

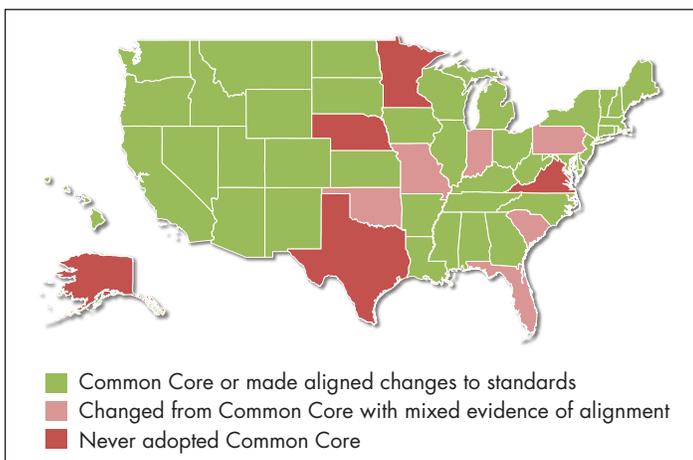
What Teachers Know and Do in the Common Core Era

Findings from the 2015–2017 American Teacher Panel

The Common Core era began in 2009, when a group of state school chiefs and governors developed and launched the Common Core State Standards (Common Core). Such standards focus on what K–12 students across the country should know in English language arts (ELA) and mathematics after each school grade. In 2010, nearly all states had voluntarily adopted the Common Core—45 states and the District of Columbia. While some states have since made changes to their standards, most still retain standards closely aligned with the key tenets of the Common Core. And even states that have not formally adopted the Common Core still emphasize important content and ideas that are part of the Common Core. Figure 1 summarizes Common Core adoption (based on findings from a recent analysis by Achieve.org) as of 2017.

The ultimate goal of the Common Core is to improve student achievement. But seeing those improvements now is challenging, both because factors unrelated to state standards aligned with the Common Core may affect such assessments and because it may simply be far too early to measure student achievement gains or declines. Although the majority of states have adopted the Common Core, some did not adopt it until 2011–2012; California, the nation’s largest state, did not implement the Common Core until 2014–2015.

Figure 1. States That Did and Did Not Adopt the Common Core, and States That Changed from Common Core to Other Standards, as of 2017



Key findings:

- While mathematics and English language arts (ELA) teachers’ use of published textbooks changed very little, their use of standards-aligned and content-focused online materials appeared to rise.
- Although most aspects of teachers’ knowledge about their standards did not change, ELA teachers were less likely to regard the use of complex, grade-level texts as aligned with their standards in 2017 than in 2016.
- There were almost no significant changes in mathematics teachers’ overall responses about their students’ practices, but some differences among subgroups of mathematics teachers emerged—in particular, those teaching high-vulnerability students.
- ELA teachers reported that their students engaged less in several standards-aligned practices in 2017 than in 2016.
- Use of standards-aligned curricula matters: Teachers using standards-aligned materials—and fewer materials that were not aligned—had more knowledge about their state standards and reported their students engaging in more standards-aligned practices.
- State context plays a role in teachers’ use of materials, knowledge, and practice. In Louisiana, for example, teachers did better than teachers in other states across all three implementation measures.

But what we can begin assessing is how the Common Core is being *implemented* in the states that adopted it. To implement the Common Core well, leaders and teachers must change the way they think about and evaluate good instruction that is aligned with what those standards demand. Such change is not about making simple fixes; rather, change depends on what teachers know about content, standards, and pedagogy, as well as their willingness to do things differently, even if they have been teaching in

the same way for decades. If the Common Core does indeed lead to change in what students learn, then changes in what teachers know and do would likely be evident before learning changes occur.

This research brief summarizes some changes in what teachers know about their standards and what they do in the classroom, based on analyses of the same teachers' responses to surveys in the RAND American Teacher Panel (ATP) fielded in spring 2015, spring 2016, and spring 2017. The ATP was designed to capture teachers' perceptions of major education policies and programs and of how the work teachers do shifts in response to those policies. We examined changes in teachers' knowledge and practices, with a focus on responses from the same mathematics and ELA teachers over time in regard to (1) what instructional materials they used for their instruction, (2) their understanding of approaches and content aligned with their state standards for mathematics and ELA, and (3) their standards-aligned instructional practices. This assessment is the first attempt—to our knowledge—to track change in what teachers say they know and do in relation to the Common Core.

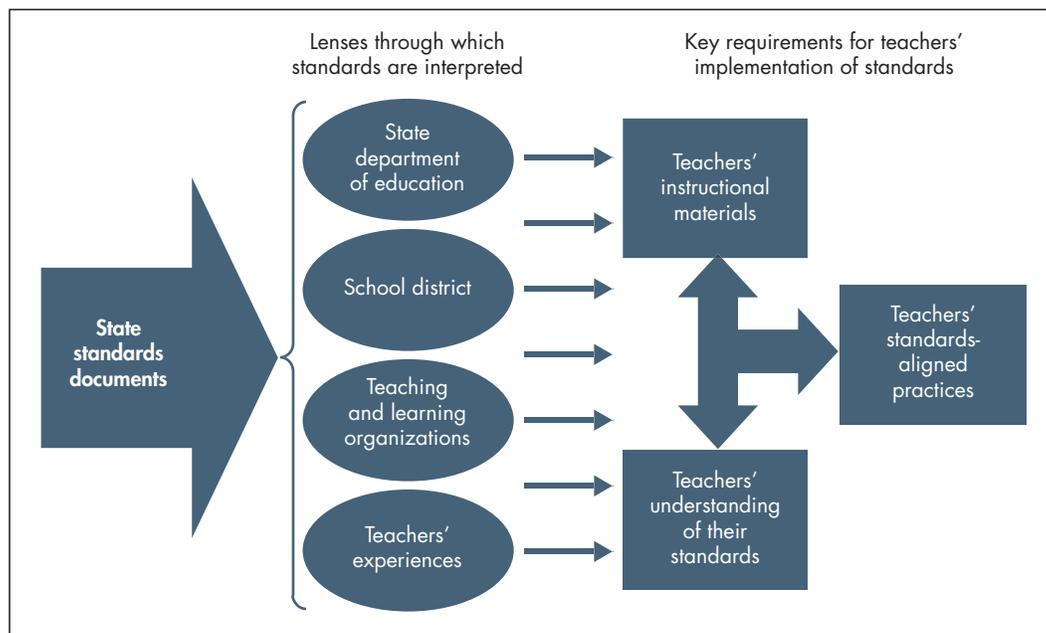
How We Did the Surveys

Our findings focused on teacher responses in the ATP to the three areas we just noted (also shown on the right side of Figure 2)—key requirements for teachers' implementation of standards. Teachers' instructional materials and the understanding of standards are interconnected and affect each other, while both influence teachers' standards-aligned practices.

As shown on the arrow on the left side of the figure, the standards themselves exist only as documents that prescribe content; the standards are not explicit about the instructional approaches teachers must engage in to teach that content. But there are a number of lenses through which teachers make sense of standards and translate them into instructional practices. Unfortunately, not all these lenses are likely to be aligned; as such, they could even provide conflicting messages to teachers about what they should do in the classroom. States, for example, could mandate assessments that are not aligned with state standards and yet count student performance on assessments as part of teachers' evaluation scores. Districts could require teachers to use materials and attend professional development classes that are not aligned with their standards. Organizations that intend to support teaching and learning could provide differing messages about what it means to implement state standards. Teachers' prior educational experiences could be in conflict with ideas and concepts embedded in standards. In fact, research suggests that teachers could think they are engaged in standards-aligned practices and even be using standards-aligned texts while—in actuality—they are engaged in more-traditional instruction that engages only at a surface level with the challenging ideas embedded in standards and some standards-aligned materials.

To capture the impact over time for standards implementation, we relied on three fieldings of the ATP survey in 2015 (total sample, 2,745; response rate, 62 percent), 2016 (total sample, 3,542; response rate, 49 percent), and 2017 (total sample, 2,698; response rate, 64 percent). The response rate may have been lower in 2016 than in other years because

Figure 2. Factors Influencing Teachers' Implementation of State Standards



the sample included individuals who were no longer teachers but were only formally removed from the ATP in 2017. To assess **use of instructional materials**, we examined mathematics and ELA teachers’ responses to questions on their use of specific published textbooks in their instruction, as well as online materials. To measure **teachers’ understanding of their state standards**, we selected survey items that attempted to capture the major instructional shifts required by the Common Core for mathematics and ELA, as well as questions about standards content and approaches. To measure **teachers’ standards-aligned practice**, we included survey items asking teachers to estimate the frequency with which their students engaged in certain practices endorsed in the standards. We were also able to make comparisons for each measure among different subgroups of teachers: rural versus urban; those in in states directly referencing the Common Core versus those in states not directly referencing it; and teachers of low-, medium-, and high-vulnerability students. High-vulnerability students come from low-income families, have Individualized Education Programs, and/or are English language learners.

Findings Across States, Across Years

Teachers’ Use of Instructional Materials

Teachers’ use of published textbooks for their instruction in 2017 looks similar to use in previous years. In mathematics, EngageNY.org materials continued to be the most-used materials for mathematics in 2017, as they were in 2016 and 2015. And in ELA, also as in past years, leveled readers—texts written at students’ individual reading levels—remained the most commonly used material, followed by trade books and specific leveled reader series, including Reading A–Z, Accelerated Reader, and RAZ-Kids. Most state standards

emphasize that students should read complex texts written at or above their grade level, and almost no standards suggest the use of leveled readers or provide guidance on their use.

In the 2015 and 2016 surveys, teachers reported using few materials that had been vetted and judged as aligned with the Common Core and similar state standards. This was still true in the 2017 survey results. Of the top materials that mathematics teachers indicated using in 2017, only Eureka Math and EngageNY.org (which includes a free online version of Eureka Math) have been judged by EdReports.org—an independent nonprofit—as closely aligned with the Common Core. Similarly, of the top materials ELA teachers reported using in 2017, only EngageNY.org has been judged by EdReports.org as closely aligned with the Common Core.

We also observed no significant change in the same mathematics teachers’ reports of what they used in 2015 than in 2017, which at least suggests that the materials teachers regarded as primary ones in 2015 were still ones they used regularly in 2017. But for ELA, the story was slightly different. Teachers’ reports of their use of leveled readers increased from 2015 to 2017 overall: 17 percent indicated using leveled readers as their primary material in 2015, compared with 31 percent reporting using them regularly in 2017. Table 1 shows the increase by subgroups of ELA teachers, with significant increases among urban teachers, teachers in states not directly referencing the Common Core, and teachers of medium-vulnerability students.

Use of many online materials changed from 2015 to 2017, including an increase in the use of content-focused, standards-aligned online materials. Over time, teachers’ reports of the use of standards-aligned websites (i.e., sites that specifically reference the Common Core and present materials and supports aligned with the Common Core) and content-specific websites (i.e., websites that specifically

Table 1. Percentage Change in ELA Teachers’ Use of Leveled Readers as Primary Material, by Subgroup

Subgroup	Percentage Change Between 2015 and 2017
Rural teachers	+4%
Urban teachers	+16%***
Teachers in states directly referencing the Common Core	+8%
Teachers in states not directly referencing the Common Core	+20%***
Teachers of high-vulnerability students	+12%
Teachers of medium-vulnerability students	+20%***
Teachers of low-vulnerability students	+11%

NOTES: Primary material means used regularly (once a week or more). Asterisks indicate significant differences between the same teachers’ responses in 2015 and 2017; *** $p < 0.01$.

address ELA or mathematics) increased significantly. We observed more increases in the use of standards-aligned materials and content-specific materials among teachers in states directly referencing the Common Core compared with those in states that did not. But the use of standards-aligned and content-specific materials did not increase significantly for teachers of high-vulnerability students. Similarly, there was no significant increase in the use of standards-aligned and content-specific materials among rural ELA teachers.

Taken together, these findings regarding instructional materials suggest little to no increase in teachers' use of published materials closely aligned with the Common Core and most state standards, which might imply that districts and schools have not moved to adopt textbooks more aligned with the Common Core between 2015 and 2017. Then again, given the increases in use of more standards-aligned and content-specific online materials, we might surmise that teachers—and/or those supporting teachers—sought online resources to supplement their published texts to fill gaps in standards alignment. Also, the absence of change in the use of standards-aligned and content-specific materials for teachers of high-vulnerability students and for rural teachers suggest that teachers could have inequitable access to high-quality instructional materials, and/or teachers in some contexts may have more information than those in other contexts about where to find standards-aligned and content-specific materials.

Teachers' Knowledge of Their State Standards

What mathematics teachers knew about their mathematics standards appeared to change little. We did not observe much significant change in teachers' knowledge of their mathematics standards from 2016 to 2017 (the only period for which we can make a comparison). To assess what teachers know about their mathematics standards, we first asked teachers at each grade level to identify which of four mathematics topics at grade level were aligned with their state standards. Two of these standards were taken from the Common Core. Two "distractor" standards were typically selected from two grade levels above or below the targeted grade. Teachers who successfully selected the two correct standards for a given grade level that they taught and none of the distractor standards or the "I don't know" response were designated as "correct." Otherwise, they were classified as "not correct." If teachers taught at more than one grade level, they responded to this question for each grade level they taught. Although the percentage of teachers who did respond correctly for at least one grade level increased from 35 percent to 41 percent from 2016 to 2017, that change was not significant. In general, teachers were often able to identify the major mathematics topics emphasized in the Common Core for the grade levels

they taught in each survey we administered. However, they also tended to identify other topics as standards-aligned for their grade level, even if those topics reflected standards two full grade levels above or below the grade level they taught.

ELA teachers were less likely to regard the use of complex texts as aligned with their standards. The survey asked teachers to indicate which approaches for selecting texts were aligned with their state's standards for ELA, as well as which reading approach was most aligned with their standards. While the use of complex texts is emphasized in most state standards, Figure 3 shows that significantly fewer ELA teachers indicated that "assigning complex texts that all students in a class are required to read" was aligned with their standards in 2017 than had in 2016 (37 percent versus 48 percent); the majority of teachers regarded "selecting texts for individual students based on their reading level" as aligned with their standards (73 percent in 2016 versus 68 percent in 2017). The percentage of teachers of less-vulnerable students who chose "assigning complex texts" also declined significantly from 2016 to 2017; this was also the case for urban teachers, but not rural ones (numbers not shown).

In each year we administered the survey, we also asked ELA teachers which reading approach was aligned with their standards: a focus on teaching texts and teaching skills through texts versus focusing on reading skills first and teaching students to apply those skills to specific texts. In response to each survey, the vast majority of teachers, particularly at the elementary level, indicated that their state standards were most aligned with a focus on teaching reading skills first, then applying them to texts, rather than the other way around. Teachers responses to this question did not change significantly from one year to the next.

Teachers' Instructional Practices

We found almost no significant changes in math teachers' overall responses about their students' practices, but some differences among subgroups of mathematics teachers emerged. Specifically, there were a number of significant decreases in reports of standards-aligned practices among teachers of low-vulnerability students compared with teachers of high-vulnerability students (Table 2). We are not sure what these differences imply. It could be that teachers serving more high-vulnerability students attended to these practices more closely for reasons tied to accountability. For example, teachers of these students might be under more pressure to improve student test scores and may perceive that standards-aligned practices can support them to do that. It could also be that teachers of students with lower vulnerability are measuring themselves according to a different bar. For instance, they may have a growing awareness of the importance of standards-aligned practices and feel they are engaging in

Figure 3. Percentage of ELA Teachers Indicating Each Approach Was Aligned with Their Standards in 2016 and 2017 (N = 434)

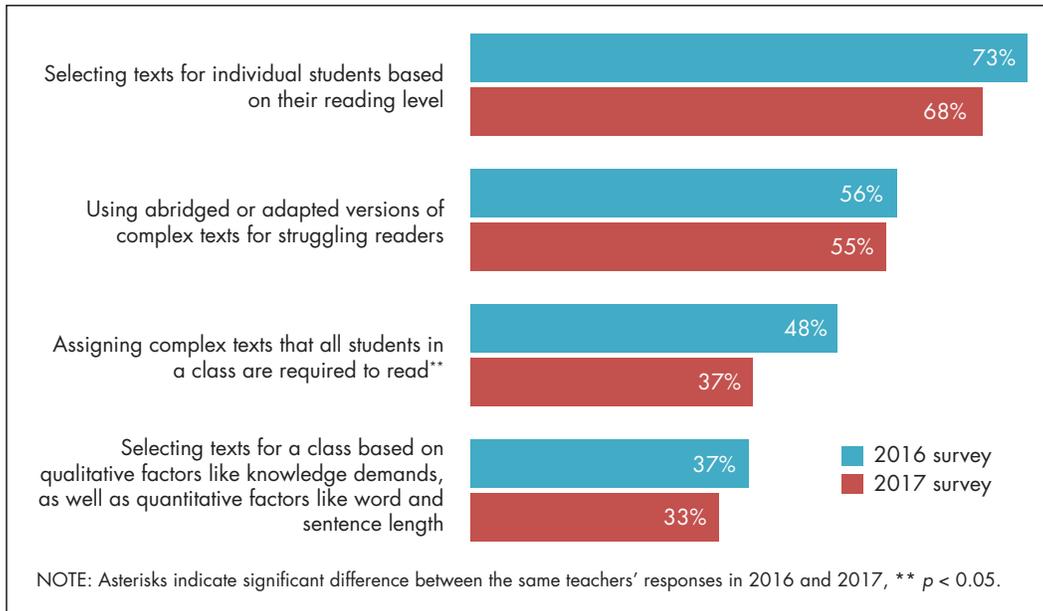


Table 2. Average Change in How Much Low- and High-Vulnerability Mathematics Students Engaged in Standards-Aligned Practices from 2016 to 2017

Practice	Percentage Change Among Teachers of High-Vulnerability Students	Percentage Change Among Teachers of Low-Vulnerability Students
Construct viable arguments and critique the reasoning of others.	+0.04	-0.03
Look for and make use of structure.	+0.16	+0.03
Choose and use appropriate tools when solving a problem.	-0.24	-0.22
Apply mathematics to solve problems in real-world contexts.	+0.20	-0.22**
Explain and justify their work.	+0.02	-0.22**
Make sense of problems and persevere in solving them.	+0.05	-0.18
Use mathematical language and symbols appropriately when communicating about mathematics.	+0.26	-0.29***

NOTES: Average change represents the difference in teachers' average response regarding the extent to which their students engaged in each practice. The response scale: 1 = not at all; 2 = to a slight extent; 3 = to a moderate extent; 4 = to a great extent. Asterisks indicate significant differences between the same teachers' responses in 2016 and 2017, ** $p < 0.05$, *** $p < 0.01$.

these practices to a lesser extent over time. Further research might shed light on the reasons for these differences among teachers with more and fewer vulnerable students.

ELA teachers reported students engaged less frequently in several standards-aligned practices in 2017 than in 2016. On the one hand, from 2016 to 2017, teachers' average responses decreased significantly for several standards-aligned practices, including "know and apply grade-level phonics and

word analysis skills in decoding words," "analyze how two or more texts address similar themes," "adapt speech to a variety of contexts and communicative tasks," and "write arguments to support claims in an analysis of substantive topics." On the other hand, teachers' responses increased significantly for two practices: "participate in a range of conversations and collaborations with various partners" and "read with sufficient accuracy and fluency."

Compared with mathematics teachers, ELA teachers from different subgroups yielded different results. For example, we did not see very many significant drops in standards-aligned practices for ELA teachers of low-vulnerability students. And trends in changes for teachers of lower- and higher-vulnerability students were generally in the same direction.

Teachers using standards-aligned materials had more knowledge about their state standards and reported their students engaging in more standards-aligned practices. Although we observed relatively small changes in teachers' knowledge and practices over time, we did find some important relationships between teachers' instructional materials, their knowledge, and their students' practices. ELA teachers who reported less use of leveled readers were also more apt to report that the use of complex, grade-level texts was aligned with their standards. In mathematics, teachers who reported the use of at least one standards-aligned published material were more likely to report student engagement in standards-aligned practices. These findings imply that the materials teachers use may support them to have more knowledge of their standards and vice versa.

Findings in One State: The Case of Louisiana

In addition to looking across the states, we were able to bore down into some specific states where the ATP data include state-representative samples, one of which was Louisiana, where we found that ***teachers did better than teachers in other states across all three implementation measures.*** Specifically, compared with other teachers nationally, Louisiana teachers used some curricula aligned to the Common Core at a higher rate than teachers in other states overall, demonstrated a better understanding of their Common Core-aligned standards, and reported undertaking more instructional activities that align with their standards. This raises the question of why Louisiana did better.

Our analysis suggests the importance of state context—specifically, the Louisiana Department of Education (LDOE) relied on *three main strategies* to support teachers' implementation of state standards, as shown in Table 3.

These three strategies may not be equally important to produce change in what teachers do. One or two of these strategies may be more effective than the others. There also could be other statewide strategies supporting teachers to think and act in ways that are different from those in states that adopted the Common Core or modified versions of the standards.

Still, the LDOE strategies and actions highlighted in Table 3 are also reflected in recommendations from decades of education research. In particular, systemic reform research posits that teachers will be better able to engage in instructional reforms (such as state standards) if they are working in an environment in which all the systems supporting their

instruction are giving them common and clear messages about what they should be doing in their classrooms. Alignment between standards and student assessments is a basic starting point, and—by adopting or developing new assessments—many states are working to achieve that alignment.

Implications of Our Findings

The findings in our research have some broader implications for policymakers and practitioners going forward.

Continue to innovate and provide standards-aligned materials for teachers online. Teachers are increasingly turning to online sites for materials. Given this, anyone who wants to get good, standards-aligned content in teachers' hands should consider how to do so through online venues. In addition, the large growth in the use of Teacherspayteachers.com suggests that teachers seek insights from other teachers. Policymakers, practitioners, and vendors might consider ways to improve such repositories as Teacherspayteachers.com toward incorporating standards-aligned and high-quality materials. They could also caution against materials that do not align with standards. Also, our findings on smaller increases in the use of standards-aligned and content-specific materials among some teachers suggests a need for initiatives or funding that could support teachers in rural schools and those serving more-vulnerable students to access and/or draw on high-quality online materials.

Provide more support for teachers to engage students with grade-level texts and support reading approaches that are aligned with their standards. The continued use of leveled readers is one area where we saw a slight decrease in teachers' understanding of their standards. The use of such readers runs counter to the evidence: Few standards reviewed in this research emphasized leveled readers or selecting texts for individual students based on their reading level. These results suggest, first, that teachers need more information about the approaches for selecting texts that are aligned with their standards. Second, given the potential rise in leveled reader use, teachers likely need much more support to engage students with grade-level texts. That said, more research is necessary to understand whether teachers are using leveled readers in ways that are aligned with their standards.

Support teachers to engage students in text-focused practices. ELA teachers reported they are asking students to engage in close reading by using evidence from texts to make inferences and by using nonfiction texts. But only one-third or less of teachers indicated that “teaching particular texts first and organizing instruction around them” was an approach most aligned with their standards. Instead, most teachers indicated that teaching reading skills first, then applying them to texts later, was a reading approach most aligned with their standards. These findings imply that

Table 3. Louisiana Department of Education Strategies to Help Teachers Implement State Standards

Strategy	LDOE Implementation Actions
1. Coherence across systems	<ul style="list-style-type: none"> • Has examined and revised three key “systems” that all point teachers down the same pathway toward helping students meet Louisiana state standards: curricula, professional development, and student assessments • Has worked to ensure strong alignment and coherence among these systems and, at the same time, designed them to be high-quality
2. Communication across layers of the educational system	<ul style="list-style-type: none"> • Disseminates information and communicates about standards, curricula, professional development, and assessment—and the alignment of these systems—with multiple layers of school and district staff in Louisiana • Regularly communicates with team leads
3. Local ownership of educational change	<ul style="list-style-type: none"> • Provides tools and supports to help districts, schools, and teachers make informed decisions about curricula, assessments, professional development, and instruction rather than mandating the use of particular materials • Has positioned itself as the purveyor of a high-quality, aligned marketplace to guide local decisions about curricula, professional development, and assessments

teachers may not be focusing on texts as much as is indicated by their reports about their practice and that they may need more support from school leaders and professional development providers to do so, although more research is necessary to understand the nature of teachers’ text-focused instruction in the classroom.

Continue to support teachers’ standards-aligned mathematics instruction. We saw little change in teachers’ mathematics instruction, including no change in teachers’ knowledge and little change in standards-aligned practices. These results suggest that mathematics teachers may not be receiving the support they need to improve their practice. For example, our findings indicate that mathematics teachers tend to identify too many grade-level topics as aligned with their standards and that they cannot always identify the order in which standards should be taught. These findings suggest there is more work to be done to support and encourage teachers’ standards-aligned practices in mathematics through continued coaching and professional development, as well as through development and dissemination of high-quality, standards-aligned materials.

Consider how standards-aligned instructional materials can support teachers’ knowledge and practice. Our results suggest that use of standards-aligned materials can make a difference in what teachers know and do. Our research does not provide explanations for the relationships we found between the use of standards-aligned materials and teachers’

knowledge and practice. But these findings do imply that the use of standards-aligned materials is an important aspect of a standards-aligned instructional system and may reinforce teachers’ work to help students master their standards.

Focus more on the experiences of individual states. Given the great variation in Common Core implementation across states, research on individual states—such as Louisiana—may be more informative in pinpointing changes to teachers’ instruction and the state policies that may be supporting those changes. The example of Louisiana’s success relative to other states examined may reflect the impact and value of aligning the lenses through which messages about standards are transmitted to teachers that was highlighted in Figure 2.

Overall, our research points to the need for much more research to determine whether teachers’ instruction is changing over time and—potentially—in response to the Common Core. We also know that change is a long-term process. High-quality implementation of such ambitious standards as the Common Core will likely take many years and require the support of countless stakeholders, including states, districts, schools, teachers, developers of curriculum materials, researchers, and multiple other external partners. By working together, and by collecting and analyzing data over time, these stakeholders can shape the system that supports high-quality standards implementation.

This brief describes work derived from five reports in RAND Education: *Changes in What Teachers Know and Do in the Common Core Era: American Teacher Panel Findings from 2015 to 2017*, by Julia H. Kaufman, V. Darleen Opfer, Michelle Bongard, and Joseph D. Pane, RR-2658-HCT, 2018 (available at www.rand.org/t/RR2658); *Aligned Curricula and Implementation of Common Core State Mathematics Standards: Findings from the American Teacher Panel*, by V. Darleen Opfer, Julia H. Kaufman, Joseph D. Pane, and Lindsey E. Thompson, RR-2487-HCT, 2018 (available at www.rand.org/t/RR2487); *Connecting What Teachers Know About State English Language Arts Standards for Reading and What They Do in Their Classrooms: Findings from the American Teacher Panel*, by Julia H. Kaufman, V. Darleen Opfer, Lindsey E. Thompson, and Joseph D. Pane, RR2258-HCT, 2018 (available at www.rand.org/t/RR2258); *Creating a Coherent System to Support Instruction Aligned with State Standards: Promising Practices of the Louisiana Department of Education*, by Julia H. Kaufman, Lindsey E. Thompson, and V. Darleen Opfer, RR-1613-HCT, 2016 (available at www.rand.org/t/RR1613); and *Implementation of K-12 State Standards for Mathematics and English Language Arts and Literacy: Findings from the American Teacher Panel*, by V. Darleen Opfer, Julia H. Kaufman, and Lindsey E. Thompson, RR1529-1-HCT, originally published in 2016; revised 2017 (available at www.rand.org/t/RR1529-1). To view this brief online, visit www.rand.org/t/RB10035. The RAND Corporation is a research organization that develops solutions to public policy challenges to help make communities throughout the world safer and more secure, healthier and more prosperous. RAND is nonprofit, nonpartisan, and committed to the public interest. RAND's publications do not necessarily reflect the opinions of its research clients and sponsors. RAND® is a registered trademark. © RAND 2018

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