



What's Happening

November 2014

Gearing up to teach the Common Core State Standards for Mathematics in rural Northeast Region schools

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Rural Districts Research Alliance**



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Summary

Educators in the rural Northeast Region report challenges in implementing the Common Core State Standards for Mathematics (CCSSM). Using administrator interviews and teacher survey data from selected rural districts in Maine, New Hampshire, New York, and Vermont, this report offers insight into how state, district, and school administrators can help teachers prepare students to meet these new, more demanding standards. Among the findings of what states and districts are doing:

- States and districts offer several professional development supports to help teachers understand and implement the CCSSM, but teachers report being not yet fully prepared.
- States and districts provide websites with resources, regional meetings, district-based professional development, and opportunities for collaboration within and across schools and districts to plan and share resources.
- State- and district-level professional development usually focuses on helping teachers understand the new standards.
- Teachers report knowing the standards well and feeling “somewhat prepared” to integrate the standards into their daily math instruction.

Administrators and teachers identified several types of supports needed to implement the CCSSM well, including:

- Teachers need more time to plan, collaborate, and gain the content knowledge necessary to implement the CCSSM.
- Teachers need access to high-quality CCSSM-aligned curricula, professional development, and support personnel to provide instruction that deepens students’ conceptual knowledge of math.
- Teachers need to collaborate more across schools, districts, and states to share resources, plan lessons and units, and engage in professional development.

Contents

Summary	i
Why this study?	1
Challenges facing rural educators	1
Research questions	1
Study sample	2
What the study found	3
States are providing web resources, establishing collaboration networks, and offering professional development opportunities to support CCSSM implementation	4
Most teachers have access to CCSSM informational resources—about half have access to district- and school-based professional development opportunities	5
Ongoing needs include time, support, instructional materials, and opportunities for collaboration	7
Limitations of the study	9
Suggested next steps	10
Appendix A. Data and methodology	A-1
Appendix B. State instructional leader interview protocol	B-1
Appendix C. District instructional leader interview protocol	C-1
Appendix D. Teacher survey	D-1
Note	Notes-1
References	Ref-1
Box	
1 Data and methods	2
Figures	
1 Professional development materials for grade 3–8 teachers in rural Northeast Region schools focus on content standards and understanding, 2013	6
2 Most surveyed grade 3–8 teachers in rural Northeast Region schools feel “somewhat prepared” to integrate the CCSSM into their daily math instruction, 2013	6
Tables	
1 Northeast Region state and district administrators interviewed and their roles, 2013	3
2 Number of Northeast Region teacher survey respondents, by state and math grades taught, 2013	3
3 CCSSM resources available to grade 3–8 teachers in rural Northeast Region schools, 2013	5
4 Most demanding CCSSM content areas identified by grade 3–8 teachers in rural Northeast Region schools, by state, 2013 (percent)	7
5 Most important instructional challenges in implementing the CCSSM identified by grade 3–8 teachers in rural Northeast Region schools, by state, 2013 (percent)	8

6	Components of the CCSSM requiring the most support identified by grade 3–8 teachers in rural Northeast Region schools, by state, 2013 (percent)	9
A1	Number of rural districts and number of students per district, by state and size of rural districts, 2013	A-1
A2	District interview respondents: Actual and targeted samples, 2013	A-2

Why this study?

Math educators around the country are gearing up to teach the Common Core State Standards for Mathematics (CCSSM), the product of the first systematic U.S. movement to follow high-performing countries' math curricular principles. Adopted by 43 states (Carmichael, Martino, Porter-Magee, & Wilson, 2010; Kober & Rentner, 2011), the CCSSM emphasize conceptual understanding, coherence among topics, abstract reasoning, and problem solving. This emphasis represents a major shift in content and pedagogy from existing state standards, which focus on mastering discrete skills and procedures (Kober & Rentner, 2012).

The CCSSM include the Standards for Mathematical Content, outlining what students should understand and be able to do (for example, number and operations in base ten, measurement and data), and the Standards for Mathematical Practice, the capacities that educators need to develop in their students (for example, making sense of problems, persevering in solving them, and constructing viable arguments). The Standards for Mathematical Practice cut across all grade levels and intersect with the Standards for Mathematical Content. Although the CCSSM may improve math learning, challenges remain in implementing them, including access to curricular materials and instructional supports (Kober & Rentner, 2011).

Implementing the Common Core State Standards for Mathematics (CCSSM) will be challenging for all math educators, but especially educators in rural schools

Challenges facing rural educators

Implementing the CCSSM will be challenging for all math educators (Kober & Rentner, 2011, 2012), but especially educators in rural schools. Recent survey data indicate that educators in small, rural schools often feel isolated and overburdened when asked to make substantial improvements in their math and science teaching and often desire additional instructional resources and supports (Babione, 2010; Howley, Wood, & Hough, 2011). However, no recent studies have looked specifically at rural educators' needs and challenges in implementing the CCSSM. Members of the Northeast Rural Districts Research Alliance, who are committed to supporting rural educators' effectiveness, expressed interest in learning about rural schools' and districts' most pressing needs in implementing CCSSM; what states and districts are doing to prepare for and address these needs; what curricular and professional development opportunities are available and being developed; and how online technology, in particular, can be used to expand access to resources.

Research questions

In response to this interest, Regional Educational Laboratory Northeast & Islands researchers, in collaboration with the Northeast Rural Districts Research Alliance, designed a needs assessment of educators in rural Northeast Region schools who are preparing or have begun to implement the CCSSM. Two research questions guided the study:

- What are selected Northeast Region states and districts doing to help teachers in rural schools prepare to teach the CCSSM?
- What challenges and needs do educators in selected rural Northeast Region districts face as they prepare to implement the CCSSM?

To answer these questions, the study team interviewed a convenience sample of state and district educators in Maine, New Hampshire, New York, and Vermont and surveyed a

sample of teachers in rural schools in each of these states (see box 1 for a brief description of the data and methods and appendix A for more detail). The interviews focused on state and district leaders' familiarity with and preparation for implementing the CCSSM; implementation plans and efforts; perceived challenges facing rural schools, districts, and teachers; and critical supports and resources needed for administrators and teachers in rural schools (see appendixes B and C for interview protocols). The teacher survey focused on familiarity with specific CCSSM guidelines, available resources and supports, perceived implementation challenges and needs, and implementation plans and efforts (see appendix D for the teacher survey).

Study sample

The interview sample included 10 state and district administrators from Maine, New Hampshire, New York, and Vermont: four state-level administrators responsible for CCSSM implementation (one from Maine and three from Vermont), one district-level administrator who also serves on state-level CCSSM committees (from New Hampshire), and five district-level administrators (two from Maine, two from Vermont, and one from New York), one of whom was also a principal (table 1). The teacher survey included a small convenience sample of 186 teachers in grades 3–8 representing 48 rural districts across Maine, New Hampshire, New York, and Vermont. The sample targeted teachers in grades 3–8 because these grades are commonly tested and span elementary and middle school. All the administrators interviewed and more than 90 percent of the teachers surveyed have begun to implement the CCSSM.

The interview sample included 10 state and district administrators; the teacher survey included a small convenience sample of 186 teachers in grades 3–8 representing 48 rural districts

Box 1. Data and methods

Members of the Northeast Rural Districts Research Alliance from Maine, New Hampshire, New York, and Vermont shared information about the study with rural and town district and school contacts who they thought would be interested and would benefit from participating in the study. This effort produced a convenience sample of 10 state and district administrators for the interviews and 186 teachers for the survey (see table 1 in the main text for information on interview participants and table 2 for the distribution of survey respondents by state). Interviews with state and district administrators focused on systemwide efforts to support schools and teachers in implementing the Common Core State Standards for Mathematics (CCSSM) and the administrators' perceptions of the most pressing challenges and needs facing rural schools and teachers. The surveys focused on teachers' perceptions of their most pressing challenges and needs as well as the efforts they have already taken to implement the CCSSM.

The interview data were reviewed to identify key themes discussed by participants (for example, challenges in implementing the CCSSM, familiarity with the CCSSM standards, and implementation efforts). The study team also looked for common themes among the responses by state and district instructional leaders. Some of the within-case analyses (analyses within a state or across a particular type of instructional leader) were limited in states where fewer interviews were conducted. All closed-ended survey questions were analyzed descriptively, with responses disaggregated by state. Statistical tests were not conducted given the small cell sizes of the disaggregated data. This approach is consistent with the study's purpose, which is to describe patterns among respondents who are preparing to implement the CCSSM, rather than to generalize to a broader population. See appendix A for more detailed discussion of methods.

The teachers who completed the survey had an average of 15 years of experience teaching math and 18 years of teaching experience overall—nationally, teachers in rural schools average 15 years of teaching experience (U.S Department of Education, National Center for Education Statistics, 2008). Many of the teachers work in small rural schools and thus reported teaching more than one grade level of math. The 186 respondents represented 299 math classes in grades 3–8. Teachers in grades 3 and 5 were most heavily represented in the sample (table 2). More than a third of respondents (64 of 186) reported teaching math in grade 3 or 5 in spring 2013, compared with 27 percent in grade 4, 28 percent in grade 6, and 18 percent each in grades 7 and 8. Elementary teachers’ perspectives are thus more heavily represented in the survey data.

What the study found

The interview and survey data provided insight into what rural educators in the Northeast Region are grappling with as they begin to implement the CCSSM. Findings are presented separately for rural educators’ current preparation and early implementation efforts and for rural educators’ most pressing challenges and needs in implementing the CCSSM.

The interview and survey data provided insight into what rural educators in the Northeast Region are grappling with as they begin to implement the CCSSM

Table 1. Northeast Region state and district administrators interviewed and their roles, 2013

Participant	State or district level	Role
1	State	Mathematics Curriculum Support
2	District	Curriculum Director
3	District	Head of District Math Committee; Principal
4	District and state	District Math Coordinator and State Math Committee Member
5	District	Assistant Superintendent for Instruction
6	State	Mathematics Curriculum Support
7	State	Mathematics Assessment Support
8	State	Common Core Implementation Support
9	District	Curriculum Instruction and Assessment
10	District	Math Coordinator

Source: Authors’ analysis of rural Northeast Region administrator interview data on Common Core State Standards for Mathematics (2013).

Table 2. Number of Northeast Region teacher survey respondents, by state and math grades taught, 2013

State	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	All teachers
Maine	12	10	13	13	13	13	37
New Hampshire	20	10	17	12	8	7	60
New York	12	13	14	8	4	4	37
Vermont	20	18	20	19	9	10	52
Total	64	51	64	52	34	34	186

Source: Authors’ analysis of rural Northeast Region teacher survey data on Common Core State Standards for Mathematics (2013).

States are providing web resources, establishing collaboration networks, and offering professional development opportunities to support CCSSM implementation

State and district administrators were asked to describe what they are doing to help teachers prepare for and implement the CCSSM. State administrators confirmed that their CCSSM support efforts were not specifically designed with the needs of rural educators in mind. One administrator explained, “Our state agency operates under the idea that whatever we provide to one district, you have to provide to others. This is the mode of operation for equity, so we haven’t done anything specifically for rural. We’ve been focusing within the regional context, because that’s the only thing that we felt like we could do in an equitable manner based on the definition.”

District or state representatives for all four states reported that each state has developed websites with guidance for districts and resources to support CCSSM implementation. These websites include information about the standards, sample test questions, PowerPoint presentations for professional development, resources from other states, examples of performance tasks; and links to external sites, such as the Smarter Balanced Assessment Consortium, the Partnership for Assessment of Readiness for College and Careers, and others.

District or state representatives for all four states reported that each state has developed websites with guidance for districts and resources to support CCSSM implementation

Maine’s state math specialist posts resources and materials from her workshops with districts across the state and has created online tools to familiarize teachers with the CCSSM. The New Hampshire website includes a crosswalk so that educators can see how the CCSSM relate to the New Hampshire Curriculum Frameworks. In addition, several states have listservs for teachers to join, where math resources are shared. New York has created a website with assessment resources, CCSSM-aligned modules, and individual lessons for teachers. The recently developed Vermont Educator Exchange also enables teachers to collaborate and share resources in a virtual environment.

State and district administrators reported that most states hold regional meetings or provide support through regional experts. Maine’s state math specialist meets with districts and encourages them to collaborate on workshops and professional development sessions. Teachers in New York often rely on support from regional experts to gain a better understanding of the CCSSM and to talk about effective teaching practices. In addition, the state has network teams of math leaders and coaches that meet regularly to learn about the CCSSM and bring what they learn back to their districts. Vermont held one-day regional meetings and offered professional development opportunities across the state to familiarize educators with the new standards. The state is moving to a professional learning network to support CCSSM implementation, develop leaders in their schools and districts, and ensure that learning occurs.

In Maine, New Hampshire, and Vermont local school boards make policy decisions for the district, following state guidelines, so the state-provided professional development sessions rarely include official timelines, pacing guides, formative assessments, or curricula. According to rural district administrators in these states, professional development focuses on CCSSM practice standards to familiarize teachers with processes and proficiencies of student thinking before moving on to content standards. Administrators in rural districts in Maine, New York, and Vermont discussed having teachers meet in grade-level teams to unpack the standards. Maine and Vermont use technology to facilitate collaboration among teachers across schools.

Most teachers have access to CCSSM informational resources—about half have access to district- and school-based professional development opportunities

Teachers in rural districts reported receiving CCSSM support from state, district, and school sources, including informational meetings and general guidance, formal and informal professional development opportunities, and specific resources and materials. Across the four states 60 percent of teachers reported having access to informational meetings on the timeline for CCSSM implementation, 38 percent reported having access to textbooks and other CCSSM-aligned resource materials, and 23 percent were aware of assessment resources to monitor student progress (table 3). Among professional development resources, district-based professional development was most commonly provided, followed by school-based professional development, including instructional coaching and focused discussions with other teachers in the same school. State- and national-level professional development offerings and workshops were reported as less commonly available.

Access to different types of high-quality professional development is a persistent challenge for educators in small rural schools. Teachers reported separately on whether the professional development focused on deepening their understanding, improving their skills, or identifying instructional materials on CCSSM content standards or practice standards. In all states, teachers indicated that professional development opportunities were more likely to focus on CCSSM content standards and on developing teachers’ understanding, rather than on honing specific skills or familiarizing teachers with instructional resources (figure 1). Of these opportunities, 77 percent focused on understanding CCSSM content, while only 17 percent focused on instructional materials to implement CCSSM practice standards.

Finally, teachers indicated how familiar they were with the CCSSM and how prepared they felt to implement the standards. Across the four states 91 percent of the teachers who participated in the survey reported that they had read the standards; 58 percent said they had read them carefully and knew them well. Most teachers in the four states felt “somewhat prepared” to integrate the CCSSM into their daily math instruction (figure 2).

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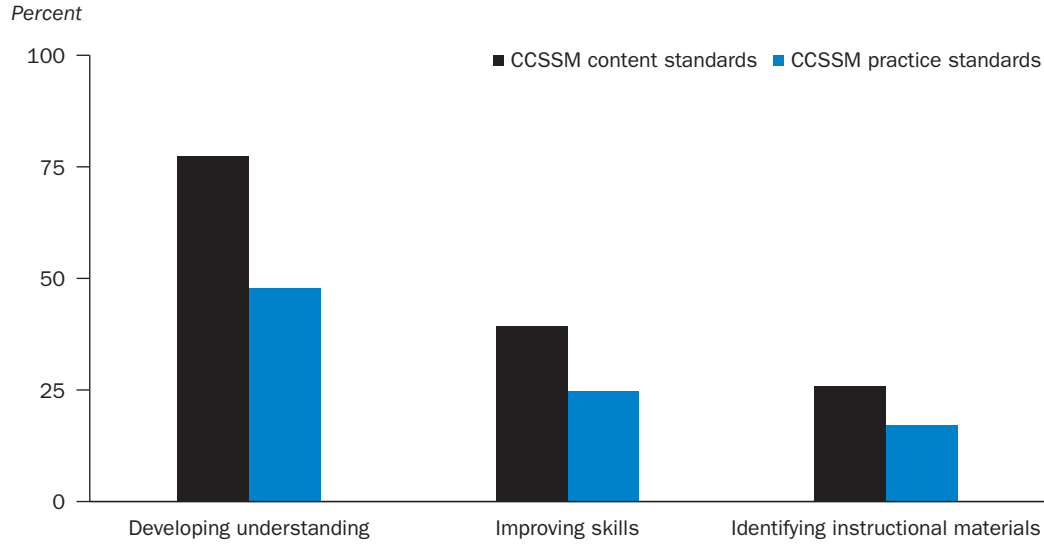
Table 3. CCSSM resources available to grade 3–8 teachers in rural Northeast Region schools, 2013

Resource	Percent
General resources	
Informational meetings on the timeline for CCSSM implementation	60
Textbooks and other CCSSM-aligned resource materials	38
Assessment resources to monitor student progress	23
Professional development resources	
District-based professional development	53
Focused discussions with teachers in the same school	49
School-based professional development	39
Instructional coaching on CCSSM implementation	26
State-based professional development	20
National professional development offerings and workshops	11

Note: CCSSM is Common Core State Standards for Mathematics. “Rural” refers to districts that are classified as “town” or “rural” by the National Center for Education Statistics.

Source: Authors’ analysis of rural Northeast Region teacher survey data on Common Core State Standards for Mathematics (2013).

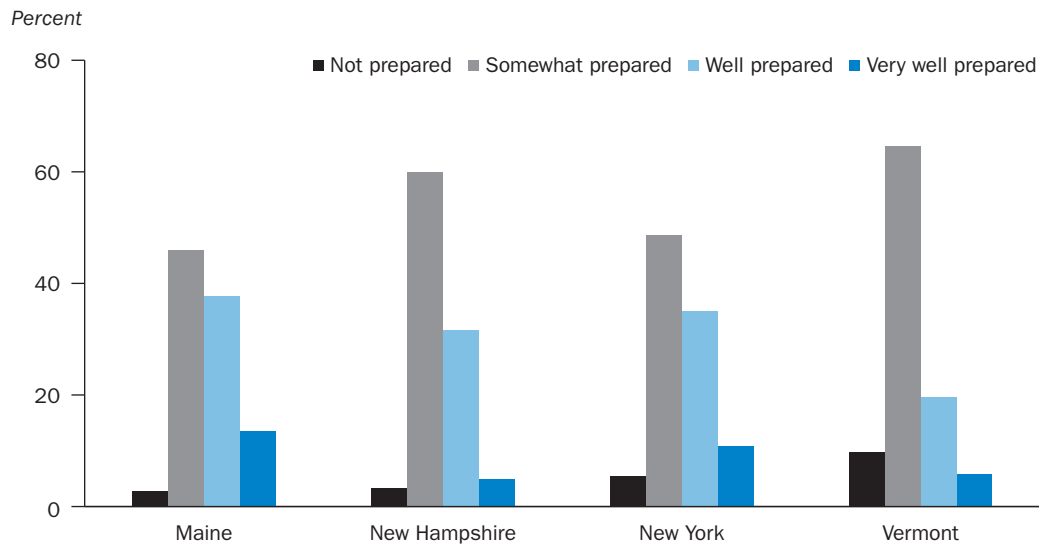
Figure 1. Professional development materials for grade 3–8 teachers in rural Northeast Region schools focus on content standards and understanding, 2013



Note: CCSSM is Common Core State Standards for Mathematics. “Rural” refers to districts that are classified as “town” or “rural” by the National Center for Education Statistics.

Source: Authors’ analysis of rural Northeast Region teacher survey data on Common Core State Standards for Mathematics (2013).

Figure 2. Most surveyed grade 3–8 teachers in rural Northeast Region schools feel “somewhat prepared” to integrate the CCSSM into their daily math instruction, 2013



Note: CCSSM is Common Core State Standards for Mathematics. “Rural” refers to districts that are classified as “town” or “rural” by the National Center for Education Statistics.

Source: Authors’ analysis of rural Northeast Region teacher survey data on Common Core State Standards for Mathematics (2013).

In New Hampshire and Vermont about 60 percent of respondents reported feeling somewhat prepared. About one-third of teachers in Maine (38 percent), New York (35 percent), and New Hampshire (32 percent) reported feeling “well prepared” to implement the new standards, compared with 20 percent in Vermont. Smaller percentages of teachers reported being at the extremes: either not prepared to implement the CCSSM (5 percent across all four states) or very well prepared (8 percent across all four states).

Ongoing needs include time, support, instructional materials, and opportunities for collaboration

Despite supports, including web resources and professional development on content standards, most teachers in this study believed they were only “somewhat prepared,” to implement the CCSSM, indicating that many challenges remain. The study asked rural educators to identify their most pressing challenges and needs.

Time to learn how to teach more difficult content. Participants in district and state administrator interviews identified insufficient time as a major obstacle in implementing the CCSSM. State and district administrators indicated that teachers and curriculum coordinators need time to review the standards and to individually and collaboratively plan instruction that meets the new standards. Administrators reported that other initiatives, including new science standards and state teacher evaluation systems, will likely further restrict teachers’ time. Time is especially short for elementary school teachers, who are also implementing the Common Core State Standards for English Language Arts and who tend to be generalists rather than math experts. The administrators called for additional training to equip elementary teachers with the expertise to teach in accordance with these new and more rigorous standards, which demand a deeper conceptual understanding of math. The administrators indicated that the higher CCSSM expectations are putting even greater pressure on teachers whose work is already demanding.

Participants in district and state administrator interviews identified insufficient time as a major obstacle in implementing the CCSSM

Teachers were asked to identify the most challenging CCSSM content areas to teach. More than half the teachers (53 percent) identified fractions as the most challenging, followed by algebraic thinking (39 percent), ratios and proportional relationships (33 percent), and expressions and equations (30 percent) (table 4).

Table 4. Most demanding CCSSM content areas identified by grade 3–8 teachers in rural Northeast Region schools, by state, 2013 (percent)

Content area	Maine	New Hampshire	New York	Vermont	All
Number and operations—fractions	46	48	78	46	53
Operations and algebraic thinking	32	45	38	38	39
Ratios and proportional relationships	38	27	19	46	33
Expressions and equations	38	25	27	31	30
Statistics and probability	35	27	14	19	24
Number and operations in base ten	8	20	30	12	17
Measurement and data	19	22	11	10	16
Geometry	19	10	19	6	12
The number system	3	8	0	0	3

Note: CCSSM is Common Core State Standards for Mathematics. “Rural” refers to districts that are classified as “town” or “rural” by the National Center for Education Statistics.

Source: Authors’ analysis of rural Northeast Region teacher survey data on Common Core State Standards for Mathematics (2013).

Support for changing instruction. State and district administrators in the four states expected that implementing the CCSSM would require substantial changes in instruction, as the standards emphasize problem solving rather than procedures and processes. To facilitate these changes, state administrators spoke about how teachers would need to focus on the student and move away from traditional instructional approaches (such as worksheets and teacher-led demonstrations) and about how this type of instruction will require teachers to understand math more deeply. State and district administrators discussed how curriculum content would change as well: students would learn perseverance, precision, and problem solving, and early grades would emphasize foundational skills and math fluency more.

Of the most pressing instructional challenges anticipated in CCSSM-aligned classrooms, 62 percent of teachers ranked meeting the needs of all students as the most demanding, followed by allotting time to discuss and plan lessons with colleagues (47 percent; table 5). Gaining access to quality textbooks and instructional materials was also considered a key challenge (46 percent), especially in New York (57 percent) and Vermont (56 percent), as were aligning curriculum (39 percent) and creating lesson plans that embody the content (37 percent) and practice (40 percent) standards. Monitoring student progress was the lowest ranked challenge by teachers overall (28 percent), although 46 percent of teachers in Maine identified this as one of the biggest challenges.

Nearly all teachers (91 percent) reported that they had begun to integrate the CCSSM into their teaching practices and identified the components requiring the most support. About half these teachers believed that they would need the most support to shift the teaching focus from covering topics to deepening students' understanding of the major work in each grade (51 percent) and helping students develop the conceptual understanding outlined in

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Table 5. Most important instructional challenges in implementing the CCSSM identified by grade 3–8 teachers in rural Northeast Region schools, by state, 2013 (percent)

Challenge	Maine	New Hampshire	New York	Vermont	All
Meeting the needs of all students	57	58	89	52	62
Allotting time to discuss and plan lessons with colleagues	54	48	32	50	47
Gaining access to quality textbooks and instructional materials to teach the CCSSM	51	27	57	56	46
Creating lesson plans that embody the CCSSM practice standards	35	38	51	38	40
Aligning curriculum to the CCSSM (both content and practice standards)	43	33	38	44	39
Creating lesson plans that embody the CCSSM content standards	32	40	43	33	37
Changing practice to integrate the CCSSM effectively	32	30	35	38	34
Monitoring student progress on mastering the CCSSM	46	25	30	17	28

Note: CCSSM is Common Core State Standards for Mathematics. “Rural” refers to districts that are classified as “town” or “rural” by the National Center for Education Statistics.

Source: Authors’ analysis of rural Northeast Region teacher survey data on Common Core State Standards for Mathematics (2013).

the CCSSM (47 percent; table 6). Forty-one percent of teachers (48 percent in Vermont and 46 percent in Maine) identified addressing new content that had previously been taught in a different grade or course and building on what had been taught under previous standards as a challenge.

Resources. State and district administrators report needing adequate resources for curricula, personnel, and professional development. As districts seek to adopt new materials, some may find it challenging to fully fund the implementation of these new materials. State and district administrators in three states identified the need for more people, including math consultants and coaches, to support schools and districts implementing the CCSSM.

Teachers echoed these concerns, identifying allotting time to discuss and plan lessons with colleagues (47 percent) and gaining access to high-quality, CCSSM-aligned instructional materials (46 percent) as major challenges.

Assessing the quality of curricular materials. Seventy-five percent of administrators reported struggling to find quality CCSSM-aligned curricula and wanting a guide to help them identify the most useful resources. Several administrators voiced the need for more collaboration across districts and states in curriculum and professional development, especially now that everyone is working with the same standards.

State and district administrators in three states identified the need for more people, including math consultants and coaches, to support schools and districts implementing the CCSSM

Limitations of the study

This study focused on the challenges that selected educators in rural Northeast Region schools face as they begin to implement the CCSSM. It relies on interview and survey self-reported data from a convenience sample with a limited number of administrators and teachers in grades 3–8 who volunteered for the study. Participants’ perspectives may not fully represent those of their peers or accurately capture the needs of all rural educators in Maine, New Hampshire, New York, and Vermont. For example, 58 percent of teachers

Table 6. Components of the CCSSM requiring the most support identified by grade 3–8 teachers in rural Northeast Region schools, by state, 2013 (percent)

Component	Maine	New Hampshire	New York	Vermont	All
Shifting the teaching focus from covering topics to deepening understanding of the major work of each grade	59	42	54	52	51
Helping students develop the conceptual understanding outlined in the CCSSM	49	47	65	33	47
Addressing and building on standards that had previously been taught in a different grade or course but now appear in the grade or course I teach	46	37	35	48	41
Helping students develop procedural fluency as outlined in the CCSSM	38	32	43	29	34
Helping students develop the mathematical practices outlined in the CCSSM	27	30	38	38	33

Note: CCSSM is Common Core State Standards for Mathematics. “Rural” refers to districts that are classified as “town” or “rural” by the National Center for Education Statistics.

Source: Authors’ analysis of rural Northeast Region teacher survey data on Common Core State Standards for Mathematics (2013).

who participated in the study believe that they know the standards well, and 91 percent reported that they have already begun to implement the CCSSM.

The study's findings may not hold for educators who are less familiar with the standards and have not begun implementing them. Furthermore, the extent of CCSSM implementation varies considerably. Some teachers have tried a single task or lesson; others have implemented an entire instructional unit or multiple units. Thus the findings presented here may not apply to educators uniformly. This study is also limited because it relies on self-reported data; participants may have exaggerated or understated their level of preparation for implementing the CCSSM. Finally, the study's scope and design did not allow for linking the teacher survey sample to the district administrator sample. Linking the data would have provided opportunities to analyze teacher perceptions of resources and supports in light of what administrators reported providing.

Suggested next steps

The interview and survey data suggest that teachers in rural Northeast Region schools need more support as they begin to shift instruction, especially time to collaborate and capitalize on relevant work in other districts and states, and efficient access to high-quality instructional resources and supports. Suggested next steps for rural educators working toward implementing the CCSSM based on the interview and survey data are:

- Because preparation efforts have helped teachers understand the standards, offer teachers similar help in implementing the standards, especially in acquiring the content knowledge needed to teach students deeper math concepts.
- Since it will take a lot of time and collaboration to align the curriculum, identify quality materials and tasks, plan instruction, and integrate the new standards, provide teachers more opportunities to meet and share resources both within and across schools, and even across states. Such collaboration can also help reduce costs at a time when resources are scarce.
- Because administrators reported difficulty identifying the most useful CCSSM-aligned resources and teachers reported limited access to instructional materials to help them implement the CCSSM, conduct further research and develop a system for evaluating CCSSM-aligned resources.

Teachers in rural Northeast Region schools need more support as they begin to shift instruction, especially time to collaborate and capitalize on relevant work in other districts and states, and efficient access to high-quality instructional resources and supports

Appendix A. Data and methodology

This appendix describes the study sampling choices and the qualitative and quantitative analyses.

Explanation of sampling choices

Interview and survey data were collected from Maine, New Hampshire, New York, and Vermont—all states with active members of the Northeast Rural Districts Research Alliance (NRDRA) who are interested in the study topic. Each state was planning for the Common Core State Standards for Mathematics (CCSSM) and was preparing for different types of supports, at different stages of preparation, and in unique policy settings.

The study defined rural districts as those classified by the U.S. Department of Education’s National Center for Education Statistics (2012) as “rural” or “town.” Because districts in this classification vary in size and because district size can affect access to resources and support, the study sampled districts that were representative of the distribution of districts of varying sizes within each state. Specifically, the study team sought to interview one state instructional leader in each state (four state-level interviews) and two district instructional leaders in each state (eight district-level interviews). For the district instructional leader interviews, the study team chose districts that were representative of three sizes of rural districts found in the Northeast Region: districts with 300 or fewer students, with 301–1,000 students, and with more than 1,000 students. The sizes were determined with input from the NRDRA’s Core Planning Group, which indicated that rural districts of these three sizes might face distinct challenges in implementing the CCSSM (table A1). The study’s convenience, nonrandom sampling design involved members of the Core Planning Group contacting state and district representatives that met these criteria within each state.

Two state instructional leader interviews were conducted (with one leader in Maine and a group of three leaders in Vermont). In New Hampshire, an interview was conducted with a district leader who serves on many state math committees (there is currently no state instructional leader). Despite repeated efforts to contact leaders in New York, an interview could not be arranged.

Interviews were sought with district representatives from districts of two different sizes within each state, based on the proportion of districts and the goal of including three

Table A1. Number of rural districts and number of students per district, by state and size of rural districts, 2013

State	Number of rural and town districts	Districts with 300 or fewer students <i>n</i> (%)	Districts with 301–1,000 students <i>n</i> (%)	Districts with more than 1,000 students <i>n</i> (%)
Maine	213	122 (57)	41 (19)	50 (24)
New Hampshire	156	72 (46)	46 (29)	38 (24)
New York	426	44 (10)	224 (53)	158 (37)
Vermont	296	217 (73)	69 (23)	10 (3)

Note: “Rural” refers to districts that are classified as “town” or “rural” by the National Center for Education Statistics. Percentages may not sum to 100 because of rounding.

Source: U.S. Department of Education National Center for Education Statistics 2012.

districts of each size across the four states (table A2). In Vermont, district representatives were interviewed from small and medium-size districts, since 97 percent of rural schools in that state fall into one of these two categories. In Maine, district representatives were interviewed from small and large rural districts, the most common categories in that state. In New Hampshire, interviews were sought with district representatives from medium-size and large districts because more than half of the districts in that state are of these sizes and because the perspectives of the smallest rural districts would be captured in interviews in the other three states. Only a representative from a medium-size district could be interviewed. In New York, the state with the largest number of town and rural districts, interviews were sought with representatives from districts of each of these three sizes. Only a representative from a medium-size district could be interviewed.

The teacher surveys drew from the Core Planning Group’s list of contacts to achieve a sample of 10 teachers in grades 3–8 from the small rural districts and 30 teachers each from the medium-size and large rural districts (15 from grades 3–5 and 15 from grades 6–8). Seventy teachers were thus recruited in each state across grades 3–8 and the three district sizes. The reason for targeting only 10 teachers and only one grade band from the small rural districts (3–8) was twofold. First, resources were not sufficient to target the number of districts it would take to find 30 teachers in grades 3–5 and 30 teachers in grades 6–8. Second, in many of these small districts the math teachers teach beyond these grade bands (for example, some teachers teach all of the math classes in grades K–8). Grade bands 3–5 and 6–8 were chosen because the challenges and needs of elementary and middle school teachers may differ. High school teachers were excluded from the study because grades 3–8 are the most commonly tested grades, and teachers from these grades would be further along in implementing the CCSSM than high school teachers. In addition, many administrators identified the particular challenges of teachers in these grades, who often do not have as strong a background in math as high school teachers.

Each district contact administered the teacher surveys to all the teachers in the district in each grade band (the research team was not involved in administering the survey). Data collection for the district-administered survey and for the Regional Educational Laboratory–administered interviews was conducted simultaneously.

Developing a more comprehensive and representative sampling plan was beyond the scope of this project, but the sample did provide insight into what is being done and what is needed to help rural educators in the selected districts successfully implement the CCSSM. Office of Management and Budget clearance was not needed for this data collection effort because two different protocols were used to interview the state and district leaders, the

Table A2. District interview respondents: Actual and targeted samples, 2013

State	Districts with 300 or fewer students <i>n</i> (target sample)	Districts with 301–1,000 students <i>n</i> (target sample)	Districts with more than 1,000 students <i>n</i> (target sample)
Maine	1 (1)		1 (1)
New Hampshire		1 (1)	0 (1)
New York	0 (1)	1 (1)	0 (1)
Vermont	1 (1)	1 (1)	

Source: Data taken from the Common Core of Data (U.S. Department of Education, 2012).

number of interviewees in each group did not exceed nine, and the surveys were administered by district leaders. Given the small sample for this exploratory study, observed findings reflect only educators in the selected rural districts and do not necessarily generalize to educators in all rural districts. However, as stated above, the study does not aim to represent educators in all rural districts but rather to provide information from those who have begun to think about or navigate challenges in implementing the CCSSM.

Qualitative analyses

All interview data were transcribed and subsequently coded using coding software (Atlas.ti). A random sample of two interviews was selected and coded to identify initial codes based on the key domains and the a priori codes defined in the proposal. One state instructional leader and one district instructional leader interview were chosen for initial coding to ensure that codes were consistent across these two types of interview participants. Initially, the team used the a priori codes. These codes proved to be too specific, and several codes were not applicable (for example, exemplary districts, schools, teachers).

The study team developed a revised list of initial codes that combined many of the codes in the a priori list. The initial list of codes was reviewed, combining codes when needed and developing definitions for each code. This finalized list of 20 broad codes was used with the remaining interview data. Each of the codes was explicitly linked to the study's research questions, including familiarity with the CCSSM, challenges in implementing the CCSSM, supports needed for implementing the CCSSM, district professional development, state professional development, online resources, implementation plan, and perceptions of district and school preparedness. The coding process was iterative, with several changes and refinements made throughout to ensure that the codes were validly and consistently applied to the interview data.

After all the interviews were coded, the study team examined whether themes and substantive patterns emerged from interview data within each state (within-case analyses) as well as across states and districts (cross-case analyses). For example, all the interviews from Vermont were analyzed to determine whether there were significant similarities among the interviews and whether there were differences between what administrators in Vermont said about the CCSSM and what administrators in other states revealed. In addition, the study team examined whether there were patterns according to administrator type. For example, in several cases state administrators had common insights and points they emphasized more than district administrators. All state administrators agreed that the CCSSM standards will require teachers to have a deep understanding of math content. While this view was also voiced by several district administrators, it was a major concern for the state administrators.

Quantitative analyses

For the secondary analysis of the teacher survey data, all responses to closed-ended questions were analyzed descriptively. Specifically, the study team reported the percentage of teachers across all participating districts that checked each response on the survey, along with corresponding frequencies. Additionally, the study team disaggregated the responses by grade level and teaching experience in math to see whether noteworthy differences emerged. This analysis did not produce patterns distinct enough to include in the report.

Similarly, to examine variability across geographic locations, findings were disaggregated by state and district. Disaggregating by state allows readers to interpret the extent to which findings differ across the policy contexts within each state. Disaggregating by district (within each state) allows readers to interpret the degree of variability among a few select districts that have begun to prepare to implement the CCSSM.

This analysis, however, did not reveal substantial results given the small number of teachers in some of the cells. All the descriptive analyses were presented as figures or in tabular form. To prevent the identification of individual districts or teachers, disaggregated results were not reported when the cell sizes were less than 3. Because this study is not designed to generalize to a broader population but rather to showcase “what’s happening” at selected rural Northeast Region schools that have begun to think critically about CCSSM implementation, tests of statistical significance for each disaggregation were not conducted, and responses to the teacher survey were not weighed. Information was gleaned from the qualitative analysis of state- and district-level interviews to provide context for quantitative findings from the teacher surveys administered in rural districts.

Appendix B. State instructional leader interview protocol

Mathematics educators around the country are preparing to teach the Common Core State Standards in Mathematics (CCSSM). This interview is part of an exploratory study that seeks to understand better the needs of rural educators in preparing for the implementation of the CCSSM. As part of this study, we are also interviewing district- and school-level instructional leaders for their perspectives. Your participation in this interview will provide valuable insight into the system-level challenges related to implementing CCSSM at scale across the state and the specific needs of rural districts in preparing for this shift.

Everything you say in this interview is confidential; we will not share your name or identify you in any reports from the study. Because we want to share what you have to say, we may quote you, but we will identify you as, for example, “State leader 1.” If you don’t want to answer any questions, you may decline to respond to any questions or stop the interview at any time.

This interview will take approximately 45 minutes. We will begin by asking general questions about your own background, then move on to questions about current preparation efforts across the state, the challenges rural districts are likely to face in implementing the CCSSM, and the use of online resources to assist districts in implementing the CCSSM.

Do I have permission to record this interview with you? [Note: If respondents wish not to be recorded, take notes, but do not proceed with recording. If respondents agree to be recorded, turn on the recorder and repeat the question so that the positive response to this question and subsequent responses are recorded.]

Before we start, do you have any questions or concerns about this process?

Background information

1. What is your role in the state and how long have you been in this position?
2. How familiar are you with the Common Core State Standards in Mathematics (CCSSM)?
 - a. How did you become familiar with the CCSSM?
 - b. What changes do you expect will result from implementation of the CCSSM?
 - i. Changes in standards
 - ii. Changes in instruction
 - iii. Changes in assessment
 - c. The CCSSM specifies mathematics content standards as well as mathematical practice standards. What is your understanding of what is now expected of students with regard to mathematics content?
 - d. What is your understanding of the expectations for student performance as outlined by the mathematical practices standards?

Current preparation efforts

3. Can you describe the state's efforts in terms of establishing a timeline for implementation of the CCSSM?
 - a. What is the timeline for implementation of the CCSSM?
 - b. How has the state been working with districts to ensure these standards are implemented according to the timeline?
 - c. What assessment will you be using (PARCC or Smarter Balanced)?
 - d. When will the first administration of the test (PARCC or Smarter Balanced) take place?

4. The Common Core State Standards in Mathematics emphasize conceptual understanding, as well as procedural fluency and the development of mathematical practices. As a result, new demands are being placed on teachers. What efforts has the state made (does the state plan to take) to support districts in CCSSM implementation?
 - a. What efforts has the state made (does the state plan to take) to familiarize districts (e.g., teachers and district leaders) with the expectations for student proficiency under the CCSSM?
 - b. What efforts has the state made (does the state plan to take) to revise and/or develop curricular documents to address the CCSSM?
 - i. Standards documents/objectives frameworks
 - ii. Pacing guides
 - iii. Lesson plans
 - c. What efforts has the state made (does the state plan to take) to adopt and implement new assessments/guidelines for assessments aligned with the CCSSM?
 - i. Do these apply to assessments implemented during the year as well as end-of-year assessments?
 - d. What efforts have been made statewide to provide professional development and/or materials and guidance for districts to use in providing professional development to support district leaders and teachers implementing the CCSSM?
 - i. With regard to the mathematics content specified in the CCSSM? {probe to understand whether focused on developing teachers' understanding of the standards and/or how to teach so that students meet the standards}
 - ii. With regard to mathematical practices specified in the CCSSM? {probe to understand whether focused on developing teachers' understanding of the standards and/or how to teach so that students meet the standards}
 - e. To what extent has the state encouraged districts to rely on resources to support instruction?
 - i. Online resources
 - ii. Other resources

5. The focus of this study is on rural districts. What efforts has the state made (does the state plan to take) to support CCSSM implementation specifically in rural districts? {probe for support in implementation of the content standards, practices, and assessment, separately}
 - a. How do these efforts differ from efforts made to support other districts?

6. How well prepared do you think rural districts in this state are for implementing CCSSM?
 - a. Why do you feel they are well prepared?/Why do you feel they are not well prepared? {probe for thoughts on preparation relative to content standards, practice standards, and assessment}
 - b. How does this compare with how well other districts are prepared to implement CCSSM?

Challenges and needs

7. What do you perceive will be the biggest challenge at the state level for implementing the CCSSM?
 - a. Why is this such a challenge?
 - b. What supports are needed?
8. What do you perceive will be the biggest challenge at the district level for implementing the CCSSM?
 - a. Why is this such a challenge?
 - b. What supports are needed?
9. What do you perceive will be the biggest challenge for rural districts implementing the CCSSM?
10. What challenges have you faced thus far in efforts to implement the CCSSM?
 - a. Have you faced any challenges related specifically to rural districts?
11. Are there any districts that are doing particularly well or are struggling more than others?
 - a. What are those districts doing to prepare for CCSSM implementation? What types of supports are they utilizing?
 - b. What are those districts that are struggling doing or not doing? What types of supports are needed to help them get up to speed?
12. As you move forward, how do you plan to assess districts' progress in implementing the new standards?
 - a. Are there any resources that you plan to use to help measure progress?
 - b. What types of resources are needed or would be most useful for measuring this progress?

Resources and supports

13. What types of support (e.g., professional development, instructional and assessment resources) do you think districts need to implement the CCSSM?
 - a. What challenges does the state face in providing these kinds of supports, especially statewide?

14. What types of supports (e.g., professional development, instructional and assessment resources) do rural districts need to implement the CCSSM?
 - a. Are the needs of rural districts different from those of other districts?
 - b. What challenges does the state face in providing these kinds of supports to rural districts?

15. Has the state examined any online resources to support districts in implementing the CCSSM?
 - a. What resources in particular have you used/are you reviewing/considering using?
 - b. Do they address mathematics content, mathematical practices, or assessment?
 - c. Are they instructional resources or resources to develop teachers' understanding of the standards themselves?
 - d. How did you go about finding these resources?
 - e. What role do you envision online resources will play in implementation efforts across the state?

Thank you for participating in this interview! We really appreciate it.

Note: Ask participant if he/she would like a copy of the final report and collect email address information.

Appendix C. District instructional leader interview protocol

Mathematics educators around the country are preparing to teach the Common Core State Standards in Mathematics (CCSSM). This interview is part of an exploratory study that seeks to understand better the needs of rural educators in preparing for the implementation of the CCSSM. As part of this study, we are also interviewing state- and school-level instructional leaders for their perspectives. Your participation in this interview will provide valuable insight into the system-level challenges related to implementing the CCSSM at scale within a district and the specific needs of rural districts in preparing for this shift.

Everything you say in this interview is confidential; we will not share your name or identify you in any reports from the study. Because we want to share what you have to say, we may quote you, but we will identify you as, for example, “District leader 1.” If you don’t want to answer any questions, you may decline to respond to any questions or stop the interview at any time.

This interview will take approximately 45 minutes. We will begin by asking general questions about your own background, then move on to questions about current preparation efforts across the district, the challenges your district is likely to face in implementing the CCSSM, and the use of online resources to assist schools in implementing the CCSSM.

Do I have permission to record this interview with you? [Note: If respondents wish not to be recorded, take notes, but do not proceed with recording. If respondents agree to be recorded, turn on the recorder and repeat the question so that the positive response to this question and subsequent responses are recorded.]

Before we start, do you have any questions or concerns about this process?

Background information

1. What is your role in the district and how long have you been in this position?
2. How familiar are you with the Common Core State Standards in Mathematics (CCSSM)?
 - a. How did you become familiar with the CCSSM?
 - b. What changes do you expect will result from implementation of the CCSSM?
 - i. Changes in standards
 - ii. Changes in instruction
 - iii. Changes in assessment
 - c. The CCSSM specifies mathematics content standards as well as mathematical practice standards. What is your understanding of what is now expected of students with regard to mathematics content?
 - d. What is your understanding of the expectations for student performance as outlined by the mathematical practices standards?

Current preparation efforts

3. Can you describe the state's efforts in terms of establishing a timeline for implementation of the CCSSM?
 - a. What is the timeline for implementation of the CCSSM?
 - b. What guidance have you received from the state regarding the timeline for implementation?
 - c. How does this guidance interact with other local initiatives and policies within the district?
 - d. How have you been involved in ensuring that the timeline is met?
 - e. What assessment will you be using (PARCC or Smarter Balanced)?
 - f. When will the first administration of the test(s) take place?

4. These new standards emphasize conceptual understanding, as well as procedural fluency and the development of mathematical practices. As a result, new demands are being placed on teachers. What efforts has the state made (does the state plan to take) to support districts in CCSSM implementation?
 - a. What efforts has the district made (does the district plan to take) to familiarize teachers and teacher leaders with the expectations for student performance under the CCSSM?
 - b. What efforts has the state made (does the state plan to take) to revise and/or develop curricular documents to address the CCSSM?
 - i. Standards documents/objectives frameworks
 - ii. Pacing guides
 - iii. Lesson plans
 - c. What efforts has the district made (does the district plan to take) to adopt and implement new assessments/guidelines for assessments aligned with the CCSSM?
 - i. Do these apply to assessments implemented during the year as well as to end-of-year assessments?
 - d. What efforts have been made districtwide to provide professional development and/or materials and guidance for teachers as they (prepare to) implement the CCSSM?
 - i. With regard to the mathematics content specified in the CCSSM? {probe to understand whether focused on developing teachers' understanding of the standards and/or how to teach so that students meet the standards}
 - ii. With regard to mathematical practices specified in the CCSSM? {probe to understand whether focused on developing teachers' understanding of the standards and/or how to teach so that students meet the standards}
 - e. To what extent has the district encouraged teachers to rely on resources to support instruction?
 - i. Online resources
 - ii. Other resources
 - f. What has your role been in these efforts?

5. How well prepared do you think this district is for implementing the CCSSM?
 - a. Why do you feel it is well prepared?/Why do you feel it is not well prepared? {probe for thoughts on preparation relative to content standards, practice standards, and assessment}

6. What is your sense on how well prepared schools across the district are for implementing the CCSSM?
 - a. Why do you feel the schools are well prepared?/Why do you feel the schools are not well prepared? {probe for content, practices, and assessment}

Challenges and needs

7. What do you perceive will be the biggest challenge at the district level for implementing the CCSSM?
 - a. Why is this so challenging?
8. What supports are needed?
9. What challenges have schools in the district faced thus far in their implementation efforts?
 - a. Among these challenges you just listed, what do you perceive will be the biggest challenge at the school level for implementing the CCSSM?
 - b. Why is this so challenging?
 - c. What supports are needed?
10. What challenges has the district faced thus far in efforts to implement the CCSSM?
11. Are there any schools that are doing particularly well in implementing the CCSSM?
 - a. What are these schools doing? To what do you attribute their success?
12. Are there any schools in the district that are struggling more than others?
 - a. What do you believe is the cause? What supports are needed to help bring the schools up to speed?
13. As you move forward, how do you plan to assess schools' progress in implementing the new standards?
 - a. Are there any resources that you plan to use to help measure progress?
 - b. What types of resources are needed or would be most useful for measuring this progress?

Resources and supports

14. What types of support do you think districts need to implement the CCSSM?
 - a. What supports have you received from the state?
 - b. What supports do you need from the state?
15. What types of support (e.g., professional development, resources) do you think schools need to implement the CCSSM?
 - a. What challenges do the district and schools face in providing these kinds of supports?
 - b. Do you think these challenges are different from those in other districts?

16. Has the district examined any online resources to support schools in implementing the CCSSM?
- a. What resources in particular have you used/are you reviewing/considering using?
 - b. How did you go about finding these resources?
 - c. What role do you envision online resources will play in implementation efforts across the district?

Thank you for participating in this interview! We really appreciate it.

Note: Ask participant if he/she would like a copy of the final report and collect email address information.

Appendix D. Teacher survey

Mathematics educators around the country are preparing to teach the Common Core State Standards in Mathematics (CCSSM). This survey is part of an exploratory study that seeks to understand better the needs of rural educators in preparing for the implementation of the CCSSM. Your participation in this survey will provide valuable insight into the specific needs of rural educators, the challenges they currently face, and needed areas of support as they seek to integrate the CCSSM.

This survey should take about 20 minutes to complete. This survey is being administered by your local school district. Should you have any questions regarding the survey, please contact <insert district survey contact name, phone, and email>.

Participation in this survey is voluntary, all responses are confidential, and all data from the questionnaire will be reported in the aggregate.

Thank you for participating in this survey!

Background information

1. In which state do you currently teach?
2. In which school district do you currently teach?
3. Including this school year (2012/13), how many years have you been teaching (*in any subject or grade level*)?
4. Including this school year (2012/13), how many years have you been teaching math (*with or without other subject areas*)? (Check all that apply.)
 - a. Grade 3 math
 - b. Grade 4 math
 - c. Grade 5 math
 - d. Grade 6 math
 - e. Grade 7 math
 - f. Grade 8 math
 - g. Algebra I
 - h. Geometry
 - i. Algebra II
 - j. Higher level of math than algebra
5. What grade(s) do you teach? (Check all that apply)
 - a. Grade 3
 - b. Grade 4
 - c. Grade 5
 - d. Grade 6
 - e. Grade 7
 - f. Grade 8
 - g. Other:

Familiarity with Common Core State Standards for Mathematics (CCSSM)

6. How familiar are you with the specific guidelines of the Common Core State Standards for Mathematics?
 - a. Scale:
 - i. I have read them carefully and feel I know them relatively well
 - ii. I have read them, but not carefully
 - iii. I know about them, but am not very familiar with them
 - iv. I do not know anything about the CCSSM
7. How prepared do you feel to integrate the CCSSM into your daily math instruction?
 - a. Scale
 - i. Not at all prepared
 - ii. Somewhat prepared
 - iii. Well prepared
 - iv. Very well prepared

Resources and supports

8. What types of supportive resources have been made available to you in preparing to implement the CCSSM? (Check all that apply)
 - a. State-, district-, and/or school-level informational meetings on the timeline for implementation of the CCSSM
 - b. Professional development workshops on CCSSM delivered by the state
 - c. Professional development workshops on CCSSM delivered by the district
 - d. Professional development workshops on CCSSM delivered by the school
 - e. Resource teacher/coach to assist teachers in integrating the CCSSM in classroom instruction
 - f. Focused discussions about CCSSM with other teachers who teach math in my school
 - g. National professional development offerings and/or conferences on CCSSM
 - h. Textbook and resource materials for students aligned with CCSSM
 - i. New local assessments to monitor student progress with CCSSM
 - j. Other:
9. Among those professional development opportunities made available to you related to the CCSSM, what was the focus of that professional development? (Check all that apply.)
 - a. Developing my understanding of the content standards in the CCSSM
 - b. Developing my understanding of the practice standards in the CCSSM
 - c. Developing skill in implementing instruction that promotes the content standards in the CCSSM
 - d. Developing skill in implementing instruction that promotes the practice standards in the CCSSM
 - e. Learning about materials that can be used in instruction to promote the content standards in the CCSSM
 - f. Learning about materials that can be used in instruction to promote the practice standards in the CCSSM
 - g. Learning more about designing assessments to address the CCSSM

- h. Learning more about materials that can be used when assessing students' mastery of the CCSSM
- i. None of the above (exclusive option)

Challenges and areas of need

10. What do you perceive will be the biggest challenge for implementing the CCSSM? (Check all that apply)
- a. Gaining a firm understanding of the CCSSM content standards
 - b. Gaining a firm understanding of the standards for mathematical practice outlined in the CCSSM
 - c. Gaining a firm understanding of how students' thinking of mathematics develops over time
 - d. Aligning curriculum to the CCSSM standards (both content and practice standards)
 - e. Meeting the needs of all students
 - f. Access to quality textbooks and instructional materials to teach the CCSSM standards
 - g. Allotting time to discuss and plan lessons with my colleagues
 - h. Creating lesson plans that embody the CCSSM content standards
 - i. Creating lesson plans that embody the CCSSM practice standards
 - j. Monitoring student progress on mastering the CCSSM standards
 - k. Changing practice to integrate the CCSSM standards effectively
 - l. Preparing students for the PARCC and/or Smarter Balanced assessments
 - m. Other:
 - n. None of the above (exclusive option)
11. Have you already begun efforts to integrate the CCSSM into your teaching?
- a. Yes
 - b. No (skip to question 13)
12. What challenges have you faced thus far in implementing the CCSSM? (Check all that apply)
- a. Gaining a firm understanding of the CCSSM content standards
 - b. Gaining a firm understanding of the standards for mathematical practice outlined in the CCSSM
 - c. Gaining a firm understanding of how students' thinking of mathematics develops over time
 - d. Aligning curriculum to the CCSSM standards (both content and practice standards)
 - e. Meeting the needs of all students
 - f. Access to quality textbooks and instructional materials to teach the CCSSM standards
 - g. Allotting time to discuss and plan lessons with my colleagues
 - h. Creating lesson plans that embody the CCSSM content standards
 - i. Creating lesson plans that embody the CCSSM practice standards
 - j. Monitoring student progress on mastering the CCSSM standards
 - k. Changing practice to integrate the CCSSM standards effectively
 - l. Preparing students for the PARCC and/or Smarter Balanced assessments

- m. Other:
- n. None of the above (exclusive option)

13. What components of the standards do you believe will require the most support?
(Check all that apply)

- a. Addressing and building on standards that had previously been taught in a different grade/course, but now appear in the grade/course I teach
- b. Preparing students for the PARCC and/or Smarter Balanced assessments
- c. Shifting the focus of teaching from covering topics to deep understanding of the major work of each grade
- d. Helping students develop the conceptual understanding outlined in the CCSSM
- e. Helping students develop procedural fluency as outlined in the CCSSM
- f. Helping students develop the mathematical practices outlined in the CCSSM

14. Which content areas do you believe will be the most demanding compared with what you are already teaching and assessing?

- a. Operations and algebraic thinking
- b. Number and operations in base ten
- c. Number and operations—fractions
- d. Measurement and data
- e. Geometry
- f. Ratios and proportional relationships
- g. The number system
- h. Expressions and equations
- i. Statistics and probability

Thank you for your time!

If you would like a copy of the finished report, please provide your email address below:

Note

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