more time to collaborate, and this time must be used in ways that are anchored unequivocally in their schools' pedagogical visions. Research is unequivocal that teachers learn best when they are working on a problem of practice, with colleagues, that relates to their students (Lieberman 1996); schools need to establish the routines and protocols, and most importantly the culture, which can support this ongoing examination of practice. The most important people in developing such a culture are principals, who thus also need to have had deeper learning experiences that play a critical role in guiding them as they develop the structures, processes, and culture that can support deeper learning in their schools.

Part of the challenge here is that moving toward deep learning will require *unlearning* for many practitioners (Mehta 2015; Bridges 2009). As the goals for instruction move from procedural and algorithmic to more conceptual and open-ended, teachers will need both to learn new content knowledge and to develop different teaching strategies. Making this kind of a shift requires considerable skill and expertise on the part of instructional leaders (including master teachers, coaches, and principals),

who need to demonstrate the values of new modes of instruction, model new practices, create opportunities for teachers to take risks, and establish environments which normalize failure as a necessary part of learning. These are many of the same characteristics we are seeking for students; thus, creating such environments for teacher learning would create system-wide *symmetry*.

In order to support this kind of adult learning at the school level, accountability and assessment systems would need to shift. As we argued earlier, the current focus on high-stakes individual teacher evaluation is counterproductive in three keys respects: it focuses narrowly on performance on state-administered tests in reading and math; it places the onus of improvement on individual teachers rather than on schools as whole organizations; and it discourages the kind of experimentation and unlearning that real change requires. A more sensible accountability system might emulate the inspectorate model utilized by the United Kingdom, by many American private schools, and most recently by New York City in the form of school quality reviews. In such a system, schools are periodically visited by an expert team of educators, who rely on a range of data–data that include interviews, student surveys, and parental surveys, as well as test scores–to make holistic determinations about strengths and areas of improvement. This approach does not preclude significant consequences for failing schools, but it also has the benefit for all schools in providing recommendations that would be useful for improvement. From a psychometric perspective, such a system would also be more fair than our current system,

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since, rather than relying heavily on single indicators, an inspectorate model marshals a diverse array of evidence to make judgments about how schools are faring and what would enable improvement.

The United States could also follow the models of the International Baccalaureate program as well as examination systems in other countries such as England, Singapore, and Australia, and develop systems of district or state-level assessments that measure deeper learning competencies (Conley & Darling-Hammond 2013). In these models, assessments usually feature a culminating "sit down" exam that entails a series of essays or other open-ended problems, and also a series of specified tasks within the classroom that require learners to demonstrate the variety of skills and knowledge that are important in a domain. This classroom portion could mean the development of a portfolio of work, as in the English examination system, or it could be a longer investigation of a single problem, such as the Singaporean science exams, which require students to develop a hypothesis, plan an investigation, record reliable data, interpret experimental results, and reflect on the methods used. This classroom portion is most often scored internally with a rubric, but it is also possible to have panels of experts evaluate the work, or, as IB does, to audit a sample of the classroom-level scoring to ensure that external standards are being upheld. It is also possible to organize systems for external scoring of portfolios of work; for example, the New York Performance Standards Consortium is a group of more than 40 public secondary schools that allow students to submit graduation portfolios in place of certain parts of the Regents exams. The key to any of these systems is that they do not incentivize the narrowing of curricula or reward the ability to take low-level multiple choice tests, and instead position the accountability system to reward the kind of deeper learning described above.

In building any such system, it would also be wise for federal, state, and district leaders to think carefully about the twin goals of *innovation* and *improvement*. Much of what we are suggesting here, while not exactly new, would represent for many a significant break from longstanding practice. It is also the case that the broader world of learning is developing quickly, and thus it would be wise to create room for the development of forward-looking models of schools, teacher training, assessment, and other practices and policies. With this in mind, we suggest a two-part strategy. One part has to do with innovation. Each level of government can use the current ESEA waiver process to create space for new ideas at the level just below it: the federal government can use waivers to allow states to create different kinds of accountability systems; states can use district waivers to grant districts more freedom to innovate; and districts can create space for new school models or for innovation within existing schools. Governmental and philanthropic organizations can also partner with knowledgeable nonprofit partners to create incubators that address different dimensions of this agenda; these incubators would create space, knowledge, and time for innovation-oriented actors to develop something new with maximal support. At the same time, there is a plethora of existing literature about how best to teach for deeper learning, organize schools for deeper learning, assess for deeper learning, and create policy for support and accountability of deeper learning. If this knowledge were to be more consistently applied, it would benefit a lot of students. We think of this as the improvement agenda, which is less about discovering new practices and more about finding ways to more consistently apply existing ideas across different contexts. In the longer run, we hope that these two streams would cross-pollinate, and that as new ideas and approaches are developed, refined, and tested in the innovation space, they would become part of a common knowledge-base that could inform incremental improvement on the part of a larger group of institutions.

CONCLUSION

Heifetz (1994) famously distinguished between "technical" challenges, which are problems that can be solved using existing knowledge, and "adaptive" challenges that require substantial new learning and re-evaluation of existing commitments. While this distinction is now so frequently invoked as to be cliché, in this case it really does apply. Building a system that would support deeper learning for all would be an adaptive challenge in many respects. In terms of goals, it would extend to all students what historically has been reserved for a relatively small minority—as the above history shows, to the degree that we have had success in producing deep learning, it has come in pockets for advantaged or highly motivated students and self-selected teachers. Deeper learning also entails a kind of education that most parents have not experienced and that many might not value—one that teaches students how to question assumptions, think independently, and ask hard questions about social, political, and ethical issues. Thus, at the most fundamental level, "deeper learning for all" is a challenge that has not been attempted in this country, nor is it clear that there is a widespread political demand for such a thing.

Adaptive learning also entails loss; people have to give up some of what they value and know in order to make room for something new. In this case, teachers will need to re-imagine how they teach; education schools will need to fight university imperatives that pull them away from practice and become more focused on carefully guiding their charges toward deeper learning; K-12 schools will need to resist the urge (and incentive) to measure their success by how much they cover; and districts and states will need to fight the desire to control teachers and schools and focus instead on supporting them as learners. None of these changes will be easy to enact, and, given the inertial pull of history, if one had to make a wager it would be for the status quo.

And yet, there are reasons to think that it can and will come to pass. Foremost among them are the economic imperatives—for most of American history, graduating from high school would secure you a middle class living, regardless of how much you have learned. This is no longer the case, which radically changes the incentives for both parents and students in how they approach schooling.

Then there are technological changes. We currently have what Elmore has described as a "portal" view of schooling: states, and then districts, and then schools make decisions about how to carve up the skein of knowledge, and the result is what a student receives in biology at 10 a.m. on Thursday. But everything ever known about biology is sitting on the student's phone. At some point, you would have to think, we will shift to a world that is directed more by students' interests, where teachers scaffold student learning, yes, but students' profit by directly engaging with the limitless information and resources available on almost any topic.

Finally, there is the fact that deeper learning is *captivating*. Hard to achieve, yes, but once you've experienced it, shallower learning looks like black and white compared to full-spectrum color. Change will be slow, and it may take several generations, but deeper learning can spread gradually, as each one teaches one until we live in a world in which all students experience an education of power and consequence.

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ENDNOTES

[1] This idea of a spiral came from a group of students in our deeper learning class, as part of a class assignment to analyze data we collected through interviews with deep learners. The students in that group were Meredith Innis, Ben Johnson, Jessica Lander, David Sabey, Jesse Tang, Julia Tomasko, Tat Chuen Wee, and Olivia Werby. It was also influenced by reading Bloom (1985).

[2] While these might be disciplinary communities, there is also an argument that the right educational goal at the secondary level should focus on general skills like reading and writing, critical thinking, and scientific reasoning (Heller 2010). Others have argued that these general skills may only emerge through deep immersion in particular classes or fields (Moje 2010). Settling this debate is beyond the scope of this paper, but we would note that the kind of induction we think is important for deep learning can take place in less punitively focused ways. Many teachers seek to impart these more general skills by modeling them and by inducting students into a community of adults who have these abilities and dispositions.

[3] More recent work by Cuban (2008) has emphasized that teachers now often alternate between more teacher-centered practices, which efficiently move students to meet district pacing guides, and student-centered activities, which are more engaging and facilitate student cooperation with the goals of school. This hybrid mix is a departure from the more teacher-centered approach of the past, but is not necessarily "deeper" in terms of creating powerful experiences for students.

[4] Elite private schools, such as Exeter, Andover, Fieldston, Dalton, and many others, benefit considerably from significant financial resources as well as the social and cultural capital of their students, but they built on these assets in ways that have created some of the most developed examples of deeper learning that exist in the country (Powell 1996).

[5] Lightfoot's (1983) *The Good High School, Sizer's Horace's Compromise* (1984), and Rose's (1995) *Possible Lives* were all, in different ways, models and inspirations for our initial study.

[6] Mehta and Fine (forthcoming) provides greater detail on exactly what elements need to be aligned for more consistent realization of instructional priorities. There is also a connection here to the literature on different kinds of school networks, including Montessori, International Baccalaureate, and more recent comprehensive school reform providers that have developed integrated systems to support instructional practice (see Cohen et al. 2013 for one account).

[7] Whether Advanced Placement courses are moving students toward "deeper learning" is a quite complex question. In some subjects and in some teachers' hands, AP can result in rapid coverage of content at the expense of deeper or more developed explorations of fewer topics, and for that reason, some of the most elite schools (public and private) have moved away from AP. At the same time, Advanced Placement courses are intended to mirror college courses in similar subjects, and as such often require a command of content and also reasoning about the content that is significantly higher than in most high school courses. There also has been some revision of Advanced Placement exams in recent years, particularly in the sciences, as the College Board has responded to criticisms that the tests are wider than they are deep, and have refocused some of their exams on fewer topics with more reasoning. Thus we argue that Advanced Placement can be either an asset for or a constraint on deeper learning, depending on the field and the way in which the teacher prepares students for the exam.

[8] The Common Core, with its emphasis on fewer topics with more depth, is an attempt to change this pattern. Whether it succeeds will depend largely on whether the systems are built that would enable these policy aspirations to enable changes in practice.

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Part II: How School Districts Can Support Deeper Learning

INTRODUCTION

School district leaders nationwide aspire to help their schools become vibrant places for learning, where students have meaningful opportunities not only to study core academic content but also to develop critical thinking and problem-solving skills, the ability to communicate effectively, and other capacities that are essential to success in later life. Some call this combination of knowledge and skills "deeper learning" (Hewlett Foundation 2012).

Historically though, school district central offices have been ill equipped to support such ambitious goals. For example, a host of major school improvement initiatives—from the "effective schools" movement to site-based management and comprehensive school reform—have stumbled, or failed outright, at least in part because central offices did not help schools implement these reforms successfully. Numerous studies of these and other initiatives conclude that productive participation by district-level leaders and staff is essential to bring high-quality teaching and learning to scale. But those studies generally do not elaborate on what productive participation entails or how to help central offices engage productively in districtwide teaching and learning improvement (e.g., Berends et al. 2002; Malen et al. 1990; Purkey & Smith 1985).

However, a new wave of research suggests that central offices can support the goals of deeper learning by making a genuine commitment—not just on paper but in all aspects of everyday practice—to what we call "performance alignment."

Performance alignment does not mean that central office staff simply adopt a new organizational vision, that they agree to make decisions with the best interest of children in mind, or that they pledge to do their current tasks more efficiently. Rather, it means that they continuously scrutinize everything they do to ensure that they are spending their time and other resources on the *right work*: work that helps principals support teachers so that all students realize ambitious learning goals.

Central office staff working toward performance alignment recognize that they influence teaching and learning not directly but through their support for the many others who do have more direct impacts on those outcomes. They strategically coordinate their work so that the individual parts of the district system operate in concert with one another, as opposed to working in separate silos or in competition for limited district resources.

Why should district central office leaders make performance alignment a key part of their efforts to help all students learn deeply? What, more specifically, does performance alignment entail, and how might district leaders move in that direction? We address those questions in this paper. First, we identify several challenges that district central offices often face when they try to support the improvement of teaching and learning districtwide. We then describe how pioneering districts are pursing performance alignment. And we conclude by recommending specific strategies that can help school districts to realize deeper learning at scale.

We base our claims on intensive research in nine districts—which vary in size, demographics, and other characteristics—and on our experience as partners and advisors to another 17 central offices that have been engaged in implementing reforms consistent with performance alignment.

Our findings and observations point to the need for a fundamental redesign of most central office functions, as well as some major departures from business-as-usual for most if not all central office staff, especially those in human resources, curriculum and instruction, and principal supervision. Such reforms can be challenging, but they are likely to be necessary for school systems to realize deeper learning in all schools and for all students.

WHAT IS DEEPER LEARNING, AND WHAT DO CENTRAL OFFICES HAVE TO DO WITH IT?

For at least the past two decades, federal and state policymakers have called on school districts to hold all students to high standards, as part of a broader strategy to ensure that all students graduate from high school ready for college and career (Center for Education Policy 2004; Fuhrman 1999; Fuhrman & Elmore 1990; Hamilton et al. 2007; Kirst 1990; Kober et al. 2010; NGA, CCSSO, & Achieve 2008). This emphasis on high standards reflects the assumption that when schools *neglect* to define clear high standards for what students should know and be able to do, classroom instruction tends to lack rigor and quality, resulting in poor learning outcomes, low graduation rates, and inequities in educational opportunity. By contrast, when educators set high standards for all students, and when they truly believe that all students can meet them, they become more likely to create opportunities for all students to learn at high levels.

Recent school improvement efforts such as the Common Core and the Hewlett Foundation's deeper learning initiative are grounded in this theory of action. They aim to define ambitious learning targets for all students, both in specific academic content areas and—in the case of deeper learning—related to additional skills such as critical thinking, problem-solving, collaboration, communication, and the ability to direct one's own learning (Hewlett Foundation 2012; Huberman et al. 2014; National Research Council 2012).

At the same time, many researchers have found that while high standards and expectations set the stage for student success, the *in-school* factors that tend to have the most powerful influences on student learning are teaching and principal leadership (Goldhaber et al. 1999; Grissom et al. 2013; Rivkin et al. 2005; Rockoff 2004; Robinson et al. 2008; Sebastian & Allensworth 2012; Supovitz et al. 2011). For example, Hanushek (1992) has found that students assigned to very high-quality teachers learn far more than peers assigned to very low-quality teachers, ending the school year up to a full grade level farther along. And principals influence classroom instruction in a number of ways, such as by establishing a climate conducive to learning, ensuring quality professional development for teachers, and providing ongoing feedback to help teachers improve their practice (Grissom et al. 2013; Sebastian & Allensworth 2012).

But what about district leaders and central office staff? How much and what kinds of influence do they have on teaching and learning?

Others have recounted some general roles central offices play to ensure teachers and principals have basic supports to succeed in their work (Knapp et al. 2010; McLaughlin & Talbert 2003). For example, in districts of all sizes, schools tend to rely on their central office staff to provide professional learning opportunities and to identify and procure standards-based curriculum materials. Further, while school principals in many districts have the authority to select their own teachers, the pool of available candidates is often shaped by central office systems of teacher recruitment, hiring, and retention (Odden 2011). But districts carry out these functions also in districts that do not significantly advance student learning. What, more specifically, do central offices do when they provide professional learning, recruit and select teachers, and otherwise engage in their work in ways that seem consistent with supporting the ambitious results of deeper learning for all students?

Little Research or Policy Attention on Central Offices

In past decades, district central offices appeared mainly in the background of studies that focused on schools and mainly as impediments to school improvement (Berends et al. 2002; Malen et al. 1990; Purkey & Smith 1985). The few researchers who did focus on central offices did so not by deeply investigating what actually went on within central offices but, rather, by using available datasets to identify a handful of district-level characteristics that appeared to be statistically associated with positive school outcomes. More recently, attention to districts has increased somewhat, with researchers using qualitative and mixed-methods approaches to study district effectiveness. However, most have described the influence of "the district" as a whole on school improvement efforts, and they have reported their findings in terms of broad categories of district action, such as "leadership," "vision," or "policy alignment," that, they argue, matter to school results (e.g., Togneri & Anderson 2002).

Because such methods leave the inner workings of central offices unexamined, researchers have been able to provide few insights into the specific and various ways that district central offices influence teaching and learning. For example studies have made no distinctions among the myriad district-level staff members whose actions might have differing impacts on school outcomes (Spillane 1998). Nor have they addressed why some districts that engage in particular actions, such as policy alignment, fail to see the positive results that have been observed in other districts (Corcoran et al. 2001).

Likewise, attention to school district central offices has been largely absent from recent policy debates about education reform. For example, the Education Commission of the States lists over 70 issues in its database of K-12 education policy topics, research, and resources, but not one of them relates to how the central office can better support school performance (ECS 2015). Similarly, many foundations and state and federal policymakers have chosen to bypass central offices altogether and work directly with schools, as was the case with both the small schools movement and school improvement grants (Busch et al. 2004; Yatsko et al. 2012).

Limited Central Office Support for Teaching and Learning

The lack of attention to central offices' contribution to teaching and learning makes sense in light of their history. In the early 1900s, rural leaders formed central offices largely to help raise the local funds required as a precondition to receiving newly authorized federal support for schools (Mirel 1990; Steffes 2008). And urban leaders created them mainly to manage burgeoning enrollments and handle business functions. Their participation in teaching and learning matters usually extended only to ensuring that teachers were properly licensed.

Earlier, in the late 1800s, superintendents had typically functioned as districts' head teachers, with authority over the curriculum. However, as the organizational ideal of "scientific management" gained prominence, in the first decade of the 1900s, central offices came to focus mainly on ensuring the efficient use of resources and on monitoring compliance to regulations; the role of the superintendent followed suit (Bjork & Kowalski 2005). And for the better part of the last century, central offices built up their capacity in those non-instructional areas, spurred in part by federal and state funding streams that treated local educational agencies as little more than fiscal pass-

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throughs for school funding (Marsh 2000). Additionally, in the 1960s and 70s, superintendents found themselves under growing pressure from civil rights leaders, teachers unions, and federal and state governments to share decision making with educators at local schools, which further eroded their influence on teaching and learning, even with regard to operational matters.

Considering these origins, it is no surprise that when, in the late 1980s and early 1990s, central offices were called upon to help implement standards-based reform and other ambitious efforts to improve the quality of classroom teaching at scale, their capacities turned out to be poorly aligned with this new role. For instance, in 1991, the National Council for the Teaching of Mathematics issued professional teaching standards that required a fundamental shift in pedagogy, from an emphasis on the memorization of mathematical procedures to efforts to deepen students' understanding of mathematical concepts and their applications. But central office staff tended to assume that the introduction of these ambitious teaching and learning standards entailed only modest changes to their own work (Honig 2004; Spillane 1998, 2000). Even those staff who were explicitly charged with supporting high-quality teaching—such as coordinators of professional development services—tended to lack the experience and resources required for realizing such outcomes (Hubbard et al. 2006).

Why Central Offices Struggle to Support Improvements in Teaching and Learning

When district central office leaders do aim to shift their roles to support ambitious teaching and learning, the misalignment of central office resources, data, and other systems to those demands can frustrate their efforts. For one, competition and lack of coordination within central office units can impede their support for teaching and learning improvement. For instance, one midsized urban district with which we partner, provided its teachers with state of the art professional development in mathematics for many successive years. Experts agreed that the live and video-based coaching and the intensity of the supports

likely contributed to significant improvements in students' performance in mathematics on standardized tests across virtually all grade levels, for several years. However, to provide this support, central office staff used well over half of the days available for teacher professional development, as well as most of the allotment for substitute teachers, leaving few resources for other subject areas, such as English language arts and science. Student learning outcomes actually declined in those other areas during this period.

A second reason central office leaders struggle to support the improvement of teaching and learning at scale relates to limitations of available data for targeting resources for improvement. For example, in one district that participated in our research, staff in the curriculum and instruction (C&I) department[1] initiated a major effort to provide professional development for teachers in schools with the greatest need, as determined by a new system that placed schools into four "tiers," based on their students' performance on standardized achievement tests. C&I staff targeted their most intensive supports to schools ranked at Tier 1–those that did not adequately improve student performance for several years–and they offered fewer and fewer supports up to Tier 4, which included schools whose test scores revealed strong performance and growth.

The district superintendent and school board praised the tiered system as an example of using data wisely to target limited resources to areas of greatest need, and other districts copied the approach. In our analysis, however, we found that many of the Tier 1 schools already had a significant number of teachers performing at a high level, as well as on-site teacher leaders who were providing enhanced professional learning opportunities to their peers–thanks to a separate initiative that had directed strong teaching candidates to those schools. The principal of one Tier 1 school reported that he now had more resources for professional development than he really needed, and his teachers were telling him that the district's required professional development sometimes took time away from learning opportunities that they found more

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[1] We use the title "curriculum and instruction" to refer to the central office department charged with supporting the curricular and instructional needs of a district's teaching staff for example by adopting curricular materials and providing professional development. other common titles for this department include "instructional services" and "teaching and learning." very small districts tend not to have full curriculum and instruction departments but still have someone or a subset of administrators handling those functions.

meaningful. Other school leaders, too, reported that the professional development the district provided to Tier 1 schools was too rudimentary to meet the needs of many teachers who were actually teaching at a higher level of quality than suggested by student test scores.

Central office staff acknowledged this problem. However, because they lacked reliable access to data that might better inform them about the actual quality of teaching in each school, they could not figure out how to provide services that aligned with teachers' actual learning needs. We find such mismatches between teacher quality and professional development opportunities to be common in many school districts. Further, we have observed that C&I staff sometimes engage teachers in professional development without first consulting with principals to determine whether the support fits with the school's overall efforts to strengthen teaching practices.

Third, systems for the hiring and placement of personnel in many school districts do not function in ways that support improved teaching and learning. For example, in many of the midsized districts with which we work, it has long been standard practice for HR staff to screen teaching candidates' credentials very lightly before passing them along for principals to consider. As a result, for each vacancy, a principal might receive files for anywhere from 50 to 100 candidates, forcing them to waste precious time looking through applications that the HR staff should have been able to exclude from the start. Further, while some of the remaining candidates might be a good fit for the given position, a cursory screening process does little to identify those whose instructional strategies and experiences are most aligned with deeper learning. Principals report that due to such slow and cumbersome hiring practices, they have lost promising candidates to other schools and districts. Districts with such systems also often end up spending significant professional development resources bringing teachers up to a basic level of performance–

resources they could have used elsewhere, had they hired teachers with higher demonstrated performance and a better fit at the outset.

Fourth, central office staff who supervise principals have rarely provided them with the kinds of intensive supports that can help them lead for instructional improvement (Honig 2013; Honig & Rainey 2014). In many districts, principal supervisors devote much of their time to monitoring principals' compliance with various central office directives. Or, they serve as all-purpose liaisons between the central office and schools, following up on requests from either party and filling in for non-responsive central office staff. For instance, in one of the districts that we have studied, HR staff were so slow to assign teachers to schools that the principal supervisors decided to step in and make those staff assignments (Honig et al. forthcoming). Not only did this mean that they had less time to do their own jobs–working directly with principals–but it also had the effect of shielding the other staff from the consequences of their low quality of service to schools, likely prolonging the office's dysfunction.

These problems with the resources, data, and systems within central offices have deep roots, and they will not be resolved by the kinds of actions that districts typically take in response to calls for ambitious teaching and learning standards.

For example, to support the implementation of the Common Core, many districts are now working to align their professional development and curricular resources to the new standards. However, in part because the standards are organized by content area such as mathematics and English language arts, this can easily have the effect of reinforcing organizational silos and encouraging even more competition among them, thereby diluting the overall quality of professional development. Ideally, central offices would provide such services based on data about the actual capacity and needs of the teachers, administrators, and

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staff in their schools, and not by assuming that resources should be channeled to particular subject areas. Further, in many districts, leaders assume that efforts to improve teaching and learning belong largely within the purview of the C&I department and overlook the importance of the personnel recruitment and selection functions played by HR, or the pivotal roles played by principal supervisors to the improvement of teaching and learning.

In a potentially promising development, some district, leaders have begun to assign cross-functional teams–including representatives from several central office units–to work together to support teaching and learning in a cluster of schools. Such teams may be able to build bridges among organizational silos, and we find that they sometimes lead to better working relationships between principals and individual central office staff members. However, like the traditional forms of principal supervision mentioned earlier, such teams also can perpetuate unaligned systems by essentially buffering their home units from challenging engagements with principals that might have otherwise created urgency for deeper changes.

Given the significant barriers to central offices' ability to support deeper learning, are advocates on a fool's errand when they call on central offices to do so, or–as we argue in the next section–is it realistic to pursue meaningful improvements?

> Principals report that due to such slow and cumbersome hiring practices, they have lost promising candidates to other schools. Districts with such systems also often end up spending significant professional development resources bringing teachers up to a basic level of performance—resources they could have used elsewhere, had they hired teachers with higher demonstrated performance and a better fit at the outset.

WHAT CAN CENTRAL OFFICES DO TO SUPPORT SYSTEM-WIDE DEEPER LEARNING?

Some districts have succeeded in confronting the mismatch between the ambitious goals of deeper learning and the long-standing limitations of central office staff capacity and systems. In so doing, their leaders have demonstrated that this work requires not just tinkering with central office staff and systems but transforming them (Honig 2013).

We conducted one intensive study of three districts that tackled the problem of central office performance misalignment head on (Honig et al. 2010), as well as another six districts that aimed to use findings about those districts and other research to inform their own central office transformation efforts (Honig et al. under review). We also currently partner with an additional 17 districts and their support providers across the country to help them use the emerging knowledge base about central office performance improvement and to learn from the experience of pioneering districts.

We find that central office staff can do much to ensure that their daily work meaningfully supports principals as they enable teachers to help all students realize ambitious learning goals. Further, they can strategically coordinate their work with that of others throughout the district so that the individual parts of the district system operate in concert with one another, again toward the goal of engaging all students in deeper learning.

Our research and district partnerships reveal that such performance alignment entails a fundamental redesign of many central office functions, with particular attention to C&I, HR, and principal supervision. Below, we draw upon our own research on performance-oriented central offices (e.g., Honig et al. 2010; Honig 2012, 2013, 2014; Honig & Rainey 2014; Honig et al. forthcoming) as well as our other experience with districts to describe three main design elements common in districts pursuing performance alignment:

> Define high-quality teaching and principal and teacher leadership;

> Ensure that principal supervisors are truly focused on supporting principals' instructional leadership growth; and

> Enable all district staff to focus their time and other resources on activities that support schools' pursuit of deeper learning.

Although the districts with which we work have not been pursuing deeper learning per se, they have been working toward much the same goals, and their experiences provide important lessons for other central offices interested in supporting ambitious teaching and learning.

>> We find that central office staff can do much to ensure that their daily work meaningfully supports principals as they enable teachers to help all students realize ambitious learning goals.

Define High-Quality Teaching and Principal Instructional Leadership

Districts that align to performance, like performance-oriented organizations in other arenas, clarify their performance target, in this case the kinds of teaching that have been linked, theoretically and empirically, to deeper learning. These districts also clarify the proximate supports for realizing that target—here, school principals as supports for teachers and high-quality teaching, or what some call "instructional leadership."

At the school level, clear and explicit definitions set the stage for teachers and principals to develop a shared understanding of (1) the kind of teaching they aim to develop and (2) what principals can do to support it. Such joint sense-making is fundamental to professional learning, providing educators with a common image, or mental model, of the kind and level of performance to which they aspire, and which they can use to guide improvements in their practice (Collins et al. 2003). We have found that teachers and principals are likely to benefit from district improvement efforts when they have opportunities to participate in defining their professional standards and deciding which of them to prioritize (e.g., Turnbull et al. 2015; Honig et al. 2010; Honig 2013).

Definitions of high-quality teaching and principal instructional leadership can also function as important tools to support performance alignment in central offices. For example, school districts that have successfully improved the quality of the teachers and principals that they hire use such definitions to focus recruitment, screening, and selection processes, and they frequently use performance

tasks to gauge how well a candidate performs in relation to those targets. In so doing, these districts not only set themselves up to hire teachers who perform at a relatively high level of quality at the outset but they also get to know each candidate in ways important to ensuring the right fit between candidates and leadership and teaching assignments (Odden 2010; Turnbull et al. 2015).

Common definitions also help staff of C&I units to design, provide, and assess professional learning opportunities. For example, in one of our partnership districts, C&I staff created a teacher evaluation system that scored teachers on the extent to which their teaching reflected the standards in their instructional framework (i.e., their definition of high-quality teaching), and the results informed their decision to target professional development on particular forms of inquiry across the content areas. And in an example from one of our original study districts, principals reported that thanks to their new instructional framework, they knew precisely what their supervisors were looking for when they observed teachers in their schools, and they now had a common language for discussing the quality of teaching and how to address concerns (Honig et al. 2010).

Just as important, a common definition of high-quality teaching and principal leadership allows for joint strategic work *within* and *between* central office units, since it enables staff to see how they contribute to the district's overall strategy for improving teaching and learning. For example, in one of our partner districts, C&I and HR staff are participating in a series of strategic planning sessions to decide on common data they can use to inform professional development and the reassignment of teachers and principals, especially at their chronically low-performing schools. Staff have commented to us that before they had a shared definition of high-quality teaching, their conversations mainly focused on sharing information about what the other units were doing; now, staff more carefully scrutinize the extent to which each is contributing to an overall approach at each school likely to realize common targets related to improving teaching quality.

But the extent to which such definitions help anchor performance alignment depends in part on the quality of the definitions themselves, and on the ways in which staff use them.

For example, many definitions of high-quality teaching and leadership are so long that they do not adequately focus teachers, principals, or central office staff on common performance targets. Emerging research reinforces the importance of choosing a manageable number of teaching and leadership practices to anchor observations and improvement efforts. Districts that do so tend to amass detailed information that they can use to provide intensive and useful feedback for teachers and principals (Grissom et al. 2013; Honig et al 2010). On the other hand, when staff try to use too many elements to guide their work, they risk focusing on none of them at a level of depth adequate to support improved practice.

Many teachers and principals in our partner districts report that when district staff neglect to prioritize their goals, they tend to resort to checklist-style observations—simply marking off whether or not they see evidence of particular practices, rather than collecting the detailed information about classroom teaching and principal leadership that would allow them to provide meaningful feedback or assess the value of a particular professional development strategy.

Further, while district frameworks might include some teaching and leadership practices that are supported by research, they might also include some that are not. For instance, they might emphasize the use of complex questions to generate classroom discussion, which has been associated with deeper learning of mathematics, science, and other content. But they could also give priority to teachers' participation in professional learning communities, which have been found to have less proximate influences on student learning. Similarly, many definitions of high-quality principal leadership include vaguely defined actions such as "providing feedback to teachers," which

hardly specifies what principals actually *do* to contribute to improvements in teaching and learning. And as Venkateswaran (2015) has demonstrated, some feedback can actually have a negative impact on teacher learning.

The generic nature of such frameworks also poses problems. For instance, the teaching moves shown to be effective in secondary science instruction are not necessarily the same as those found to promote student learning in elementary mathematics (Franke et al. 2007; Windschitl et al. 2012). Similarly, leading a secondary school involves practices that can differ from those associated with elementary school leadership. And while individual principals sometimes have a direct influence on the quality of teaching, a growing strand of research suggests that successful principals often cultivate the leadership of teachers to grow their own and their colleagues' practice (Portin et al. 2009). Yet, in coming up with their definitions of high-quality principal leadership, districts often neglect to make these and other important distinctions.

In sum, districts that align their performance to the goals of deeper learning are careful to adopt specific, shared, and research-based definitions of high-quality teaching and principal leadership.

However, while such definitions of high-quality teaching and leadership are necessary, they are hardly sufficient. In order to see real gains, district leaders need to address the *entire* central office's performance, asking themselves: What would the office look like if it were truly designed to support instructional leadership, high-quality teaching, and—ultimately—deeper learning? Currently, are staff engaged in work that is not in service of such results? And, beyond simply helping them do their current work more efficiently, what can be done to engage them in the right work?

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Ensure That Principal Supervisors are Truly Focused on Supporting Instructional Leadership

To become true leaders of teaching and learning improvement in their schools, principals often need intensive and personalized supports, which district principal supervisors are in unique positions to provide (Honig et al. 2010; Rainey & Honig forthcoming).

In our work, however, we have found that principal supervisors typically spend the bulk of their time engaged in tasks such as monitoring schools' compliance with federal, state, and district policies, running interference for ineffective central office units, and conducting principal evaluations—none of which supports principals' growth as instructional leaders. Nor does the size of the district seem to matter. In small school systems, one might expect to see more personalized attention to principals' needs. But we have found that supervisors in smaller districts (where the role typically falls to superintendents or directors of teaching and learning) also spend their time mainly on operational issues and evaluation. That is the case even among superintendents who say that they have a responsibility to provide principals with feedback and other supports to help them strengthen their instructional leadership (Honig et al. forthcoming).

Viewing principal supervisors as an important but largely untapped resource, districts pursuing performance alignment take deliberate steps to reduce the amount of time supervisors spend on operational and regulatory functions and shift their focus toward improving instruction. In turn, supervisors have the greatest impact on their districts when they dedicate their time to specific teaching strategies such as modeling effective instructional leadership, both in one-on-one settings and in professional learning communities (Honig et al. 2010; Honig 2012; Honig & Rainey 2014; Rainey & Honig forthcoming; for a summary of research findings into principal supervision, showing an association with improved performance, please see: www.dl2uw.org/principal-supervisor-performance-standards.html).

Such supervisors are careful not to skip over the principal and work directly with teachers instead, in an effort to have a more immediate impact on the quality of teaching and learning in local schools. We have found that when they do so, they miss important opportunities to support principals, resulting in weaker instructional leadership over the long term, as well as undermining the overall coherence of teachers' professional learning opportunities (Honig et al. 2010).

Supervisors can become progressively more capable of helping principals only if they receive ongoing support, too (Rainey & Honig forthcoming). We find that it is particularly important that their own district leaders protect their time, taking other tasks off of their plates so that they can focus on working intensively with principals. Further, they should be assigned a manageable caseload—we estimate that this consists of between 8-12 principals per supervisor, assuming that those principals have varying levels of expertise as instructional leaders and need varying amounts of assistance (Honig 2013). And we find that is important that supervisors receive intensive professional development as well, in order to perform their role effectively (Honig et al. forthcoming).

Ensure that all District Staff Members Focus Their Time and Other Resources on Activities that Support Schools' Pursuit of Deeper Learning

District Priority #3

> - Ensure that all central office work meaningfully contributes to a common theory of action related to improving the quality of classroom teaching and ultimately student learning.
> - Start with the redesign of C&I and HR:
>   - » Generate rich, meaningful data about the quality of teaching and leadership in every school relative to the districts' standards, strategic plan goals, and the school's improvement goals. Promising systems for generating such data include decision- or question-oriented data dashboards and school improvement planning processes that lead schools through such data gathering.
>   - » Encourage the collaborative use of such data by staff of C&I, HR, and schools, as well as by principal supervisors, to identify capacity gaps and promising points of leverage for broader improvements in teaching and learning. Points of leverage include the strategic movement of staff to ensure better fit between person and position and the provision of high-quality professional learning opportunities.
> - Engage non-instructional units in ensuring that their work, too, contributes meaningfully to a common theory of action about how every aspect of central office work, singly and with others, contributes to improvements in teaching and learning.

In our research, we have found it to be critical for principal supervisors to have the time and support they need to work intensively with principals, helping them understand what it entails to provide effective instructional leadership. But it is also critical that their efforts align with the work going on across the district. In order to have a positive impact, they must be working in synch with the rest of the central office, with everybody reaching across traditional silos to pursue a common theory of action about how to realize deeper learning for all students (Honig 2013; Honig et al. 2010).

As noted above, we find it to be particularly important that principal supervision be well aligned with the work of C&I and HR. Misalignment with C&I means that supervisors are unable to draw on other professional learning resources

to help principals. And misalignment with HR means that supervisors often end up diverting their attention from supporting principals to performing whatever HR duties are not getting done correctly, efficiently, or at all.

Further underscoring just how important HR units are to school improvement, in our most recent district partnerships, we have observed that the strategic movement of principals—either to different schools or out of the principal corps altogether—can be just as impactful as efforts to provide them with high-quality professional development. When HR systems make it difficult or impossible to reassign or remove principals, supervisors can end up spending an inordinate amount of time trying to help leaders who require far more assistance than they can provide, leaving them with less time to help others.

In central offices aligning to performance, district leaders carefully scrutinize the work of all staff members to ensure that they contribute meaningfully to leadership, teaching, and learning. And all means all. Particularly in our original study districts, leaders helped each and every staff member to identify aspects of their work that did nothing to support high-quality teaching and learning—whether directly or indirectly—and helped them find ways to align their work more tightly to that goal (Honig et al. 2010). In the process, leaders sought to eliminate systems and tasks that seemed outdated or unnecessary, redirecting the resources to tasks that are more essential to the improvement of teaching and learning (Plecki et al. 2010). In effect, they found ways to maximize the benefit of central office functions relative to their cost, addressing the familiar concern that districts tend to be top heavy or bloated.

Based on their experiences, we have compiled a number of lessons for leaders seeking to align their school systems to the goals of deeper learning:

COLLECT AND USE THE RIGHT DATA

To help them answer questions that are fundamental to system-wide improvement, district leaders must have access to the right data. For example, the right data answers such key questions as: What is the current capacity of teachers in each school relative to the district's instructional framework, the district's strategic plan, and the individual school's improvement plan? And do our efforts reflect the latest knowledge about how best to support teachers in reaching such goals?

In one district, central office leaders came to realize that to answer such questions, they would have to build an entirely new data dashboard. While their existing system provided extensive information about achievement test performance, grades, attendance, and teacher evaluation results, it did little to help them understand the *quality* of teachers' classroom instruction. For instance, teachers in several schools had received particularly low marks on the teacher evaluation related to using explicit objectives in their teaching. However, when C&I staff more closely examined what teachers were doing in their classrooms, they observed that those teachers actually had different levels of capacity related to this evaluation standard.

Nor could the system help them answer questions important to their strategic decision making, such as: Which of our students are chronically low-performing across grades and subject areas? Which teachers and principals, if any, have these students had in common? What other features of these schools might help explain such results?

Having built a new data system, leaders in this district now report to us that they are able to make grounded hypotheses about the root causes of disappointing student outcomes, and they can identify key points of leverage that are likely to improve performance. Having access to better data means they are no longer tempted to blanket their schools with professional development offerings and staffing changes, in the hope that some of them might pay off. Instead, they are now careful to target their efforts on the areas of greatest need.

Another district that we work with is now developing a strategy to improve the quality of the data it collects through its annual school improvement planning (SIP) process. The SIP previously required schools to report their goals and strategies for student learning for the coming year. But knowing what schools *wanted* to achieve did nothing to help district staff figure out which supports might enable them to *realize* such results. Instead, the new, redesigned SIP will lead schools through a process of assessing their current capacity relative to their performance targets, which will provide better information about the kinds of district support they will need.

ADDRESS TEACHING AND LEARNING ACROSS THE SUBJECT AREAS

Second, as C&I staff make decisions about which sorts of professional development to provide to schools, they should not confine themselves to the traditional subject-matter silos. Rather, they should consider working collaboratively across professional development areas, guided by relevant data about teaching and leadership quality. For instance, in one district, C&I staff from several subject areas meet regularly to discuss their data about teacher capacity in individual schools. Only then, and in collaboration with their principal supervisors and school principals, do they choose the specific professional development approaches that are most likely to have the greatest impact on teaching.

In other words, leaders of these units do not assume that their own subject areas should be the focus of professional development services. Nor do they restrict their choices to the services they themselves can provide. Rather, they start out by considering the schools' overall needs and priorities. Then, after careful analysis with central office and school staff, they choose strategies for leveraging professional growth in each school.

BUILD BRIDGES WITHIN THE CENTRAL OFFICE–ESPECIALLY BETWEEN CURRICULUM AND INSTRUCTION AND HUMAN RESOURCES

In districts aligning to performance, C&I and HR leaders also collaborate to ensure that professional development aligns with the systems guiding the placement of teacher and principal candidates.

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For example, one of our partner districts is building a new system of coordination between C&I and HR in which school-specific decisions about professional development happen in tandem with analyses of the fit between particular teachers and their placements. Beginning with the initial screening of job candidates, HR staff collect information related to their teacher education or leadership programs, prior professional experiences, and their scores on performance-based tasks—such as teaching mock or actual lessons—integrated into the hiring process. (Researchers and district leaders have been able to use such information to identify, for example, teacher education programs whose graduates tend to do especially well in a particular district, school, grade-level or subject area; Odden 2011.) When questions arise as to the quality of individual teachers or principals' work, HR and C&I staff meet together and review that data, using it to inform their decisions as to whether it would be preferable to move those people to new positions or to keep them in place while providing them with professional development services.

Leaders in C&I and HR units can also eliminate or streamline existing tasks to maximize the time their staff spend on work that helps improve teaching and learning. For example, by automating various routine processes related to professional leave, payroll, and the verification of continuing education credits, one district was able to redirect staff lines to an enhanced recruitment team, which reviews school-level data to help them identify and recruit teaching candidates who seem to fit particularly well with the given position and the local workplace dynamics.

SEARCH OUT ADDITIONAL OPPORTUNITIES FOR ALIGNMENT

We continue to find that while principal supervision, C&I, and HR play lead roles in district efforts to improve teaching and learning, other parts of the central office also have important parts to play.

For example, in one study, we observed that administrators and HR staff made a strategic decision to reduce the number of teachers in a given school, but implementation stalled because information technology, payroll, and other systems could not easily process the decision (Honig 2009)—or, to put it another way, those other systems could not easily align to improvements made by HR. In another instance, C&I staff found that professional development events were more successful when staff from the facilities and payroll departments were included in the planning (Honig et al. 2010).

In another positive example of alignment between non-instructional units and the improvement of teaching and learning, a district's chief of operations decided to engage her bus drivers in a series of conversations about the role they could play in enhancing the quality of student learning and reinforcing the school culture, such as its rules of appropriate conduct. For instance, they could greet students personally every morning, communicate with their adult caregivers at bus stops, and relay any important information to school staff (which can be particularly valuable when those caregivers are unable or unwilling to communicate with school staff directly).

In another district, following complaints by school principals about the lack of responsiveness of Buildings & Grounds staff, the chief of operations partnered with union leaders to find ways to improve performance. They discovered that principals wasted numerous hours following up on outstanding work orders to Buildings & Grounds, but they also found that staff had not been proactively identifying and addressing issues that could have maximized the use of instructional space. Union leaders believed the staff wanted to improve their performance but had never been invited or supported to do so. In response, the central office established a relationship with a local community college to help raise staff skill levels, and staff built a department performance scorecard to track metrics such as how much time they saved principals when they worked in more responsive and proactive ways. Another district developed

> We continue to find that while principal supervision, C&I, and HR play lead roles in district efforts to improve teaching and learning, other parts of the central office also have important parts to play.

a similar scorecard that translated the number of hours of principals' time saved into dollar figures, showing how much money they were freeing up for the school (Honig et al. 2010).

Given our limited experiences working with units other than principal supervision, C&I, and HR, and given the limited research in this area, we can only touch briefly on the importance of performance alignment throughout the rest of the central office. However, we do find that when district leaders neglect to consider all parts of the central office, they ultimately face a host of predictable problems, including competition among units, lack of coordination, and use of the wrong data to inform change.

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CONCLUSION

In this paper, we have argued that strong, coordinated support from the district central office is essential to realizing deeper learning for all schools and all children. No matter how committed individual district leaders may be to school improvement, their plans will likely be stymied unless they find ways to bring every part of the system into alignment with the goals of excellent teaching and learning for all students.

As we have written elsewhere, the changes we describe here are a far cry from administration-as-usual. District leaders who are serious about this work do not simply tinker with their central offices but transform them into teaching-and-learning support systems (Honig 2013). Such efforts go well beyond the shifting of boxes and lines on formal organizational charts and reach into the daily work of each and every central office staff person to engage them fully in redesigning their roles and participating in multiple stages of reform.

Our main recommendation to all district leaders—and policymakers and foundation leaders as well—is to heed these lessons and support major improvements in central offices focused on performance alignment. Further, because aligning for performance relies so heavily on re-making the day-to-day work of the central office, district leaders would do well to invest in building the capacity of their own staff to help lead the effort. Our partner districts have done so not only by creating professional learning opportunities for existing staff but also by bringing in new staff whose expertise (in leadership, instruction, finance, and other areas) does not necessarily fit the traditional central office mold.

Going forward, how can district leaders, researchers, policymakers, and others ensure the continued development of central office staff capacity consistent with performance alignment?

One place to start is the creation of new data systems to capture and display information that goes well beyond test scores, and which allow staff in all parts of the central office to better understand the quality of teaching, learning, and principal leadership in their schools, and to see how they might align their work to support improvement. District leaders build such systems not by relying on whatever data sources happen to be available but, rather, by taking proactive steps to collect data that can help them answer their most pressing questions about adult capacity and performance.

Another place to begin may be to enlist researchers to help districts strengthen their understanding—and in the process to strengthen the larger knowledge base—of the ways in which central office work practices matter to student outcomes.

Finally, and as we noted earlier, care should be taken to create policy frameworks that support these efforts. Historically, state and federal governments, as well as foundations, have contributed to the lack of strategic coordination within central offices by, for example, distributing funding and designing accountability systems in ways that reinforce organizational silos, typically by privileging test score results as performance targets and doing little to help districts build data systems that can drive performance improvements. Going forward, then, the question is: How can policymakers and foundations work together to support districts in ways that enable the creation of integrated district systems in support of deeper learning?

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Table 1. Data Sources

Data Source	Study Title (Short)	Sites	Activities	Dates
Research Sites	Central Office Transformation*	› 3 urban districts	› 282 interviews › 265 observation hours › 252 documents	August 2007-July 2008
	Research Use as Learning**	› 1 midsized urban district › 2 midsized suburban districts › 3 small rural districts	› 124 interviews › 499 observation hours › 300 documents	January 2011-June 2012
Partner Districts	NA***	› 17 midsized and large, urban and suburban districts	› Engagement in learning sessions around latest knowledge about central office performance improvements › Principal and principal supervisor surveys › Interviews about reform implementation › Participation in design-based research methods as part of reforms focused on principal supervision and C&I and HR redesign	September 2011-present

* Publications from this research study include Honig et al. 2010; Honig 2012, 2013, 2014; Honig & Rainey 2014.

** Publications from this research study include Honig et al. forthcoming.

*** Publications from ongoing partnerships include Rainey & Honig forthcoming. See also www.dl2uw.org.