APRIL 2017

Practice What You TEACH

Connecting Curriculum & Professional Learning in Schools

By Ross Wiener and Susan Pimentel

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EDUCATION & SOCIETY PROGRAM

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The Aspen Institute • One Dupont Circle, N.W., Suite 700 • Washington, DC 20036
Published in the United States of America in 2017 by The Aspen Institute

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Introduction

To improve teaching and advance student learning requires weaving together the curriculum that students engage with every day with the professional learning of teachers. This paper describes the research supporting this argument, profiles three examples of educators integrating curriculum with professional learning, and provides key takeaways for state, district, and school leaders.

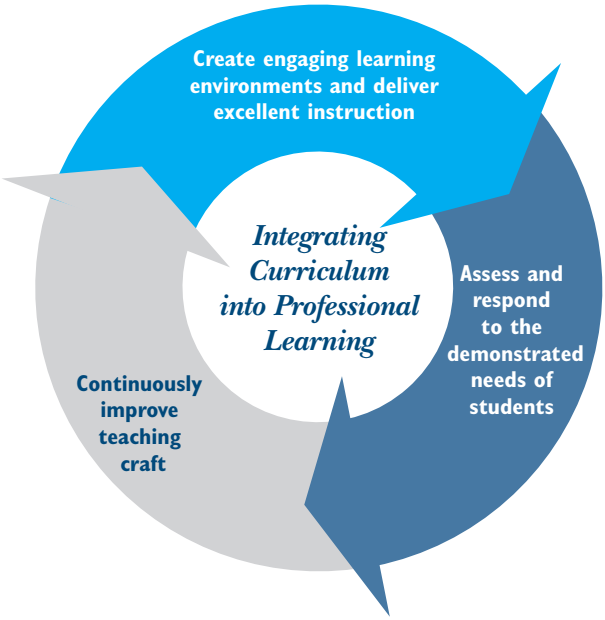
The recent adoption of college- and career-ready standards in almost every state raises the bar for student learning. Students are expected to actively engage with one another, wrestle with rigorous and often unfamiliar content, and persevere in addressing tough problems.[1] These shifts demand new instructional materials *and* more sophisticated, adaptive teaching. Moreover, these elevated expectations are coming online when more than half of public school students receive free or reduced-price meals (indicating low levels of family income) and the fastest-growing group of students is English-language learners[2] – groups of students that teachers and schools traditionally have struggled to educate well.[3]

> A primary role of school systems is to create the conditions in schools through which teachers can become experts at teaching the curriculum they are using and adapting instruction to the needs of their particular students.

All of this makes it essential to establish systems that support teacher learning so teachers can more effectively advance student learning. Yet current practice divorces the "what" of curriculum from the "how" of professional learning, which undermines the efficacy of both.[4] A primary role of school systems – states, districts, and charter-management organizations (CMOs) – is to *create the conditions in schools through which teachers can become experts at teaching the curriculum they are using and adapting instruction to the needs of their particular students.* Integrating professional learning and curriculum into a holistic approach for improving teaching and learning is an important element of meeting the goal of educating all students and giving teachers the support they need to become expert practitioners.[5]

How to Use This Paper

This paper addresses the need for system leaders to integrate curriculum into professional learning so teachers can focus on their essential roles: creating engaging learning environments and delivering excellent instruction, assessing and responding to the demonstrated needs of their students, and continuously improving their craft.[6]



Most schools and districts *already* have expert educators who are eager and willing to learn, but they typically don't have in place the systems, structures, and cultures under which excellent professional learning takes place and occurs at scale. This is, in part, because systems pursue the work in schools discretely; one office selects and supports curriculum, while multiple other offices focus on professional learning activities – and each office or division has separate budgets, timelines, accountabilities, and often separate and distinct approaches to "supporting" schools. No high-performing education system in the world operates in similarly siloed fashion; other countries intertwine their curriculum and professional learning efforts.[7]

This paper is designed as a resource for system leaders at the district, state, and CMO levels looking to improve instructional outcomes for students by improving teacher development in their schools. Part I briefly describes the research base for this argument. Part II examines three cases of innovative practice and identifies ways in which a state department, a district, and a group of enterprising teachers are leading positive change efforts. Part III identifies key considerations and enabling conditions system leaders should prioritize when organizing professional learning around high-quality curriculum.

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FACILITATING ADULT LEARNING TO ADVANCE STUDENT LEARNING

The fastest way to make professional learning relevant for teachers is to put their school's curriculum and related evidence of student learning at its heart. But it's still only one piece of a comprehensive professional learning system, whose goal must be improved outcomes for students. In the coming months, the Aspen Institute's Education & Society Program will release a series of papers on *How to Facilitate Adult Learning to Advance Student Learning,* starting with a proposed framework for a professional learning system.

A professional learning system tightly integrates multiple, often siloed structures and initiatives – from school design and resource allocation, to the selection and use of instructional materials, to how educators are hired, compensated, and promoted – so that those up and down the system are focused on improving adult learning in order to improve student learning.

This means, for example, that school principals must know how to create a culture of learning among their faculty; that principal supervisors need to support and hold principals accountable for growing the knowledge and skills of their teachers, not just their students; and that central office staff members, whether in the curriculum, assessment, human resources, or finance department, need to prioritize and be held accountable for supporting the work of adult learning in schools.

Embracing a systemic approach presents a significant challenge in a public education sector replete with numerous, loosely coordinated initiatives. But for teachers to practice what they teach, the entire system must focus on facilitating the time, resources, support, and collaborative inquiry process that will, in turn, facilitate powerful learning for students.

PART I Research Supports Linking Curriculum and Professional Learning

This paper builds on several key research findings:

- First, schools and school systems already make massive investments in teachers' and school leaders' professional learning, yet most professional learning activities are not meeting teachers' needs and lack measurable results on changing practice or improving outcomes for students.[8]
- Second, curriculum materials have a profound effect on what happens in classrooms and on how much students learn.[9] When average teachers use excellent materials, student learning results improve significantly.[10] Research also documents that many teachers do not have access to strong, standards-aligned curriculum; in fact, most teachers spend hours every week searching for materials that haven't been vetted and aren't connected to ongoing, professional learning activities in their schools.[11] Ensuring teachers have high-quality, rigorous materials is an effective and affordable tool for improving student learning outcomes at scale.[12]
- Third, teaching expertise is the most important factor in school effectiveness; schools cannot be more successful than their teachers. Developing teacher expertise is intellectually demanding, professional work – it takes study, practice, and critical feedback to develop into an expert teacher.[13] Teachers deserve both materials and professional learning experiences that address the decisions they are making with *their students* in the context of the *actual materials they are using*. Providing teachers with generic strategies divorced from their day-to-day reality makes it less likely teachers will apply what they learn to improve practice or student outcomes.[14]
- Finally, adults learn best when they are engaged in *a collegial process that draws on and values their experience* as a resource in the learning process.[15]

Taken together, these findings suggest a powerful strategy for improving support to teachers: design professional learning activities that build off of and deepen teachers' knowledge for enacting the curriculum used in their school. This is not the same as offering orientation to new curriculum materials, although this may be one component. The vision is one of fully integrating chosen curriculum into ongoing, job-embedded professional learning and development.

Done right, professional learning linked to curriculum can lead to transformational changes in teaching and learning.

It is a deceivingly simple and powerful strategy that system leaders can pursue, requiring smart planning, resource reallocation, and learning from experience to continuously improve. Done right, professional learning linked to curriculum can lead to transformational changes in teaching and learning.

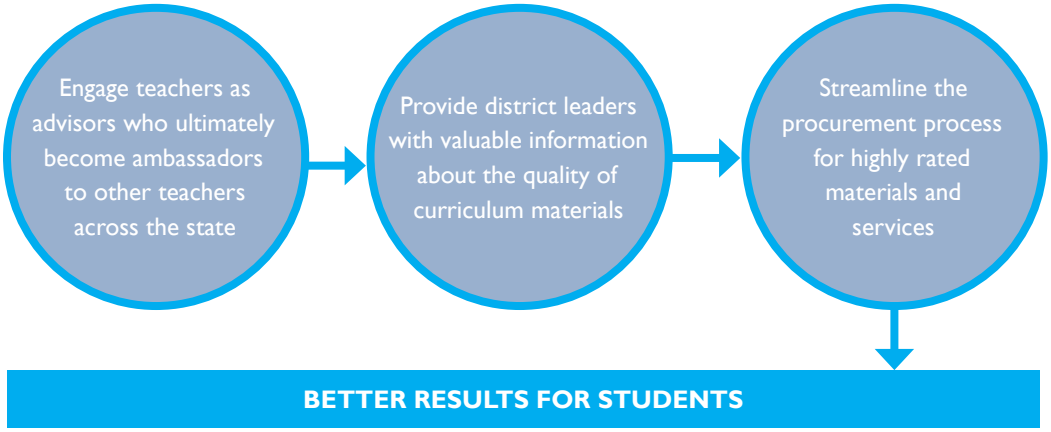
PART II Profiles of Promising Practice

The three learning communities showcased below – a state-based effort, a district-led initiative, and an ensemble of dedicated teachers – are already pursuing the strategy of integrating curriculum materials with professional learning.

LOUISIANA'S DEPARTMENT OF EDUCATION
Making the Best Thing to Do the Easiest Thing to Do

Louisiana illustrates the power and subtlety of a state-led effort. Recognizing the state had limited authority, but also seeing a clear need for higher quality materials and related professional learning, leaders at the Louisiana Department of Education (LDOE) designed a "pull" strategy. LDOE provided district leaders with valuable information about the quality of curriculum materials, streamlined the procurement process for highly rated materials and services, and engaged teachers as advisors who ultimately became ambassadors to other teachers across the state. All of this has contributed to dramatic uptake of better materials and services – and dramatic gains for the students of Louisiana.

Louisiana's "Pull" Strategy



In 2012, the LDOE identified two actions that would dramatically accelerate its efforts to improve student outcomes. First, research confirmed that the state could increase the number of teachers using high-quality curricular resources. This also would advance equity because more students would interact regularly with better texts and richer tasks. Second, LDOE realized that teachers across the state needed to become partners in the effort to bring more rigorous curriculum to the classroom or there would be no systematic, sustainable improvements in student learning.

> Louisiana's curriculum effort was notable for its transparency and the extremely high bar set for standards alignment.

The state made it clear that not just any curriculum would do. Its curriculum effort was notable for its transparency and the extremely high bar set for standards alignment. LDOE staff members and local teachers reviewed hundreds of programs using a rigorous evaluation rubric built on the Instructional Materials Evaluation Tool.[16] LDOE publicly posted the reviews on its website. Only two math programs received a Tier 1 ranking of full alignment with the standards, with the majority categorized as Tier 3, indicating they were not aligned. Because no full English language arts programs received a Tier 1 rating, teacher leaders joined with LDOE staff members and Common Core experts at LearnZillion to produce a complete ELA curriculum, which also provided the opportunity to prioritize themes and texts that reflect Louisiana's culture.[17] The curriculum is now freely available online at the Louisiana Department of Education website (go check it out!).[18]

LDOE also made Tier 1-rated curriculum materials attractive by removing logistical and administrative barriers that might have prevented districts from purchasing them. The agency signed statewide contracts with vendors whose materials received the highest ratings. This circumvented the need for districts to go through time-consuming local procurement processes that often make considerations like cost or administrative burden the determining factor rather than quality.

State officials at the LDOE recognized that simply making high-quality curriculum available was not enough to ensure high-quality educational experiences for students. So LDOE convened approximately 50 teacher leaders from across the state to experience firsthand the quality of the Tier 1 materials, based on a belief that personal experience would lead these teachers to demand the best when they returned to their districts, which is what happened.

Something else happened as well. Word quickly spread about the value of LDOE's materials and training, leading to a groundswell of teachers asking for similar experiences. Inspired by the success with a small group of teacher leaders, LDOE issued a call to districts to send one teacher from every school to state-sponsored trainings. From November 2012 to April 2013, the LDOE went from supporting a cadre of 50 teacher leaders to working with 5,000 teacher leaders from across the state through a series of regional and annual summits. LDOE invested in the original corps of teachers to build and deliver training in how to use the highly rated materials to their best advantage.

Word quickly spread about the value of LDOE's materials and training, leading to a groundswell of teachers asking for similar experiences.

LDOE staff members also developed a guidebook of professional development providers who really understood what mattered when integrating high-quality professional learning with high-quality materials. The initial group of providers were experts on Tier 1 rated curriculum like Great Minds and Eureka math, and understood the state's non-negotiables. Since then, the state has expanded the list to about 30 providers (updated annually). LDOE then used its summits to "test drive" the professional development offered by select vendors in front of a committed audience. This in turn made district personnel smarter about whom to hire.

To further facilitate the uptake of high-quality professional learning practices, LDOE negotiated with highly rated professional development providers in a process similar to that used with the publishers of high-quality materials, making it easier for districts to procure services that were specifically aligned to Tier 1 curriculum. Districts appreciated the vetting that went into this process, while they retained choice over how to implement professional learning that best fits their local situation.

Rapides Parish School District is an illuminating example. For an urban district of nearly 50 schools and close to 25,000 students, shifting to a standards-based math curriculum was no easy task. But the district didn't have to go at it alone: district leaders found the curriculum ratings provided by the LDOE intuitive and easy to use, sparing them the burden of evaluating numerous programs on their own. Discovering the pre-existing state contracts with vendors was another boon, which allowed the district to acquire and implement a new math curriculum much faster than previously.

But the benefits of the LDOE effort for Rapides Parish didn't end there. The LDOE helped the district facilitate professional learning for teachers before every instructional module. The day-long training teachers received made the standards-based curriculum both relevant and immediately applicable. Teachers saw its value and gained a more sophisticated understanding of what teaching the Louisiana standards looked like in action. In its materials, the state included procedures for developing and demonstrating sample lessons, a facet teachers singled out as especially valuable. The district superintendent concluded that the collaborative approach with the state significantly improved the instructional practice of district teachers and ensured that all students were given access to high-quality educational experiences.

Feedback from the trainings facilitated by the LDOE is overwhelmingly positive: 85 percent to 90 percent of attendees feel what they are learning applies directly to what they need to teach in the classroom. According to the RAND Corporation, many more Louisiana teachers are using materials judged to be aligned with the Common Core standards than teachers in other states, and Louisiana teachers far outpace teachers in other states in understanding the instructional shifts the standards expect.[19] Louisiana also is seeing impressive gains in student achievement, including greater gains in NAEP 4th grade reading scores in 2015 than any other state; Louisiana also had the biggest gain of any mandatory ACT state that year.[20]

By making the highest quality route the easiest route, and serving as a helpful support to districts, LDOE is seen as a credible partner in the effort to improve teachers' professional learning.

Because of the long tradition of local control in Louisiana, the role the LDOE adopted in Rapides Parish and elsewhere is a supporting one. LDOE exerts no control over what districts choose to do; there is no quid pro quo expected in exchange for accepting the training and other guidance offered by the state. But by making the highest quality route also the easiest route, and serving as a helpful support to districts as they tackle this hard work, LDOE is seen as a credible partner in the effort to improve teachers' professional learning. The success the state has enjoyed stems in no small part from its willingness to accept the role of facilitator instead of director.

As a result, there has been very little pushback on the part of teachers, although deep and sustained improvements in teacher practice are still a work in progress.

Louisiana has embraced a clear and unambiguous philosophy summed up by a member of the LDOE: "Make the best stuff the easiest stuff for teachers to use, and they will come, learn, and go back to their home districts and train."

DISTRICT OF COLUMBIA PUBLIC SCHOOLS
LEAP Into School-based Professional Learning

Several years ago, the District of Columbia Public Schools (DCPS) had reached a crossroads. Leaders there had spent years getting basic operations right, attracting and retaining great talent, holding educators accountable for results, and boosting pay for top performers. DCPS was the fastest-improving urban district based on NAEP scores, yet leaders knew that despite this remarkable progress, they had a long way to go for students — and that "more of the same" would not meet the challenge. This is the story of how a district-led effort is transforming professional learning by providing teachers with great teaching materials and the time and training to develop expertise in using those materials.

In 2011, DCPS began working with its teachers to build "Cornerstones," a set of 260 rich, rigorous tasks and related instructional materials embedded in the district's scope and sequence across all core content areas.[21] Cornerstones allowed DCPS to ensure all students engaged with rich, standards-aligned work at least once in each subject every quarter, and it signaled the level of rigor DCPS expected throughout the curriculum. In addition, Cornerstones created a context for common professional learning experiences that both prepared teachers for standards-aligned instruction and leveraged student work products as teaching tools for teachers. What started as a series of loose units of study grew by 2015 into a solid knowledge-based humanities curriculum centered on authentic, interconnected texts and tasks in every grade.

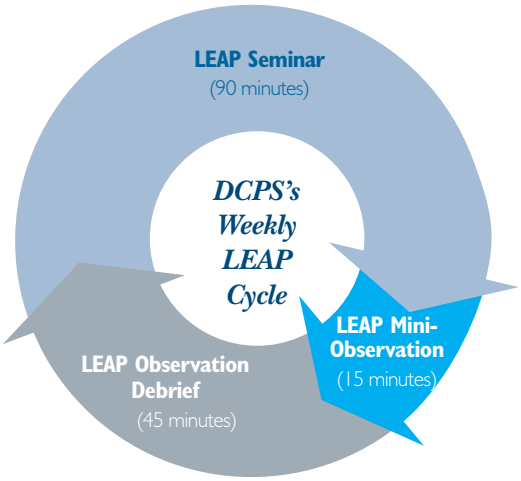
Requiring all teachers to use the same curriculum they helped develop was a revolutionary step. Because so many students needed to accelerate learning, DCPS saw the curriculum and embedded tasks as one important way to ensure a baseline of rigorous instruction. This was only a first step, however; DCPS knew that curriculum change was necessary but not sufficient for improving student learning. Formal and informal classroom observations showed that the most prevalent instructional model was teachers dispensing knowledge akin to a tennis volley (teacher hits, students respond, teacher hits, etc.); in contrast, college- and

career-ready instruction demands more active engagement and interaction among students. DCPS decided to tackle this issue head-on through an overarching, districtwide goal: to provide teachers with the time and support to become experts in teaching the new high-quality curriculum DCPS had adopted.

At the same time the curriculum work was maturing, DCPS was investing in teacher leadership as part of its human capital strategy. With the help of Leading Educators, a non-profit focused on developing teacher leaders, DCPS began recruiting and training teacher leaders with the goal of retaining more highly effective teachers.[22]

> DCPS's goal is to become known as the district where teachers learn to become experts at their craft.

In 2015, DCPS first connected curriculum development to professional learning, explicitly linking *what* was taught with *how* it was taught. Dipping its toe into the water of a district-centered professional learning system provided DCPS with the confidence to move forward even more boldly the next year by embedding the training within each school. DCPS launched LEAP (**Le**arning Together to **A**dvance our **P**ractice), and succinctly articulated the goal in the district's handbook: "Our hope is that LEAP helps us become known as the district where you learn to become an expert at your craft." Teacher leaders, whose ranks had been growing in DCPS, became a critical resource in this work.



The professional learning embedded in LEAP is based on a *weekly* learning cycle and reflects a lesson study approach. The three-part cycle involves a small-group seminar, individual observation, and a coaching debrief. A LEAP team leader – a content-specific teacher leader, coach, or school administrator who has release time to work with teachers to improve their instructional practice – leads the weekly 90-minute LEAP seminar. LEAP teams are content-specific and, as much as possible, grade-specific, to deepen content knowledge and hone teaching practices in the precise context in which they will be applied.[23]

Because seminars are designed to be practice-forward, teachers spend the next week implementing in their classrooms what they learned in the seminar the week before. For example, one week a seminar might focus on the concept of fluency practice. During the seminar, teachers learn about the research base and rationale for different strategies and then practice the strategies prior to trying them out the following week with their students. In math, to expertly implement the curriculum, many teachers need to deepen their content knowledge: they need deep comprehension of *why* a math algorithm works in a certain way and *how* to recognize common misunderstandings that lead to student mistakes. Teachers follow up by bringing student work to weekly seminars to collaboratively assess student progress and to strategize about how to address learning gaps in future assignments.

While teachers use what they practiced in the prior week's seminar, the LEAP team leader conducts a 15-minute classroom observation, which represents the second part of the LEAP cycle.[24] The observation is intentionally brief because it is non-evaluative and entirely growth oriented, allowing the focus to stay solely on the translation of professional learning into classroom practice.[25]

The final part of the weekly cycle is the 45-minute debrief of the observation. The LEAP team leader meets with the teacher to review what was observed during the classroom visit. Together they identify observable growth in instruction relative to what was learned in the seminar. The team leader and the teacher also identify areas of practice that need further development, which helps both the individual teacher improve and the team leader plan subsequent seminar topics.

Team leaders in each school are the linchpin of the weekly learning cycle and of building a trusting, respectful learning culture among teachers. Before they begin their role, team leaders attend a two-week

intensive summer training where they learn about adult learning theory and the design of the weekly LEAP cycle; they also receive content-specific training. Team leaders practice what to look for during observations and learn how to tailor professional learning seminars to fit the needs of the individual teachers with whom they work. The summer intensive session also provides team leaders time to adapt the LEAP weekly cycle to the context of their individual schools. During the year, team leaders receive weekly seminar plans and content resources to help guide the professional learning of their teams.

> Team leaders in each school are the linchpin of the weekly learning cycle and of building a trusting, respectful learning culture among teachers.

Implementing LEAP required significant resource reallocation and role redefinition. Master educator positions, part of DCPS's vaunted IMPACT teacher evaluation system, were eliminated so those resources could be redirected into developing content-specific LEAP team leaders. Additional support inside the school comes from assistant principals, who are expected to have a content-area focus and to serve as LEAP team leaders. The district shifted central office teams to steer and support the LEAP process, and Leading Educators, which helped design the teacher-leader initiative, supports central office leaders in creating content-rich, curriculum-centered professional learning and leadership development experiences for the LEAP team leads.

As with any reform, DCPS made trade-offs and accepted certain risks. Requiring that every school implement LEAP across the district in one fell swoop invited pushback and surface-level compliance from some school staff. But district leaders felt that equity demanded the acceleration of efforts to ensure that all students across the district have the same high-quality learning experiences via consistent lessons. While the district maintains a tight hold on the focus of the weekly seminars, it gives teachers a big say in *how* LEAP is carried out in their school. As district administrator Jennifer Jump observed, "We are having many more authentic conversations around the work, and it is a beautiful sight to see. Instead of conversations about how many lunches are needed, spontaneous conversations are popping up in the corridors, between classes, and after school about this text or about how a teacher is getting such a high level of writing from her students."

TEACHING LAB IN WEST VIRGINIA
Grassroots Take Hold in the Mountain State

Like most states, West Virginia raised expectations for student learning dramatically when it recently adopted the West Virginia College and Career Readiness Standards. But related guidance, expert support, and aligned materials were still in short supply when a group of West Virginia teachers took their own initiative in the spring of 2014.

Professional developers from the Regional Education Service Agency (RESA 3) had tried to support teachers in making the instructional shifts required by the standards. "Even with all the curricular materials, administrator support and instructional coaching, teachers struggled to enact new instructional strategies," observed professional developer Mandy Flora, and "it was clear mass PD sessions with minimal follow-up were not going to change classroom instruction."

A group of inspired and determined teachers took control and launched professional learning on their own, with minimal but important external supports. Through professional development with RESA 3, several West Virginia teachers learned about grassroots initiatives taking hold in other states, where teams of teachers were developing and adapting rich tasks and accompanying instructional units, trying them out, and then bringing back examples of student work to the group to reflect on ideas for improving the next stage of instruction.

When the West Virginia teachers heard that a leader of this collaborative inquiry process was going to be supporting teams of teachers in Washington, D.C., they jumped at the chance to experience it themselves. After convincing the state education agency to reimburse them for a rental car, these teachers hit the road.

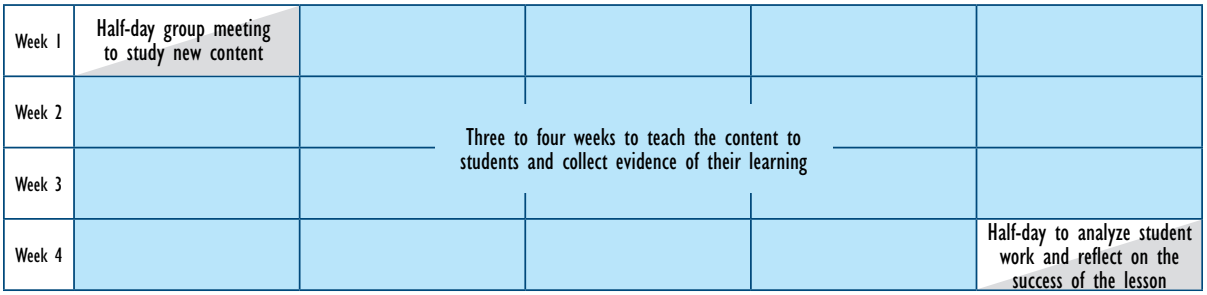
In the fall of 2014, Mandy and four teachers from three schools in three different districts drove back and forth to DC twice to participate in collaborative analysis and inquiry cycles, which were modeled on the Core Task Project launched in Washoe County, Nevada.[26]

In spring 2015, these teachers brought inquiry cycles to life in their own schools under the name West Virginia Teaching Lab. With support from the state's chief academic officer, the regional support office hosted teams of teachers three times – in March, April, and May – to facilitate collaborative inquiry and improvement discussions. Supported by experts from the nonprofit Student Achievement Partners (SAP), the teachers who had gone to DC learned how to recruit other teachers using community organizing strategies, drawing together a coalition of the willing to do deep work on aligning instruction to the standards.

These same SAP experts helped the West Virginia Teaching Lab teachers select and adapt high-quality content; shared resources and models for conducting inquiry cycles in schools; and assisted in planning and facilitating the initial inquiry cycles. Silas Kulkarni, one of the experts from SAP, recognized that a little help could go a long way: "There are a lot of teachers, especially in remote places, who don't have much access to formal support, but who have lots of talent, drive, and initiative. Highly curated content and facilitation support can take their work to the next level." Teaching Lab, a new non-profit that Kulkarni helped co-found, aims to replicate the West Virginia Teaching Labs by providing similar support to teachers across the country.[27]

Resource and logistical constraints, especially in rural areas, meant teachers often did not have release time for these efforts; some teachers were able to focus professional learning communities in their schools on conducting inquiry cycles, while other teachers pursued this work on personal time in the evening or on weekends, with modest stipends from RESA 3. Typically, a monthly inquiry cycle included a half-day group meeting to study new content, three to four weeks to teach the content to students and collect evidence of their learning, and then a second half-day to analyze student work and reflect on the success of the lesson. The collaborative learning felt so energizing and meaningful that the teachers made the time to work together — and their enthusiasm kept attracting new teachers.

West Virginia's Monthly Inquiry Cycle



Curriculum choices were *not* consistent across these districts or schools and misaligned materials were still prevalent in the field, with many districts awaiting new adoption cycles. To address this challenge, teachers identified exemplar lessons or resources to try out in common that undergirded their professional community. Teachers supplemented the curriculum they were assigned to use with open educational resources from some of the most prominent sources of standards-aligned materials, such as Achieve the Core and the Basal Alignment Project, and put these materials at the center of their collaborative inquiry work.[28]

Once teachers had selected exemplars from the open educational resources available, they studied them, planned instruction, and then practiced with peers before implementing in their classrooms. The teachers came back to each work session with student work samples to trade and analyze, and then planned what to do next. This teacher-led, collaborative, and non-evaluative approach created dramatically higher trust and ownership among teachers. In the words of one participant, "Instead of 'do this because you have to' it was 'do this and see what you think.'"

This deeper buy-in led to organic growth of the groups, with new West Virginia Teaching Labs springing up in different locations and subjects, sometimes led by former participants from previous labs. From a core group of four teachers and a regional coach, there are now approximately 100 teachers engaged in the process from at least six school districts across West Virginia, supported with small regional and state grants and technical assistance.

The inquiry cycles and professional conversations these West Virginia teachers have undertaken through their Teaching Labs are at the heart of improving teaching and learning at scale. It might be messy and imprecise, especially as teachers try to develop a shared vision for instruction and student learning outcomes that genuinely reflect the aspiration of the standards. But as one RESA 3 facilitator reasoned, this is an example where "you have to go slow to go fast." At the end of the day, classrooms won't reflect the profound rigor of college- and career-ready standards if teachers don't have a deep understanding of the standards themselves.

The inquiry cycles and professional conversations these West Virginia teachers have undertaken through their Teaching Labs are at the heart of improving teaching and learning at scale.

Policymakers are taking note of the grassroots enthusiasm and success of this work. The West Virginia Board of Education has embraced Learning Forward's professional learning standards and has set the goal of all schools becoming "Learning Schools" over five years. Regional support agencies (RESAs) were directed to support schools and districts in their efforts to more closely align professional learning to these standards. The state is supporting and studying schools at the vanguard of this effort, dubbed "Catalyst Schools," to share their lessons with others.

As a matter of policy, West Virginia's education leaders have signaled that transforming teachers' and principals' professional learning is a priority. All of this paved the way for RESA 3 to allocate resources to local Teaching Labs; now this example is being shared with teachers around the state.

PART III Key Takeaways and Recommendations for System Leaders

1. Curriculum quality matters *a lot*.

Professional learning cannot live up to its potential unless it's rooted in the content teachers teach in their classrooms. Similarly, the resulting professional learning won't be excellent unless the underlying instructional materials are excellent. System leaders who want to foster effective and relevant professional learning using instructional materials should focus in the first instance on making sure the instructional materials reflect the full aspiration of college and career readiness.[29] It's the professional learning equivalent of "you are what you eat."

Curriculum and associated tasks and assessments signal the performance level expected of students, which becomes the starting place for identifying teachers' learning needs. High-quality curriculum is an essential baseline for equity because it ensures *all* students engage with quality text and intellectually demanding tasks. In addition to scrutinizing standards alignment, an inquiry into quality also should examine other attributes, including whether (1) the materials reflect a diversity of students' cultures and lived experiences; (2) the curriculum embeds rich culminating tasks and other quality assessments;and (3) the materials anticipate and address the learning needs teachers will have in trying to enact the curriculum (anticipating and addressing teachers' learning needs sometimes is referred to as a curriculum's "educative features").[30]

There is a lot of inertia in keeping curriculum materials already in use, including the comfort of the familiar and the relationships and embedded supports provided by publishers. Switching to materials with greater alignment to standards takes some or all of the following: technical knowledge regarding standards alignment, leadership and tenacity in the *process* of selecting materials, and political will. No one needs to start at square one anymore: For example, the evaluation work of Louisiana and EdReports can be used as guides.[31] Both used rigorous rubrics that measure alignment and usability; engaged and trained teams of expert teachers to review and rate popular options; and posted the results online for free. Moreover, additional high-quality curriculum are being made available all the time. These include open educational resources, which have the added benefit of engaging stakeholder communities and providing opportunities for continuous improvement, rather than waiting years for publication and adoption cycles to run their course.

2. Content-specific inquiry cycles improve practice.

Teaching is intellectually demanding, adaptive work. The learning that improves practice must anchor in the context of teachers' ongoing work (hence the connection to curriculum).[32] And teachers must be able to apply their learning; study how it worked for their students; bring back questions and suggestions to the group; and then repeat the cycle of learning, application, and reflection. The work in DCPS and in the Teaching Labs in West Virginia exemplify this approach. These practices were adapted from lesson study, which is prevalent in Japan (and similar practices exist in high-performing education systems all over the world).[33]

Community accountability means every member of the team works to strengthen their practice and brings examples of student work and their own reflections back to the group. Experiencing new teaching methods with students, assessing their learning progress, and then thinking about what students will benefit from next is the *sine qua non* of professional learning: the whole point of this work. Ensuring protocols for using collaborative time effectively will make it more likely that teachers can spend precious time – the most scarce resource in schools – to focus on the work only they can do, which is to craft and facilitate meaningful learning experiences for their students.

3. Culture eats structure for lunch.

Professional learning that changes practice relies on teachers' active participation and willingness to be vulnerable and to take the stance of a learner. As education researcher Anthony S. Bryk stated in his study of improvement efforts, positive change depends on the "good will and engagement of the people whose work is the subject of change."[34] Uniting efforts to improve curriculum quality with efforts to improve professional learning is unassailably a good idea, but if teachers experience it as a top-down compliance mandate or are preoccupied with accountability from the outset, positive change can be undermined and progress stunted.

Creating a culture that embraces adult learning in service of student learning requires attending to teachers' hearts as well as their minds. Researcher Carrie Leana cites the failure to invest in "teacher collaborations that strengthen skills, competence, and a school's overall social capital" as the missing link in improvement efforts. She followed more than 1,000 elementary teachers across New York City and found that when teachers engaged in frequent peer-to-peer conversations centered on the complex task of instructing students in mathematics, increases in student achievement resulted – and *gains were highest when collaborations led to feelings of trust and closeness among staff.*[35]

The effects of stronger collaborative culture in schools are powerful: according to the same study, "If a teacher's social capital was just one standard deviation higher than the average, her students' math scores increased by 5.7 percent." It is worth noting that previously ineffective teachers performed as well as average teachers when they taught in schools with strong social capital.[36]

One way system leaders can improve culture, and thus improve the efficacy of reforms, is to subject their own ideas and practices to the same sort of analysis, feedback, and improvement cycle expected of teachers. Soliciting feedback from teachers and changing system practice as a result models good practice for teachers and shows that everyone is learning and pulling in the same direction. In West Virginia, teacher leaders who guide inquiry cycles meet with district leaders quarterly to give feedback on which policies are enabling or hindering their efforts. In DCPS and Louisiana, system leaders use both surveys and focus groups to gauge how reforms are perceived and enacted, and they use the results to adapt.

4. Teachers need *time* to improve instruction.

To develop expertise, teachers need dedicated time to engage with peers during the school day, week, and year. It takes time to get familiar with instructional materials and the content knowledge they demand, and implementing college- and career-ready standards increases these expectations, including learning new pedagogical approaches.

Researchers report that teachers who participate in substantial professional learning on an annual basis – averaging 49 hours across nine studies – see their students' achievement increase by about 21 percentile points.[37] Many high- performing international systems have teachers spending between 10 to 17 hours in the classroom per week, leaving substantial time for professional learning compared with US teachers, who spend around 27 hours in front of students weekly.[38] In the words of Linda Darling Hammond, "Effective professional development is intensive, ongoing, and connected to practice; [it] focuses on the teaching and learning of specific academic content…and builds working relationships among teachers."[39]

5. Content experts should facilitate professional learning.

The inquiry cycles described above need to be facilitated by content experts; teachers also need access to this expertise to improve as individual practitioners. This means teacher leaders and other expert practitioners need *additional* dedicated time to learn (i.e., release time or fewer classes and preps). They need opportunities to deepen their content knowledge and pedagogical expertise through access to content experts and collaboration with each other. They also need development as *leaders* so they can facilitate teams, diagnose teachers' needs from observation and student work, and coach teachers to improve their practice.

This additional time might take the form of a teacher on special assignment with or without current teaching responsibilities (a hybrid position) as is the case in Louisiana, or formal in-school teacher-leader roles and administrators with teaching experience and content expertise (as is the case in DCPS). A cross-functional

leadership team, such as the one that exists within the West Virginia effort, can draw on the talents of multiple individuals as opposed to focusing on one all-encompassing leader.[40] Whatever the configuration, content-specific roles must be designed to cultivate teaching expertise in teachers.

System leaders also should recognize the critical role of *external* expertise. All three of the profiled examples engaged experts who had spent years working across systems to advance the vision of instruction aligned with college- and career-ready standards. There is a growing handful of organizations that have developed expertise in curating high-quality materials, facilitating teachers in exploring the standards, designing and interpreting formative assessments, and using looking-at-student-work protocols to deepen teachers' practice and their ability to advance student learning. System leaders should take advantage of these organizations strategically, augmenting expertise when necessary but always aiming to build capacity within their schools and systems.

6. System leaders have vital roles and responsibilities too.

The most important professional learning – job-embedded, ongoing, responsive to demonstrated student learning needs – either happens for teachers in schools or it does not happen.[41] Because teaching is highly context-specific, schools are the essential unit of change for improving the quality, relevance, and efficacy of professional learning in ways that deepen teaching expertise and improve student learning.[42] That said, system leaders have vitally important roles and responsibilities. In particular, equity considerations must be addressed proactively to ensure that schools with higher proportions of low-income students and students of color have the resources, personnel, and support to sponsor high-quality, applied learning experiences within the school community.

While different systems will allow for different levels of autonomy at the school and team levels, some enabling conditions should be guaranteed across schools. For example, schools might have options regarding curriculum, but system leaders should ensure an adequate supply *and use* of high-quality options. Likewise, protected time for teacher learning cannot be compromised; schools may have discretion in how to build schedules and what students are doing while teachers are engaged in learning activities, but every teacher should be part of a team with dedicated time.[43]

Systems have an especially important role in supporting teacher leaders to lead learning among their peers.[44] This means creating new roles, developing selection criteria and training for leaders, and ensuring principals embrace a distributed leadership model. The challenge is steep in many places because this aspect of professional advancement has been under-resourced in the United States relative to higher performing systems around the world.[45]

It can be tempting to divide professional learning into top-down or bottom-up approaches, but the three examples profiled indicate these labels are inapt because it takes some of each to achieve the best results. There are trade-offs between a "push" strategy mandating specific activities, which can get to scale quickly but runs the risk of a compliance approach, vs. a "pull" strategy that allows for more organic uptake and ownership but may extend the timeline for full implementation.

System leaders need to know their context and decide what change strategies will be most effective for them. For instance, Louisiana recognized that voluntary adoption of its recommendations was best in its context, while DCPS leaders were building on a track record of system-wide, mandatory implementation of human capital reforms and decided to go to scale more quickly (this also partly reflects the difference between scaling within a district vs. a whole state). The Teaching Labs in West Virginia represent a truly grassroots effort; the next several years will determine whether system leaders can capitalize on this authentic ownership at the local level to spread resources and supports across many more teachers, schools, and districts.

Conclusion

For professional learning to be optimally relevant and useful to teachers, it needs to build on the instructional materials teachers use in their classrooms. Separating the work of implementing standards-aligned curriculum from the ongoing professional learning in which teachers engage is not only inefficient but also incoherent; it undermines the success of both. System leaders have a responsibility to intentionally weave these work streams together. By making these two parts of a whole, they can accelerate and deepen progress to the benefit of teachers and their students.

High-quality, standards-aligned curriculum and accompanying student tasks are rich enough to occupy many years of developing teachers' professional expertise. As one teacher put it: "Teachers should not be expected to be the composers of the music as well as the conductors of the orchestra."[46] System leaders should respect the artistry and skill required to teach students for deep comprehension, and they should align systems to support teachers in meeting this goal.

Acknowledgments

The authors extend their gratitude to the practitioners, researchers, and thought partners who provided valuable insights and feedback on this publication. The authors alone are responsible for the recommendations herein and for any inaccuracies or errors.

- Stephanie Banchero, Senior Program Officer, The Joyce Foundation
- Mandy Flora, Staff Development Director, RESA 3, West Virginia Department of Education
- Ben Jensen, CEO, Learning First
- Jennifer Jump, Director of Elementary Literacy, District of Columbia Public Schools
- Silas Kulkarni, Co-founder and Executive Director, Teaching Lab
- Lynn Olson, Consultant
- Brian Pick, Chief of Teaching and Learning, District of Columbia Public Schools
- Mark Sass, Colorado State Policy Director, Teach Plus, and Teacher Leader, Adams 12 Five Star Schools
- Whitney Whealdon, Director of Academic Content, Louisiana Department of Education
- Judy Wurtzel, Director of Education, Charles and Lynn Schusterman Family Foundation
- Members of the Aspen Institute Urban Literacy Leadership Network

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