THE COMMON CORE OF UNDERSTANDING AMONGST THE MICHIGAN EDUCATION COMMUNITY REGARDING THE IMPLEMENTATION OF THE *COMMON CORE STATE STANDARDS FOR MATHEMATICS*

By

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ABSTRACT

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The current effort to implement the *Common Core State Standards for Mathematics* (*CCSSM*) is the latest in a series of mathematics standards implementation efforts in the United States over the last half century. When implemented, previous standards efforts have either failed or been less successful than anticipated for a variety of reasons. Two oft cited reasons are (1) a lack of a shared understanding about what the standards are and how to incorporate them effectively at various levels of an existing education system, and (2) perceived and/or real flaws in the standards themselves. With this past in mind, this study sought to document whether and to what extent these problems exist within Michigan's education system as the state implements the *CCSSM*. More specifically, this study sought answers to two research questions: (1) To what degree is there alignment between Michigan Department of Education (MDE) officials', regional professional development providers', and teachers' views of the goals of *CCSSM* implementation? (2) Do those outside MDE charged with the implementation feel adequately supported in effecting their part of the transition to the *CCSSM*? MDE officials, regional professional development providers, and teachers were surveyed and interviewed in order to gather their thoughts on what they believe the goals of the *CCSSM* to be, what

they believe their roles in the implementation effort are, and how they are supported in that effort. Responses were analyzed for commonalities and differences in the perceptions of individuals at the varying levels of the state's education system. While elementary teachers were confident in their abilities to implement the *CCSSM* effectively, they still desired more professional resources and were generally unfamiliar with several resources others in Michigan's education system were promoting.

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This dissertation is dedicated
to the memory of my grandparents,
Rovona and Orval Miller,
who desperately wanted to see me graduate.
I love you.
Sorry I'm slow.

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TABLE OF CONTENTS

LIST OF TABLES

KEY TO ABBREVIATIONS

CCSSM	*Common Core State Standards for Mathematics*
NCTM	National Council of Teachers of Mathematics
SBE	State Board of Education
ISD	Intermediate School District
SBAC	Smarter Balanced Assessment Consortium
MDE	Michigan Department of Education
NCEE	National Commission on Excellence in Education
NAEP	*National Assessment of Educational Progress*
NGA	National Governors Association
CCSSO	Council of Chief State School Officers
OEII	(MDE's) Office of Education Improvement and Innovation
RESA	Regional Educational Service Agency
M^2C^2	Michigan Mathematics Consultants and Coordinators
GLCEs	(Michigan's) *Grade Level Content Expectations*
PD	Professional Development
MAISA	Michigan Association of Intermediate School Administrators
ELA	English Language Arts

Chapter I: Introduction, Literature Review, and Motivation

Common Core State Standards for Mathematics' Place in the Mathematics Education Landscape

The *Common Core State Standards for Mathematics* (*CCSSM*) is the latest iteration of standards in the standards movement of mathematics education. The *CCSSM* contain both content standards that outline the specific things that students should learn and practice standards that are general processes and dispositions students should develop as learners of mathematics (National Governors Association & Council of Chief State School Officers, 2010). While previous standards efforts have existed on a national scale, such as the National Council of Teachers of Mathematics' (NCTM) *Principles and Standards for School Mathematics* (2000), each state still had its own set of mathematics standards, which aligned with NCTM's standards to varying degrees. Developed as a collaboration between states, the *CCSSM* have been adopted in 45 states. While what exactly adoption means has begun to vary in a number of states, this represents the most comprehensive effort to date to get most of the nation's schools and students on the same path with respect to mathematics standards.

Michigan's initial situation with respect to the *CCSSM*.

Shortly after the final *CCSSM* document came out, Michigan's State Board of Education (SBE) voted to adopt the *CCSSM* as the state's new mathematics standards in June 2010 (Michigan Department of Education, n.d.a). Like many other states, individuals from Michigan were involved in the development of the *CCSSM* (NGA & CCSSO, n.d.). After the SBE adopted the *CCSSM*, the initial

process of implementation began later that year (MDE, n.d.b). The plan for implementation included the SBE working with intermediate school districts (ISDs) and math and science centers "to provide ongoing professional development that supports the transition" (p. 3). Initially, districts were expected to have curricula and instruction that aligned with the *CCSSM* in place for the 2012-13 school year. New *CCSSM*-aligned assessments would follow and be in place for the 2014-15 school year.

With the adoption and intended implementation timeline, Michigan had been in a relatively similar place to many other states. In fact, Michigan had joined with 24 other states as members of the Smarter Balanced Assessment Consortium (SBAC) and was one of 23 governing states in SBAC (SBAC, 2012). Each of these states expected to have the new *CCSSM*-aligned assessment in place for the 2014-15 school year.

Subsequent legislation.

While other states continued with their *CCSSM* implementation as planned, Michigan and a few other states were slowed down due to backlash against the *CCSSM* and their implementation. On June 13, 2013, Governor Rick Snyder signed Michigan's state budget for the fiscal year beginning on the following October 1 into law (Keesler & Martineau, 2013). Included in that budget was a provision that no state money could be used to implement the *CCSSM*. Despite approving the budget, the Governor publically expressed support for the *CCSSM* and encouraged the legislature to reconsider the implementation funding ban (Oosting, 2013). Ahead of the new fiscal year, both houses of the state

legislature debated whether to lift than ban on the use of state funds for *CCSSM* implementation and held hearings on the issue. Ultimately, the House decided to lift the ban on funding on September 26, by a vote of 85 – 21 (Ujifusa, 2013).

By October 1, the state Senate had not voted. Because the new fiscal year had begun, the state began halting any expenditures on *CCSSM* implementation (Smith, 2013a). That resulted in the removal of *CCSSM* related resources from the MDE website. Interestingly, during the time while the state could not spend money on *CCSSM* implementation, there was no such prohibition for individual school districts (Keesler & Martineau, 2013). On October 24, the Senate voted in favor of funding *CCSSM* implementation (Smith, 2013b). Immediately thereafter, the state superintendent ordered the continuation of all previously stalled *CCSSM* implementation efforts (Smith, 2013c). At that point, it was unclear what effect that relatively brief hiccup at the state level would have on the *CCSSM* implementation process. As will be seen in the results of this study, some aspects of *CCSSM* implementation were affected a great deal, particularly the roll out of the new assessments.

As a result of the compromise that allowed renewed *CCSSM* funding, the legislature required the Michigan Department of Education (MDE) to prepare a report that considered other *CCSSM* aligned testing options besides SBAC. The report showed that due to time constraints SBAC was the only option available that could be implemented properly (Smith, 2014a). The legislature disagreed with that assessment and discussed appropriations language that would require that state to use their previous assessment for the 2014-15 school year (Smith,

2014b). That previous assessment was not aligned with the *CCSSM*, though. Ultimately, the legislature removed Michigan from the SBAC and ordered the creation of a new assessment for the 2014-15 school year (Ujifusa, 2014). This test was ultimately called the *M-STEP*. It was developed during the beginning of the 2014-15 school year for use statewide in the spring of that school year. Even with the issue of the assessment seemingly settled, there are still renewed calls in the Michigan legislature for the state to drop the *CCSSM* as of this writing (McVicar, 2016). It is within this statewide political context that this study was conducted.

Literature Review and Background

History of mathematics standards movement.

Choosing a specific event so that one can point to a timeline and say, "The first true efforts at implementing mathematics standards to reform mathematics education began here," is a difficult task that has no definitively correct answer. On the one hand, the *Common Core State Standards for Mathematics* are clearly not the beginning of the standards movement. On the other hand, if the meaning of "standards" is stripped all the way down to mean merely what it is that learners are expected to learn, then textbook authors have at least implicitly incorporated their own standards, perhaps reflective of the mathematical communities of which they were members, into textbooks for centuries.

That the beginning of the standards movement is so difficult to pinpoint can at least partially be attributed to the fact that standards have grown

incrementally in both robustness and influence over time. Broadly speaking, by "robustness" I mean the general care with which the standards were crafted. This can take into account how many people were involved in writing the standards, and how much the standards were based on research. For example, by the late nineteenth and early twentieth centuries, various smaller groups began writing about what should be learned by students in American mathematics classrooms. At the time, though, education research, and even more so mathematics education research, was in its infancy. Standards of the time were much more based on extant practices and perceived societal needs and norms than on any theories of learning. As the twentieth century progressed, standards came to more reflect the learning theories of their times.

As previously stated, standards also grew in terms of influence as well. Originally, textbook authors aimed the ideas they thought were important at the elite few who got to study mathematics. As access to education grew, education came to be seen as a right for all citizens. As more and larger education systems grew and became interconnected, it became necessary for various reasons to attempt to standardize what it was that students in those systems should be learning. Lone schoolhouses turned into school districts. School districts became coordinated by state departments of education. Later, the federal Office of Education was elevated to the Department of Education in 1979. Even though education has remained chiefly controlled at the local and state levels, the federal Department of Education assists the state and local education system and can exert influence through funding for those systems. As the

nation's education systems and channels of influence became more centralized, the opportunity for standards to influence more classrooms and students grew. With these ideas in mind, we'll begin our brief look at the history of the mathematics standards movement with New Math.

New Math.

Changes in mathematics standards often accompany a perceived crisis affecting the country. When the USSR launched Sputnik 1, the prevailing wisdom was that the country must produce more professionals proficient in mathematics and science to keep up with and ultimately surpass the USSR. This shook up American attitudes regarding science and technology enough that new ideas for mathematics and how to teach it were much more openly embraced than they had been previously (Walmsley, 2007). This paved the way for New Math to gain prominence.

New Math was one of the first large scale, nationwide efforts to change what was learned in mathematics classrooms and how it was learned. Unlike more recent standards efforts that we will consider, New Math did not involve a single, widely publicized document of exactly what should be learned and when (Walmsley, 2007). Rather, it was a group of many different mathematics curricula projects promoting similar new ideas about K-12 mathematics content (Walmsley, 2003).

The main idea of New Math was that K-12 students should be taught to think about and do mathematics like professional mathematicians do. Emphasis was placed on the learning of logic, set theory, and mathematical critical thinking

skills (Walmsley, 2007). There was also an increased emphasis on getting students to conceptually understand the mathematics they were doing (Walmsley, 2003). Some of these ideas are present in the reform efforts of the present day.

Ultimately, New Math had its day in the sun for most of the 1960s. By the end of that decade, several problems were becoming more apparent and less avoidable. First, several important groups of people were not able to cope with New Math (Walmsley, 2003; Schoenfeld, 2003). "If teachers feel uncomfortable with a curriculum they have not been prepared to implement, they will either shy away from it or bastardize it. If parents feel disenfranchised because they do not feel competent to help their children, and they do not recognize what is in the curriculum as being of significant value…they will ultimately demand change," (Schoenfeld, 2003, p. 5). Despite funding for summer institutes for teachers to learn about New Math, there was not enough to go around (Walmsley, 2003). Combining frustrated teachers with parents who did not see the mathematics their children were doing as useful helped lead to an unsuccessful end for New Math.

Also, one will recall that New Math did not have a single standards document that informed all the curricula efforts. This made evaluating and comparing New Math curricula projects quite difficult (Walmsley, 2003). Standardized tests of the time, such as the *SAT*, were not aligned to the goals of New Math. Furthermore, each of the New Math curriculum efforts had goals that

differed from the other projects' goals by enough that finding a test to fairly compare groups of children using different curricula was difficult.

In summary, New Math suffered from a lack of shared understanding in the education community with regard to what should be taught in large part because there was no single standards document. This lack or shared understanding, combined with a lack of resources, led to an inability to incorporate New Math effectively into schools. Also, the shift to New Math resulted in many people feeling the ideas of New Math themselves were flawed in general. In the end, though, the New Math movement gave way to the Back to Basics era (Walmsley, 2003, 2007; Schoenfeld, 2003). More emphasis was placed on rote arithmetic, while less emphasis was placed on problem solving and nontraditional topics. Previously, standardized test scores had eroded at least partially because the tests were not aligned with the New Math curricula. Through the 1970s, scores continued to decline despite the shift of focus to arithmetic and computation. This led to the educational crises of the 1980s.

A Nation at Risk *and the 1980s.*

As stated earlier, changes in mathematics standards often accompany a perceived crisis affecting the country. If the declining mathematics scores on standardized tests were not enough of a crisis, the late 1970s and early 1980s also found America in an economic crisis (Schoenfeld, 2003). This economic downturn and relative rise of other countries' economies caused another refocusing of American attention on education, specifically mathematics and science.

By this time, though, the sources for standards of what students should learn and the organizations weighing in on the process had become much more centralized. This was true at both the national and state level. In 1980, the NCTM released its *Agenda for Action*. While acknowledging that arithmetic skills were important, this document did push back against the Back to Basics paradigm. It advocated for the use of newly available technology in the classroom, increased focus on problem solving, development of assessments that would test students for more authentic understanding, and working to gain the support of the public (NCTM, 1980). This document also informed the standards work that the NCTM pursued in the 1980s.

NCTM was not the only organized body attempting to spur reform of mathematics education for perceived national needs. In 1983, the National Commission on Excellence in Education (NCEE) released their report on the quality of the country's education entitled *A Nation at Risk*. In forming the report, the commission reviewed current research and convened several panels. As the title implies, the content of the report was quite dire. Among many other things, the report recommended a more rigorous curriculum of mathematics for all students based on understanding, more rigorous standards for achievement at the high school and college levels, more educated mathematics teachers, and more of a central role for federal and state governments in helping local school districts make sure the more rigorous standards could be met (NCEE, 1983). The report proved to be quite influential. Within just three years, "forty-one states had increased their high school graduation requirements, thirty-three states

developed competency tests, thirty states initiated teacher competency tests, and twenty-four states had started teacher salary enhancement programs" (Walmsley, 2007, p. 42).

California Framework.

One state that had already begun working on some of these issues was California. That state published a new mathematics framework for its schools in 1985 (Wilson, 2003). The writing of these standards was done by teachers, educators, and curriculum developers who addressed many of the issues raised by NCTM (1980) and NCEE (1983). In addition to computational skills, the framework called for emphasis on problem solving and using computers to do mathematics (California State Department of Education, 1985). It also called for new testing procedures, textbooks, and professional development opportunities for teachers. Finally, expectations for what students should learn within certain grade bands were discussed.

While the framework's writing process was contentious, and it had its share of initial detractors, it was published in 1985 to a mostly positive reception. During the next revision cycle in 1992, it was expanded on (Wilson, 2003). This was true in several ways. In terms of the framework's size, it more than quadrupled. A few new content areas were added, and previous content was elaborated. Also, the types of people included in the authorship team and review process increased. This time, mathematicians were explicitly included, and the document received over 500 reviews before it was ultimately published.

By the early 1990s, though, this standards effort had clearly begun to go downhill. In 1992 and 1994, California students performed unusually poorly compared to students from other states on the *National Assessment of Educational Progress* (*NAEP*) (Wilson, 2003). This, in part, fueled a backlash against the new mathematics framework. Little thought was given to how the aims of the *NAEP* exam aligned with the goals of other states' mathematics standards versus California's. Nevertheless, the content of the standards and what they expressed as what it meant to do mathematics came under attack.

Part of the parents' frustration with homework and grading was due to teachers' own frustration with the new standards. Most teachers tasked with teaching mathematics within the new framework had been taught in a traditional, rote fashion. They had also rarely, if ever, interacted with the framework document itself (Wilson, 2003). Naturally, being asked to teach mathematics in a way that was unfamiliar to them, including some topics that were unfamiliar to them, proved to be difficult. Initially, there was money set aside, and concerted efforts at mass professional development were made. Ultimately, the professional development efforts were not big enough to begin with, and the money funding them ebbed. In 1990, a series of case studies was published in *Educational Evaluation and Policy Analysis* that sought to show how individual teachers in California classrooms were working with the framework (Ball, 1990; Cohen, 1990; Wilson, 1990). One fifth grade teacher whose district adopted new textbooks aligned with the framework still held quite traditional beliefs about mathematics teaching and learning, did not understand certain topics in the book,

fit the book into a very traditional presentation of mathematics in his classroom, and was openly hostile to the reform efforts (Wilson, 1990). The other case studies showed teachers who thought they were teaching in a reform-oriented way in keeping with the framework; however, when educators observed their teaching over the course of a year, they saw largely traditional mathematics classrooms with only glimmers of the ideas for which the new framework advocated.

Ultimately, the California framework headed down the same path as New Math. While there were some innovations compared to New Math, such as actual codified standards with an attempted inclusive author and review team, this standards effort could not avoid the same fate. Teachers who were unfamiliar with aspects of content they were to teach and pedagogy they were to use were in a difficult position with respect to implementing the new standards. Perceived flaws with the standards themselves combined with a lack of shared understanding amongst policy makers, professional developers, and teachers about what the standards were and how to implement them effectively contributed greatly to the lack of success of these standards.

The accountability movement and the* CCSSM*.

Due in part to publications like *Agenda for Action* (NCTM, 1980) and *A Nation at Risk* (NCEE, 1983), a push came not just for standards but also for increased accountability on the part of the education system. Through this time, standards had come to be seen as necessary, but each state worked to create and maintain its own set of standards. The NCTM sought to bring some clarity

and consistency to the situation by developing a set of standards that states across the country could use. As a result, NCTM published its *Curriculum and Evaluation Standards for School Mathematics* in 1989.

This new set of standards published by the NCTM (1989) had some new advantages over previous standards efforts, but also suffered from some of the same criticisms. The document once again emphasized a focus on problem solving as the less formal New Math had. They also advocated for more of a student-centered mathematics classroom and the widespread introduction of new technologies, such as calculators, into the nation's mathematics classrooms. The same arguments that had been lodged against New Math were sounded again, though (Walmsley, 2007). Many stakeholders, including some mathematicians, parents, and teachers, did not want the focus on basic concepts and arithmetic procedures to be decreased.

Perhaps one of the largest advantages of the new standards (NCTM, 1989) was that they were the first codified document that was nationwide in scope on which states could base their own mathematics standards. It is important to note, though, that these standards were not imposed at a national level. There was no legal weight behind them compelling states to adopt them or any part of them. Furthermore, the document was written in quite general terms, and not designed to be a grade-by-grade list of what students should learn and when they should learn it. Rather, it broke the K-12 years into three grade bands and discussed broadly what students should be learning during each of those bands. Many states then took this and devised their own standards in a way that

they thought was aligned with the NCTM document. As the document was general in nature, different states could have K-12 mathematics standards that were aligned to it yet quite different from each other. Again, this shows that there was not necessarily much specific shared understanding of what the NCTM standards meant.

The latter part of the document (NCTM, 1989) discussed how mathematical learning should be evaluated and assessed. Chiefly, it said that assessments needed to be aligned to standards to get worthwhile data. Also, while still calling for assessment of students' abilities to use mathematical procedures, the document called for students' knowledge of mathematical concepts as well as their abilities to communicate and reason mathematically to be assessed. In that same vein, and with increasing public demand for educational accountability, NCTM published its *Assessment Standards for School Mathematics* in 1995.

After a decade, NCTM released a revised version of its standards called *Principles and Standards for School Mathematics* in 2000. While responding to previous criticism, NCTM spoke much more specifically about what should be learned in each grade band in this version of standards. Still, this book was designed to be a document with which states could inform themselves and base their grade specific standards on rather than a specific standards document itself.

Throughout the decade of the 2000s, the demand for accountability on the part of the education system only increased. Much of this demand was codified into law with *No Child Left Behind* in 2001. As part of the law, students in all

states were required to be tested regularly to determine if their progress was meeting their states' standards. The law called for an increasing percentage of students to be proficient relative to each state's standards every year. Eventually, the disparity in different states' standards became more and more apparent. States that did well on the *National Assessment of Educational Progress* (*NAEP*) relative to other states were found to have fewer of their students meeting proficiency standards. Other states lowered standards so that the percentage of students meeting standards would necessarily increase.

Partially as a result of this, the states came together through the National Governors Association and the Council of Chief State School Officers to develop the *Common Core State Standards*. Standards were developed for both literacy and mathematics. Technically, the two groups mentioned above are the authors of the standards; however, groups of experts in the relevant fields were charged with actually writing the standards.

The *CCSSM* represent a large step in development, specificity, and adherence. Experts from many states were involved in the development of the *CCSSM* (NGA & CCSSO, n.d.). The chief writing group consisted of university mathematics educators, state education officials, mathematicians, and teachers. A feedback group consisting of similar types of people gave feedback to the original author group (MDE, n.d.b). An advisory group consisting of representatives from other organizations such as the College Board and the National Association of State Boards of Education also gave input. Finally, other

national organizations, industry experts, and the public at large had a chance to offer input before the final standards document was published.

With respect to specificity, the *CCSSM* greatly expanded upon NCTM's previous documents (1989, 2000). As for content, the *CCSSM* no longer made use of grade bands. Rather, it discussed each grade individually. Also, the *CCSSM* specify much more specifically what students should learn in each grade than NCTM previously had. The *CCSSM* also builds on elements of NCTM's previous standards and the National Research Council's A*dding It Up* (2001) with the inclusion of eight practice standards. These practice standards state overall attitudes and abilities that students should exhibit while doing mathematics throughout their education.

With respect to adherence, this document (with its increased specificity) was designed for states to use and adopt as their state's mathematics standards rather than as something for the states to use when designing their own standards. Rather quickly after their final release, most states adopted the *CCSSM* as their new mathematics standards, with similar timelines for textbook adoption, professional development, assessment development, and full implementation. Along the assessment line, the adopting states joined one of two assessment consortia to develop standardized assessments. As a result, most states will be using nearly identical standards, and their students will be evaluated using similar assessments.

Theory of standards-based reforms.

In several of the examples discussed above, one can see the intent of standards-based reform in mathematics education. First, codify in standards what students should learn. Then use policy as a lever to make various parts of the education system work together to achieve that goal (Walmsley, 2003, 2007; Wilson, 2003). For example, one policy lever is student assessment. When new standards are introduced, new assessments (or new versions of existing assessments) that are aligned to the standards are necessary to discern whether student learning goals are achieved. Models of the parts of the education system used to conceptualize these actions are discussed in the next section.

Perhaps the most important promise of these standardization efforts was an increase in educational equity in the states that adopted them (Gamoran, 2007; Vogel, 2010). When the development of learning objectives was left to individual districts or teachers, learning outcomes could vary greatly for students based on the schools they attended. Standardization efforts seek to level that playing field by equalizing expectations for all schools. Of course, the degree to which the playing field is leveled is subject to how equitably the standards are implemented across a state. The present study takes care to consider views on *CCSSM* implementation from across the state of Michigan.

Framework.

Models of the education system.

Weiss, Knapp, Hollweg, and Burrill (2002, p. 31) proposed a model of the United States education system, including three "channels through which

national reform ideas might flow to various layers of the system and eventually influence teaching and learning," as a way to develop a framework to study the influence of standards. Their model consisted of concentric circles. At the center of this model are students and their learning. Encompassing their experience are the teachers. As the model progresses outward, successively higher level pieces of the education system with progressively less direct contact to student experience are shown: the school, district, state, and federal levels. The three channels of influence each separately cut across all the previously mentioned layers. They consist of curriculum, assessment and accountability, and teacher development. The resulting picture shows the nested structure of the social and political context of the nation's education system.

In her methodological appendix, Wilson (2003, pp. 232-233) discussed a general approach to studying mathematics reform efforts in California that used a similar model:

> [I]nvestigate the 'system' in systemic reform, up and down. Interview and observe teachers, principals, school district staff, local school board members, state department staff, policy makers…Ours focused, in one study, on the California Department of Education to the classroom…We took a robust (but not comprehensive) 'slice' through that system…We were interested in how policy shaped and was shaped by multiple actors in nested contexts.

While Weiss et al. (2002) visually represented the nested structure of the education system with concentric circles, Wilson represented it with the

branching diagram. At the top was the state department of education. Several school districts branched off from the state department, then schools branched off from the school districts, and finally teachers branched off from the schools.

Taken together, these two models for the structure of the education system closely resemble the model for Michigan's education system used in this study and discussed in the methods chapter. Starting from the levels of students and teachers, there are successively higher levels of administration with broader spheres of influence and less direct contact with students. People occupying each of these positions in the education system have a role in the implementation of the *CCSSM* in Michigan, and they have ideas about what proper implementation entails.

Perspective.

The phenomenon under consideration in this study was that of the implementation of the *CCSSM* in Michigan. By that I mean the preparation for and expected effect on day-today practice of the standards for several actors in Michigan's education system. The process of this transition and implementation may involve changes for individuals with jobs at various levels of the Michigan education system. Those changes happen within a context of all of those individuals' professional expertise about mathematics and its teaching, their beliefs about mathematics and its teaching, and other perceptions and external factors concerning how they do their jobs.

The primary goal of the *CCSSM* is to have a set of strong standards that leads to better student learning. Implementing new standards to achieve this

goal would be meaningless if all the actors in the situation change nothing about what they do or how they do it. Capturing the views of those actors regarding those changes, regardless of the perceived degree of change, is important to the field.

This study focused on learning the meaning that implementing the *CCSSM* holds for various stakeholders in order to create a semi-holistic account of what this implementation process looks like across a slice of Michigan's education system. Creswell (2009, p. 176) describes a holistic account as involving the "reporting of multiple perspectives, identifying the many factors involved in a situation, and generally sketching the larger picture that emerges." Here, I use *semi-holistic* rather than *holistic* because only three types of stakeholders participated in the study. An account of the phenomenon of *CCSSM* implementation in Michigan is documented in this study, but not as full of an account as possible. Therefore, I use *semi-holistic*.

Motivation

For a large scale, top down policy implementation effort to be effective and successful, the needs and expertise of people at all levels of the system who are charged with some piece of the task of implementation must be considered. This is a personal belief I hold, but it is also born out in the literature (Scott, 1999). Wilson (2003) and Weiss et al. (2002) have shown the nested structure of the education system and demonstrated how policy can be interpreted in varying ways based on one's location within that structure. Therefore, using an approach that seeks to understand the meaning of *CCSSM* implementation for people at

various levels of the education system in Michigan would be appropriate to help determine how effective this process may be for Michigan.

Studies of this nature have been solicited from the field of mathematics education research. Weiss et al. proposed that their framework could be used to study "how aware teachers are of national standards, whether—and in what ways—they believe they are orienting their professional practices to these standards, and in what ways they are supported in their efforts to realize the standards," (2002, p. 84). Floden and Wilson noted that "[e]ffects of standards based reform have varied within and across organizations (states, districts, schools)…The variation in effects has been related to: capacity for change, clarity and consistency of standards, teachers' beliefs about the possibilities for change, assessment policies and practices, and professional development," (2003, p. 34). This led them to conclude that "[s]tudies of the influence of standards should thus aim at describing, with depth and generality, how particular configurations of factors are connected to changes in teaching practice," (p. 40).

While those types of studies have been requested by the field to study the influence of standards in general, Heck, Weiss, and Pasley (2011) have called for studies answering questions specifically about the implementation of the *CCSSM*. In particular they call for case studies of states' and teachers' responses to the task of implementing the *CCSSM*. At the state and district levels, several questions the authors solicit answers to include "What policy levers…are states using to influence which parts of the system (e.g., curriculum,

teacher development, assessment and at what level…?", "How are states/districts modifying policies and programs to support implementation of the *CCSSM*…?", "How do specific policies, programs, and resources intended to support implementation of the *CCSSM* play out?", and "Within the state/district, what variations in implementation of the *CCSSM* are evident?" (pp. 30-31). With respect to teachers, the authors wish to know "What opportunities do teachers have to learn about the *CCSSM* and their implementation? What messages do teachers take from these opportunities?", "What implications do teachers see for their mathematics instruction?", and "[T]o what extent and in what ways do teachers perceive their practice aligning with the expectations of the *CCSSM* standards…?" (p. 32).

This study provides a snapshot case study of *CCSSM* implementation in Michigan that attempts to determine how well the views of the goals of *CCSSM* implementation in Michigan align amongst different members of the state's education system.

Problem Statement

The *CCSSM* is a major new policy initiative being implemented in Michigan schools. In order to better effect this particular transition and the certain subsequent standards transitions to follow in the future, it is important to understand the views, perceptions, and experiences of those within the education system who are tasked with implementing the *CCSSM*. For this purpose, this study will investigate the following research questions.

Research Questions

1) To what degree is there alignment between Michigan Department of Education officials', regional professional development providers', and teachers' views of the goals of *CCSSM* implementation?
2) Do those outside MDE charged with the implementation feel adequately supported in effecting their part of the transition to the *CCSSM*?

Chapter II: Method

General Approach

This study employed a mixed methods design with surveys and interviews. The purpose of using a mixed methods design was to combine the types of conclusions that quantitative and qualitative methods allow a researcher to draw, thereby making the overall study stronger. The qualitative approach allows the researcher to focus on and learn the meaning that implementing the *CCSSM* holds for various stakeholders in their own words in order to create a thorough, well-rounded account of what this implementation process looks like across a slice of Michigan's education system. The quantitative approach allows the researcher to argue about the generalizability of the results that were described in detail in the qualitative approach.

Methods of Data Collection

Data collection for this study occurred exclusively within the state of Michigan and was carried out in three phases. Phase I of data collection (hereafter referred to as state level data collection) occurred during March and April of 2014. Phase II (hereafter referred to as regional level data collection) occurred during September through November of 2014. Phase III (hereafter referred to as local level data collection) occurred during January through May of 2015. As will be explained below, each phase of data collection depended on the results of the phase(s) that preceded it. Therefore, the phases necessarily had to occur sequentially and not concurrently.

Due to the nature of the various positions in the education system that the participants in this study occupied, a three-pronged sampling and recruitment approach was pursued. For participants at the statewide level of Michigan's education system, snowball sampling was used to facilitate access to highly networked individuals within MDE. To sample regional professional development providers level, I drew on two existing leadership structures to contact nearly all such individuals in the state: Michigan's regional Mathematics and Science Centers and the Michigan Mathematics Consultants and Coordinators group. The two groups are composed of mathematics professional development providers and, therefore, were well positioned to address the issue of the preparation and support of teachers with respect to the transition to the *CCSSM*. Finally, at the local level, a branching sampling scheme was used to contact elementary teachers based on the responses of the regional professional development providers.

State level data collection and snowball sampling.

In snowball sampling, a researcher talks to individuals who he believes to be relevant to the given phenomenon. Then, the researcher solicits suggestions of who to talk to next from the original participants. The process then repeats itself: the researcher talks to those people, solicits recommendations of further people to talk to from them, etc. This type of sampling has been used effectively in communities that are difficult to penetrate, including communities of somewhat closed off but highly networked individuals. State level education professionals

appeared to fall into this category. So the snowball sampling scheme was employed.

Snowball sampling requires a first individual to talk to in order to be able to get other potential participants. This process began with an individual the researcher had a previous relationship with in the Curriculum and Instruction unit in MDE's Office of Education Improvement and Innovation (OEII) who also had previous mathematics consulting experience. That individual agreed to an interview with me and brought another individual from OEII who works in the areas of urban education and mathematics. At the end of my interview with those individuals, I brought up the names of other individuals at MDE who I thought might be able to contribute to this study. They told me which of those they believed to be potentially fruitful interviews and suggested some other individuals as well.

After successive iterations of snowball sampling, there were a total of eight state level interview participants who worked for the following offices, departments, or other bodies in addition to those discussed above: the Michigan State Board of Education, the MDE Accountability Services, the MDE School Reform Office, the MDE Office of Standards and Assessment, and the MDE Statewide System of Support. All interviews were conducted in March and April, 2014. All interviews were conducted at a place of the participant's choosing. For most participants this entailed an office or conference room at MDE. One interview was conducted at a coffee shop.

Interviews at the state level were semi-structured in nature. The interview protocol had four main questions:

1) As [job title], what is your sense of the goals of the *CCSSM*, both in general and specifically with respect to elementary school?
2) What is your view of the implementation process?
3) What do teachers need to do to effectively make this transition?
4) How are teachers supported in doing this?

All interviews were recorded on a voice recorder while the researcher simultaneously typed notes.

During the interviews, redirect questions and follow up questions were employed based on the participants' responses. For example, redirect questions were employed when a participant would respond to a question by referring to aspects of *CCSSM* implementation that seemed to relate directly to English language arts and not to mathematics. In this example, a participant would have been asked, "What you just said sounded like it dealt specifically with the literacy standards. Was the process the same or different for mathematics? How so?" When this happened, it tended to be early in the interviews.

Furthermore, when participants discussed an aspect of implementation that a previous interviewee had discussed, clarifying questions were asked in order for the researcher to ascertain whether the participants were talking about the topic in the same way. This pertains to both whether participants agreed on a view about a topic and whether participants were using terms related to a topic to mean the same thing.

Once the state level data collection was completed, all interviews were transcribed. The transcriptions were then analyzed for the purpose of creating a survey to be distributed to Michigan's network of regional professional development providers. As discussed in more detail in the results chapter, the state level participants provided a generally unified view of the *CCSSM* and its implementation. Their views were used to construct the survey for the professional development providers as described in the next section.

Regional level data collection.

Regional survey instrument.

Based on the data gathered at the state level, a web-based survey with six item categories was made for distribution to Michigan's network of regional mathematics professional development providers. The full survey can be found in Appendix A. The first set of items gathered demographic information on the professional development providers. The second set of items assessed participants' levels of agreement with MDE officials' views of the nature of the *CCSSM*. Generally, a five-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree" was used for these items. The third set of items assessed participants' levels of familiarity with various resources that MDE officials stated were available and useful for the transition to the *CCSSM*. Generally, a five-point Likert scale ranging from "Not at all familiar" to "Extremely familiar" was used for these items. Unless participants marked "Not at all familiar" for a particular resource, they were presented with another item asking about their views of that particular resource's usefulness. A five-point Likert scale ranging from "Not at all

useful" to "Extremely useful" was used for these items. The fourth set of items assessed participants' views of their regions' readiness for the transition to the *CCSSM*. A five-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree" was used for these items. The fifth set of items was a miscellaneous set of items about topics that were discussed by MDE officials but did not fall into one of the previous categories. For example, this section included the item "Interacting with the various offices at MDE about *CCSSM* has been confusing and/or frustrating." A five-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree" was used for these items. The sixth set of items consisted of two open-ended questions asking participants if they would like to elaborate on any of their previous answers, and if they would like to discuss aspects of *CCSSM* implementation that were important to them but that were not discussed in the survey.

Regional participants.

Among Michigan's network of regional mathematics professional development providers, educators in this sample generally fell into one of two roles, and often both. First, they may have been Directors of one of Michigan's regional Mathematics and Science Centers. There are 33 such Centers in the state. The Director of each Center was emailed and asked to complete the survey, or, in the case that the Director was focused on science and had a partner who was a more focused on mathematics, to forward the survey to the senior mathematics educator in the Center to complete the survey.

Second, they may have been mathematics consultants for Intermediate School Districts (ISDs). ISDs, which in some locations are referred to as Regional Educational Service Agencies (RESAs) or another similar name, generally provide services to districts within their boundaries that would be too expensive for individual districts to fund on their own. Among many other support and technical services offered to school districts by their ISDs, these services often include subject-specific professional development provided by employees of the ISD. In many regions in the state, Mathematics and Science Center Directors are also mathematics consultants for their local ISDs.

Aside from contacting Mathematics and Science Center Directors individually, subjects at this level were recruited through the Michigan Mathematics Consultants and Coordinators (M^2C^2) group. This group is largely comprised of the Mathematics and Science Center Directors (or senior mathematics educators) and ISD mathematics consultants. This group meets monthly during the school year via computer-aided conference call, with one in person meeting per year, in order for members to discuss items of mutual interest and collaborate on ongoing work. The researcher contacted the organizer of this group, who then allowed the researcher to attend one phone meeting to recruit for the study in September, 2014. Following that meeting, the M^2C^2 organizer sent a link to the survey out to all the individuals on their listserv.

The surveys were completed in September and October, 2014. In all, 28 individuals responded by completing the survey. Of those, three were deemed to have fallen outside the intended sample. Those three respondents listed

occupational titles that were not directly related to mathematics professional development, and brief web searches confirmed that mathematics professional development was not a primary component of their jobs. Their removal from the sample resulted in an overall sample size of 25 for the survey of regional mathematics professional development providers, all of whom were either Mathematics and Science Center Directors (or senior mathematics educators), ISD mathematics consultants, or both.

Due to several factors, an exact response rate cannot be calculated for this sample. There are 33 Mathematics and Science Centers with readily identifiable mathematics professional development personnel. There are 56 ISDs in Michigan. Information on mathematics professional development personnel in those ISDs is less readily available, particularly in ISDs where there is not personnel overlap with the Mathematics and Science Centers and in ISDs where there are no such personnel. Some ISDs also had multiple mathematics professional development providers who qualified to take the survey. Furthermore, use of the M^2C^2 listserv gave an unknown number of potential participants the opportunity to take the survey; however, the M^2C^2 has a high degree of overlap with mathematics educators in the Mathematics and Science Centers and ISDs. So, while an exact response rate cannot be calculated for this sample, it is likely that the response rate was well over 50%.

From this sample of survey respondents, three were selected for follow up interviews. In order to reflect Michigan's diversity of settings, including the disparate availability of educational resources across the state, the researcher

aimed to select one respondent each from an ISD/Mathematics and Science Center that 1) served a primarily urban area, 2) served a mostly suburban area, and 3) served an entirely rural area. The urban participant came from an ISD/Mathematics and Science Center containing a city with a population over 100,000 that was also the largest city in its county. The suburban participant came from an ISD/Mathematics and Science Center with a county population over 180,000, but no cities with a population over 100,000. The rural participant came from a multi-county ISD/Mathematics and Science Center, the largest constituent county of which has a population of fewer than 40,000.

Regional interviews.

The follow up interviews were semi-structured in nature, centering on the same four questions the state level participants were asked. In addition, participants were asked follow up questions regarding some of their survey responses, particularly in instances where they disagreed with the state or with their colleagues. As with the state level interviews, redirect questions and follow up questions were employed based on the participants' responses. When participants would discuss an aspect of implementation that a previous interviewee had discussed, clarifying questions were asked to ascertain whether the participants were talking about the topic in the same way. This pertains to both whether participants agreed on a view about a topic and whether participants were using terms related to a topic to mean the same thing.

All interviews were conducted in October and November, 2014. All interviews were conducted at a place of the participant's choosing. Two of the

interviews were conducted at local ISD offices. One interview was conducted at a coffee shop. All interviews were recorded on a voice recorder while the researcher simultaneously typed notes.

Once the regional level data collection was completed, all interviews were transcribed. The transcriptions were then analyzed for the purpose of creating a survey to be distributed to elementary teachers in the regions of the professional development providers who participated in follow up interviews. Both state level and regional level participants' views were used to construct the survey for the local level elementary teachers as described in the next section; however, the content of the regional level survey was preserved in the local level survey.

Local level data collection.

Local survey instrument.

Based on the data gathered in Phases I and II, a web-based survey with six question categories was made for distribution to elementary teachers in the regions of the professional development providers who participated in follow up interviews. These surveys were substantially similar to the regional level surveys. The same six question categories were used with a small number of questions added or adjusted for the targeted sample. Most of these were in the demographics category of questions. For example, teachers were asked what grade they currently taught, as well as what grades they had taught previously.

In addition, the interviews with the regional professional development providers indicated that some teachers in the suburban region may have had some much more prolonged and substantive experiences with respect to

implementing the *CCSSM* than their counterparts in other regions. For example, some teachers in that region served on committees that wrote, piloted, and reviewed sample lessons that were ultimately to be provided to other teachers in the state as a resource. Questions were added to the survey given to the teachers in that region to see if respondents participated in any such activities. The full surveys can be found in Appendix B.

Local participants.

The intended sample for this level of data collection was elementary teachers within the regions of the professional development providers who were interviewed. At the end of each regional level interview, the researcher asked what the best way to contact and reach teachers in their respective regions would be. In each case it was agreed that if the researcher prepared the survey and an invitation email to potential teacher participants, that the highest level of response would be obtained if the professional development providers forwarded the survey to elementary teachers in their regions. In some cases, the survey email went straight from the professional development providers to the teachers in their regions; in other cases, the survey passed through an intermediary. Often the intermediary was a school administrator. Those administrators may or may not have forwarded the survey email to their teachers. Due to the forwarding of the surveys to the teachers through the professional development providers, and sometimes other individuals as well, exact response rates could not be calculated in all cases; however, within the regions, response rates were

able to be calculated for certain subsets of teachers. The details of these calculations are discussed in the following paragraphs.

Following that initial contact by the professional development providers, teacher recruitment proceeded in different ways for the three regions. In the urban region, 40 teachers responded to the survey. Of those, two completed little more than the demographic questions at the beginning and were ultimately excluded from the sample. This left the urban region teacher sample size at 38. Note, though, that this is simply the number of teachers from the region with an urban area. Few of those teachers taught in an urban school.

In the rural region, teacher response to the survey was quite limited. After the initial invitation sent through the professional development provider, seven teachers responded, with five completing enough of the survey to be included in the data set. Given the low response rate, the researcher used district websites to compile an email list for all elementary homeroom teachers in the ISD, which totaled 168 teachers. Another invitation to participate was sent directly from the researcher to all of those teachers. This effort garnered one more survey response. The professional development provider sent one more email message that garnered no responses. So the teacher survey data sample size for the rural region was six. This amounts to a teacher response rate of four percent for the rural region.

In the suburban region, teachers' response to the survey was also limited. After the initial invitation sent through the professional development provider, five teachers responded, each completing enough of the survey to be included in the

data set. When the researcher looked at the schools and districts of those five teachers, it seemed that most responses came from relatively well-performing schools and districts, based on Michigan's Top to Bottom school ranking list. Of the five respondents, none came from districts whose elementary schools averaged out to be in the bottom or second quartiles of the rankings, one came from the third quartile, and four came from the fourth quartile.

While more overall participation from teachers in the suburban region was desired, it was also important to get a well-rounded sample of teachers within the ISD. So the researcher sampled two districts from each of the bottom three quartiles, and attempted to contact elementary teachers in those districts. In one district, teacher email addresses could not be located online. The elementary building principals and secretaries were contacted in that district; however, no response was returned. In the other five districts, the researcher used district websites to prepare an email list for all elementary teachers in those districts, and sent an email invitation to complete the survey to all of those teachers. In these five districts, the email was sent to 259 teachers. This garnered 25 additional responses, of which 23 completed enough of the survey to be included in the data set. So, the overall suburban survey data set sample contained 28 teachers. Among the teachers to whom the researcher sent a direct email, the teacher response rate was nine percent for the suburban region.

Therefore, between the three regions, the total teacher sample size for the teacher survey was 72. The table that follows summarizes this information as well as provides information regarding the grades those teachers currently teach.

Because some teachers marked that they were currently teaching more than one grade, the numbers of teachers in each grand band will not always sum to the total number of teachers. Also, the two sixth grade teachers in the sample taught in self-contained classrooms.

Teacher Survey Sample by Grade Band

Region	K-2	3-5	6	Total
Urban	18	21	2	38
Rural	4	2	0	6
Suburban	10	18	0	28
Total	32	41	2	72

Table 1: Teacher Survey Sample

Originally, the planned procedure for teacher follow up interview participant selection was to contact two teachers from each of two schools in each of the three regions; however, this proved impossible for several reasons. First, most respondents didn't have another teacher in the building who completed the survey. In instances where two or more teachers did complete the survey, usually at most one would agree to participate in the interview. Furthermore, in the rural region, there were only six survey responses from teachers in the region. After contacting all six respondents, one agreed to be interviewed.

Not having the desired survey and interview participation caused the researcher to alter the interview recruitment procedure. In order to make the results as generalizable as possible with the given survey sample, the researcher used the quartiles described in the survey sampling process for the suburban and urban regions. Ultimately, follow up interviews were conducted with ten teachers. These respondents covered the four quartiles for both the suburban and urban regions. Also, one teacher from the city in the urban region was interviewed.

Teacher Interview Sample by Grade Band

Region	K-2	3-5	6	Total
Urban	3	2	0	5
Rural	1	0	0	1
Suburban	1	3	0	4
Total	5	5	0	10

Table 2: Teacher Interview Sample

Local interviews.

The follow up interviews were semi-structured in nature, centering on the same four questions the state and regional level participants were asked. In addition, participants were asked follow up questions regarding some of their survey responses, particularly in instances where they disagreed with the state, with the professional development providers, or with their colleagues. As with

the previous interviews, redirect questions and follow up questions were employed based on the participants' responses. When participants spoke to an aspect of implementation that a previous interviewee had discussed, clarifying questions were asked in order for the researcher to ascertain whether the participants were talking about the topic in the same way. This pertains to both whether participants agreed on a view about a topic and whether participants were using terms related to a topic to mean the same thing.

All interviews were conducted between March and May, 2015. All interviews were conducted at a place of the participant's choosing. Usually interviews were conducted in participants' classrooms during or after school. Some interviews were conducted in coffee shops or local restaurants. All interviews were recorded on a voice recorder while the researcher simultaneously typed notes. Once the local level data collection was completed, all interviews were transcribed. The transcriptions were then analyzed as discussed below.

Limitations.

Of course, each of these local level survey and interview samples has its limitations. First, the lack of participation among teachers in the rural region was much lower than desired. The weak response could reflect a lack of resources and time to devote to such matters, which could be pertinent for this study. Also, resources to reward participants for their participation could have improved the response rate. With such a small survey response rate from the region, it was

not possible to compare the rural region's survey results to the other regions because no argument for representativeness could be made.

Next, the suburban region survey sample was ultimately adequate after the recruitment procedure was adjusted; however, the original recruitment for the teacher survey had to flow through various layers of administration that did not exist in the other regions. This could have affected the original response rate from that region. Furthermore, the ISD has a group of teachers formally identified as a group of leading mathematics teachers. Part of the distribution procedure in that region involved sending the survey to them, and for them to share it with their colleagues. A question was included on the survey in this region to identify members of this group. After looking at those responses, and the next phases of recruitment in this region, it does not appear that members of that team had undue influence on the results as only two participants indicated membership in that group.

Finally, school and district level math coaches were originally intended to be part of this study. Their numbers proved to be exceptionally low, though. The rural region professional development provider told me that no such personnel existed anywhere in her region. No responses from coaches came in from the urban region. A small number of coaches took the survey in the suburban region; however, it was too few to do any analysis with their data.

Methods of Data Analysis

Qualitative analysis.

All interviews were transcribed shortly after the data was collected. After the first two levels of interview data collection, the transcriptions were analyzed for the purpose of creating a survey to be distributed to the next level of respondents. Interviews were analyzed with an emergent coding scheme to uncover areas of coherence and dissonance between the various participants' responses. After the teacher level interview data had been gathered, the process was repeated with all three levels of data at once.

Quantitative analysis.

Initially, the survey responses of the 25 professional development providers were analyzed by determining the mean response and standard deviation for each question. After the local level survey was conducted, the survey responses of the 25 professional development providers and 72 teachers were analyzed using SPSS. For each survey question, the mean response was computed for both groups. An analysis of variance test was run to discern any significant differences in the mean responses of the professional development providers and the teachers. In the results chapter, significant differences are noted at the $p < 0.05$ level.

Combining the survey and interview data.

The results of both types of analyses were used to inform further analysis and the progression of the study. Qualitative analysis of data gathered at the

state level informed the construction of the regional level survey, including the entirety of the non-demographic items.

State level qualitative data analysis and regional level quantitative data analysis from the survey informed the interviews conducted with the regional participants. For example, state level participants thought one particular resource would be extremely useful for teachers. The regional level surveys showed that the professional development providers generally disagreed on that point. Therefore, the regional level participants who were interviewed were asked about the disparity.

Qualitative analysis of the regional level interviews combined with the previous analyses informed the construction of the local survey of elementary teachers. Quantitative analysis of the local survey combined with the previous analyses informed the interviews with local level teachers.

As previously stated, all the data was analyzed with the aim of discovering areas of coherence and dissonance between the various participants' responses. The analysis was carried out with an awareness of the vertical structure of Michigan's K-12 educational system, where it is typically assumed that information and directives flow from the MDE through regional leadership to teachers in local communities. These three groups (MDE, the regional professional development providers, and the local elementary teachers) were compared to each other with careful attention given to the idea that information and directives may not flow as typically assumed.

Originally, a horizontal analysis was planned to compare the responses of teachers in rural, urban, and suburban regions to each other. Given the difficulties in participant recruitment and the low response rate in both the city of the urban region and the rural region as a whole, this analysis was not conducted.

Chapter III: Results

Organization of the Chapter

The results of this study generally fell into four topic categories regarding participants' views of: the goals of the *CCSSM*, methods of support for teachers, *CCSSM* readiness, and interactions with the state by various stakeholders. Results are presented below within each of these four categories. The results regarding the goals of the *CCSSM* most directly answer the first research question: To what degree is there alignment between Michigan Department of Education (MDE) officials', regional professional development providers', and teachers' views of the goals of *CCSSM* implementation? The results regarding the methods of support for teachers most directly answer the second research question: Do those outside MDE charged with the implementation feel adequately supported in effecting their part of the transition to the *CCSSM*?

The results from the remaining two categories, *CCSSM* readiness and interactions with the state, provide supporting information for the previously discussed results as well as context for the answers to both research questions. For example, participants' responses about *CCSSM* readiness help to shed light on what they believe the goals of the *CCSSM* to be by their descriptions of what they are ready to do. Participants also discussed their readiness for the *CCSSM* in the context of various support mechanisms. Finally, while discussing interactions with the state, participants were able to discuss views of *CCSSM* implementation and its goals within the state's political system, as well as their interactions with MDE when they sought support.

Throughout this chapter, and within each of the category sections, results will be presented in the following fashion. First, data from state level interviews will be presented and interpreted. Next, the survey items for the regional and local level surveys that resulted from that state level data will be introduced. Then, the results of those survey items will be introduced, followed by supporting representative quotes from regional professional development providers and teachers to assist in interpreting them. The order in which the teacher and professional development provider interview data and interpretation are given varies by section and usually depends on flow and explanatory power of one for the other.

One important general result to note before proceeding into individual results is that the regional professional development providers generally had lower standard deviations on their survey responses than the elementary teachers did. This could be the case for a variety of reasons. First, the regional professional development providers were a rather homogenous group with similar high levels of interest in mathematics who were regularly in communication with each other. The teachers varied on each of these dimensions. Also, the levels of support and professional development that teachers had access to in order to prepare for the *CCSSM* varied greatly across the state and, sometimes, within districts.

Finally, several of the mean responses in the section that follow have standard deviations over 1.00, which is rather high for a five-point Likert scale survey item. Despite that, statistical differences will still able to be discerned

between the regional professional development providers and teachers in a number of areas. These differences will be the focus of the analysis.

Goals of the *CCSSM*

In this section, participants' views and beliefs about the goals of the *CCSSM* will be discussed. This was done largely in comparison to the previous *Grade Level Content Expectations* (*GLCEs*) with the idea that if the transition to the *CCSSM* is worthwhile, then it must offer some advantage over the previous *GLCEs*. This section addresses the first research question: To what degree is there alignment between Michigan Department of Education officials', Math and Science Center Directors', and teachers' views of the goals of *CCSSM* implementation?

Changes in standards related to *CCSSM* implementation.

First and foremost, there was agreement at the state level that even though Michigan was shifting from its previous *Grade Level Content Expectations* (*GLCEs*) to the *CCSSM*, there really was neither much new mathematics in the *CCSSM* nor many grade level shifts in when mathematical topics should be taught. One MDE official stated that, "I personally love the *Common Core*, not only because the messaging was right on what we felt was good math education, [but] it actually aligned…with what we set content-wise across the state anyway. It was not out of whack from [the *GLCEs*] content-wise." Another MDE official noted a "97% concurrence between the old standards and the new standards." Other data from the state level interviews, which will be discussed in more detail in later sections, substantiates this belief from MDE officials that the content of

the *CCSSM* did not vary greatly from the *GLCEs*, nor did the grades in which individual pieces of content were introduced.

Each time this view was stated by an MDE official, though, it was done in comparison to the Standards for Mathematical Practice and/or the new level of depth and rigor that would be required to teach and learn mathematics properly according to the new standards. One MDE official commenting on the student learning aspect said, "The level of rigor, the depth of knowledge, that we're asking students to analyze and apply rather than recognize, you know, the verbs that are used in the *Common Core* are higher level verbs." Another MDE official noted how the introduction of the *CCSSM* Standards for Mathematical Practice helped them to push teaching in a positive direction that they were already trying to facilitate among the teaching force:

> *Common Core* made the practices much more explicit. When we were developing the high school content expectations, we really had conversations around how do we embed in our standards somehow these ideas of the mathematical habits of mind. And so we weren't successful in that until the *Common Core* was really an improvement on that.

So, while state level participants generally viewed content changes and grade level shifts between the previous *GLCEs* and the new *CCSSM* to be relatively minor, they viewed the explicit listing of the Standards for Mathematical Practice as a full fledged part of the *CCSSM* as an important piece of the new standards with respect to improving the teaching and learning of mathematics in the state.

The views of the state level participants led to the creation of the following questions for the regional and local level survey. Three items were statements that participants could use a five-point Likert scale with which to express their level of agreement: (1) “There really is not much new mathematics in the *CCSSM*, nor are there that many grade level shifts in when mathematics topics should be taught.” (2) “The transition to the *CCSSM* is less about a transition in mathematical content for teachers and students than it is about a transition in teaching as expressed in the Practice Standards.” (3) “Compared to Michigan’s previous *GLCEs*, a greater level of depth and rigor in mathematics is needed for teachers and students to meet the *CCSSM*’s standards.” Finally, a fourth item was included regarding the relative amount of content in the *CCSSM* as compared to the previous *GLCEs*. Participants could indicate whether they thought the new standards had less content than, about the same amount of content as, or more content than the previous standards. The results from the regional (PD provider) and local (teacher) participants follow. When there is a statistically significant difference at the $p < 0.05$ level between the mean responses of the regional and local participants, it is indicated with an asterisk (*). Standard deviations for each mean response are indicated parenthetically next to the means.

“There really is not much new mathematics in the *CCSSM*, nor are there that many grade level shifts in when mathematics topics should be taught.”

PD Providers	Teachers
2.20 (0.96)	2.35 (1.00)

1: Strongly disagree, 2: Disagree, 3: Neither agree nor disagree, 4: Agree, 5: Strongly agree

Table 3: New Content and Content Shifts

“The transition to the *CCSSM* is less about a transition in mathematical content for teachers and students than it is about a transition in teaching as expressed in the Practice Standards.”

PD Providers	Teachers
3.44 (0.92)	3.56 (0.84)

1: Strongly disagree, 2: Disagree, 3: Neither agree nor disagree, 4: Agree, 5: Strongly agree

Table 4: Transition in Teaching Versus Content

"Compared to Michigan's previous *GLCEs*, a greater level of depth and rigor in mathematics is needed for teachers and students to meet the *CCSSM*'s standards."

PD Providers	Teachers
4.52 (0.59)	4.17 (0.93)

1: Strongly disagree, 2: Disagree, 3: Neither agree nor disagree, 4: Agree, 5: Strongly agree

Table 5: Level of Depth and Rigor

"Compared to Michigan's previous *Grade Level Content Expectations* (*GLCEs*), the *CCSSM* covers "

PD Providers	Teachers
1.78 (0.52)	2.15* (0.76)

1: Less content, 2: About the same amount of content, 3: More content

Table 6: Content Coverage Comparison

These data show that the regional professional development providers and teachers both disagreed with the notion that there was not much new mathematics in the *CCSSM*, or that there were many grade level shifts in when topics should be taught. This disagreement occurred despite both groups showing slight agreement to the statement that the transition to the *CCSSM* was less about a transition in content are more about a transition in teaching. Both the professional development providers and the teachers rather strongly agreed

that a greater level of depth and rigor with respect to both teaching and learning would be needed to meet the new standards in the *CCSSM*. Finally, there was some disagreement between the professional development providers and the teachers about the amount of content in the *CCSSM* as compared to the *GLCEs*, with the teachers believing more content exists in the *CCSSM* while the professional development providers thought there was somewhat less. Professional development provider and teacher interviews were used to further understand and interpret these data.

When the regional professional development providers and elementary teachers were asked during interviews about the amount of new content and grade level shifts in content, while they agreed about the importance of the Standards for Mathematical Practice, they still found the content changes to be significant.

For the teachers, especially those who had taught a particular grade for some years, the content changes were significant and important to learn about. Each of the ten teachers who were interviewed spoke about topics similar to those identified by the three teachers who are quoted in the paragraphs to follow. For example, one teacher noted a shift in when her district introduced multiplication that coincided with the transition to the *CCSSM*:

> Multiplication, for us anyway, at our district, has been, like, I know a lot of districts do third, but ours was more fourth, and now I see where third graders really have to know multiplication facts. So I think that there's

actually been a lot of moving things down so that they're getting exposed earlier on to a lot of concepts.

Teachers gave more examples, though, where the new content they referred to was content they had taught previously on the surface, but now had to learn to teach in new forms. One kindergarten teacher spoke about the shift in focus of numeracy education in her classroom:

> The *Common Core* has set some more concrete boundaries of kindergarten is really going to focus through five, and first grade is really going to deeply focus through ten, and second grade is going to focus through twenty. And we talk about math facts or breaking down a number, decomposing a number, constructing a number, we're really going to focus on five at the kindergarten level…And I don't feel that that was stressed as much in the previous … *GLCEs*. So I do see that there was a shift of, 'No, we're not going to really get the kids just to count up to 20 and do some adding in kindergarten. Let's just focus on the five frame, and building five, really understanding five and how to build it.'

Similarly, a first grade teacher spoke about new approaches to teaching and learning addition and subtraction:

> I think that there are a lot of new concepts that are being taught. Like making ten to subtract instead of just teaching kids subtraction, we have to do make ten to subtract. I think I gave you a specific example…about adding with doubles, and how you can split the number in half, and then add two more once you have your answer, or you can split the number in

half and add one to each half, and then add the two new numbers together. And I think that's new mathematics to me. That's not anything I've ever taught before, not a way that we've ever taught before. And so although we're teaching addition and subtraction, it's completely different, and it's done in such a way that the teachers don't fully understand it. And so it's hard for us to deliver quality instruction to the students.

So, when comparing the amount of new content or the amount of content shifts for a particular grade level, it appears MDE and the teachers may have viewed the term *content* in two different ways. The evidence suggests that MDE viewed content as what students should learn at a particular grade level, which did not change much between the *GLCEs* and the *CCSSM*. The teachers, on the other hand, viewed these new ways of teaching or understanding that same content as new content. The ways of teaching with more depth and rigor and adhering to the Standards for Mathematical Practice were taken by numerous teachers as new content for them to learn. This led them to view the *CCSSM* as having a lot more content changes than MDE did.

For their part, the professional development providers viewed the issue in a similar way because of their close work with the teachers. The following is representative of what all three professional development providers had to say on the matter:

[T]opic-wise, no, there's not a huge shift topic-wise, but there are huge shifts in the content in terms of 'What is it I really need to teach at my grade level?' And the depth. So, at a topic level, I agree [that there hasn't

been much change in content], but when you go beyond the topic level and to the making sense and saying this is really what this means, and making that sense from looking at the progressions documents and looking at TurnOnCCMath.net, Jere Confrey's site, it's pretty significant in terms of, and then you layer with that the practices.

This closely echoes what the teachers had said: the teachers were needing new ways to teach and understand the same content.

In summary, all three groups of participants (MDE, the professional development providers, and the teachers) were largely in agreement that content topics had not shifted much, but that a new level of depth and rigor would be required to teach them well in accordance with the standards. However, the different ways in which the groups spoke about this issue, specifically what they meant when they referred to content, could be the source of some confusion. That confusion could arise when members of these three groups attempt to communicate with each other, or when educators tasked with facilitating communication between these groups, such as building administrators, become involved.

Reception of the *CCSSM*.

Together, these previous findings lead to the last result of this section: participants' views on whether the transition to the *CCSSM* was a positive change. As noted in the initial chapter, policy initiatives are more successful when those tasked with implementing the change view the change as worthwhile. So each survey and interview participant at every level was asked if they viewed

Michigan's transition to the *CCSSM* as a positive change. Their answers to this query provide a view of the participants' overall feelings toward the *CCSSM* and its goals.

In general, all three groups thought the transition to the *CCSSM* was a positive change. The MDE and professional development providers viewed the change, particularly with respect to the Standards for Mathematical Practice, as productive for providing the opportunity to instill more research-based teaching practices in the state. One MDE official, referring to the Standards for Mathematical Practice, said, "We didn't have any piece on that in the *GLCEs*. Those of us, those that were good teachers had that in the back of their mind and always looked at the *GLCEs* through that lens, but the *Common Core* made that really explicit in those practices."

"I view Michigan's transition to the *CCSSM* as a positive change."

PD Providers	Teachers
4.56 (0.65)	3.59* (0.97)

1: Strongly disagree, 2: Disagree, 3: Neither agree nor disagree, 4: Agree, 5: Strongly agree

Table 7: Disposition Toward CCSSM *Transition*

As the table above shows, while teachers viewed the change positively, they did so at a significantly lower level than the professional development providers (and MDE) did. The teachers who viewed the change positively did so

for largely the same reasons MDE and the professional development providers did. Several of the teachers believed the *CCSSM* would be a good change for students in the long run and enjoyed having more time to go more deeply into mathematics content with students. For example, one said, "I like the idea of going into more in depth. At my level there's lots of exposure to lots of things, and sometimes it's fun to just be able to dig deeper, and make sure they have it." Another teacher thought the new standards made her students more mathematically powerful, stating, "I believe this shift gives students the power to be mathematical problem solvers."

The teachers who disagreed that the change to *CCSSM* was positive did so for a number of reasons. The follow up interviews with teachers helped to shed light onto their views. Some were concerned about developmental appropriateness:

> [T]hey take the kids and they want them to perform higher and higher and higher. And so the demands are higher, but developmentally, a kid's brain, like an eight year old's brain, is still an eight year old's brain. And I feel like we try to cram too much down their throats instead of just letting them have more time with a few concepts.

Another raised similar concerns, citing students' basic abilities:

> It's a double edged sword…I understand what the initiative is attempting, what it wants to do. It wants to get these kids thinking about these multiple ways and discussing early on so that they don't have to learn to do that in the upper grades. But I'm dealing with kids that can't speak,

> and kids that can't write, and they're still learning these basic fundamental skills just to communicate period. And so, to try and teach them to do that with math, and they can't do it during reading time, or any other time, it's a big challenge.

So while one of these teachers was concerned with the level of mathematical content and the other was concerned students' basic abilities to work across content areas, they were both wary of what they perceived as high—and apparently too high—expectations for their students. Additionally, other teachers cited issues with parents not understanding new methods involved with learning certain topics.

One teacher who supported the transition to the *CCSSM* but was still working through some difficulties with respect to it said,

> I think some fear it because we're constantly wary of the change, and having to keep up with the change, and it takes a lot of time and energy on our part. And, you know, we want to see results, and sometimes we want to see them right away. And if we don't, we get discouraged. But sometimes things take a little bit of time. But I really do think we are going to reach kids in the longer run on a deeper level.

Within this one quote, several stresses on teachers with respect to the change to the *CCSSM* can be seen. First, the teaching profession demands a great deal of time and energy even in years when new standards are not being implemented. So there is the time stress for teachers of both becoming acquainted with the new standards and learning how to teach appropriately with respect to them—

especially when expectations on their teaching are not reduced. Second, the quote referenced the teacher's desire for immediate results in terms of student success. While this could refer to aspects of the teacher accountability era, it can also simply refer to an impediment to change. If teachers are relatively comfortable with what they are doing and feel successful with it, then if they change to something and are not immediately successful, the change is called into doubt.

Methods of Support for Teachers

In this section, various methods of supporting teachers in making the transition to the *CCSSM* will be discussed. This section addresses the second research question: Do those outside MDE charged with the implementation feel adequately supported in effecting their part of the transition to the *CCSSM*?

As this study began with interviews of state level education officials, much of the data collection in this area at the regional and local levels centers on devices the state level officials hoped would be useful for *CCSSM* implementation. In particular, these include MDE's *Crosswalk* documents, sample units and lessons from the Michigan Association of Intermediate School Administrators, and released items from the Smarter Balanced Assessment Consortium. Finally, participants were asked if and what kinds of further financial and professional resources would be helpful. The overarching finding in this area is that teachers generally were not as familiar with various devices designed to help them make the transition as state education leaders hoped they would be.

***Crosswalk* documents.**

The first example of this is a series of *Crosswalk* documents made by MDE. These *Crosswalks* were "intended to show the alignment of Michigan's current mathematics *Grade Level Content Expectations* (*GLCEs*) to the Standards for Mathematical Content to assist with the transition to instruction and assessment based on the *CCSS*" (MDE, 2010, p. 1). The documents consisted largely of lining up the *GLCEs* and corresponding *CCSSM* standards side by side in tables. MDE hoped that making this direct comparison for teachers regarding the content of the two sets of standards would help ease the transition for them.

These views of the state level participants led to the creation of the following questions for the regional and local level surveys. First, participants were presented with the question: "How familiar are you with the Michigan Department of Education's (MDE's) *Crosswalk* documents that compare the prior Michigan *GLCEs* with the *CCSSM*?" Participants used a five-point Likert scale with which to express their level of familiarity. If they responded that they were at least slightly familiar, participants were then presented with a second question: "How useful have MDE's *Crosswalk* documents been for you?" Participants used a five-point Likert scale to express their level of familiarity. The results from the regional (PD provider) and local (teacher) participants follow. When there is a statistically significant difference at the $p < 0.05$ level between the mean responses of the regional and local participants, it is indicated with an asterisk (*). Other survey items in this section that will be discussed in future paragraphs were formatted similarly.

"How familiar are you with the Michigan Department of Education's (MDE's) *Crosswalk* documents that compare the prior Michigan GLCEs with the *CCSSM*?"

"How useful have MDE's *Crosswalk* documents been for you?"

	PD Providers	Teachers
Familiarity	3.88 (1.09)	2.33* (1.41)
Usefulness	2.79 (1.32)	2.79 (1.11)

1: Not at all familiar/useful, 2: Slightly familiar/useful, 3: Somewhat familiar/useful, 4: Moderately familiar/useful, 5: Extremely familiar/useful

Table 8: Crosswalk *Familiarity and Usefulness*

The table above shows that the state's professional development providers were moderately familiar with the *Crosswalks*, but were more dubious about their usefulness. The reasons for this were rather uniform among the professional development providers with whom I spoke, despite the somewhat high degree of variability in their survey responses. For example, one stated,

> I don't like the *Crosswalk* documents. I have not hidden how I feel about that at all because I do not believe that there is a one-to-one correspondence first of all from the *GLCEs* to the *Common Core Standards*. And the standards are asking students to do different things with those topics. And I feel that those *Crosswalk* documents, that the work that's been done around those has attempted to just map a content

topic to another one, and I'm afraid teachers will look at that and say, 'Oh, we keep doing the same thing we used to around [whatever topic].'

The professional development providers noted a lack of exact one-to-one correspondence as well as a fear that teachers would use the *Crosswalks* to rationalize not changing the content they were teaching or how they were teaching it. Therefore, the professional development providers viewed the *Crosswalk* documents as a state provided resource that impeded one of the goals of the *CCSSM*: to improve the way mathematics is taught.

In particular, the professional development providers feared the *Crosswalk* documents would facilitate the new standards becoming a checklist in teachers' minds:

> [The *Crosswalks*] were helpful to a certain degree in terms of, 'OK, where can I connect? Where can we show relationships to the old and the new?' But where they weren't helpful is where with *Common Core* we don't want to treat it like a checklist. And I think the *Crosswalk* documents kind of maybe encouraged that.

The professional development providers wanted the Standards for Mathematical Practice to be in the front of teachers' minds as much as possible. Much of the disdain they had for teachers perceiving the *CCSSM* as a checklist was rooted in the idea that that orientation toward to *CCSSM* was too focused on the content standards alone. While one professional development provider did note a usefulness in helping teachers see content shifts between grade levels, the overall view of the *Crosswalk* documents among this group was negative.

This dislike of the *Crosswalks* among the professional development providers may account for the low level of familiarity with the *Crosswalks* on the part of the teachers noted in the table above. Few of the teachers who completed the survey or who I conducted follow up interviews with had heard of the *Crosswalk* documents. The few who were familiar with them noted that they had mostly found them somewhat useful early on in the transition process. One teacher stated,

> Well, when I was comparing, at the very beginning, 'OK, this is what was in my old program, and this is what's in my new program,' it made it very easy for me to see which things were missing and which things I needed to at least identify with my kids. Do they have this? Do they not have it? Before I build on it. So I did find that very helpful to read that, and go, 'OK, here's this. Oh it's not over here.'

Another noted, "I enjoyed the experience of knowing where the foundations are, where it's going, where they were, identifying my piece in it. But once that was done, it didn't need to be revisited." These representative quotes from the teacher interviews substantiate what the professional development providers feared: teachers using the *Crosswalk* documents as an introduction to a highly content-focused view of the *CCSSM*.

MAISA sample units.

MDE officials also noted that the Michigan Association of Intermediate School Administrators (MAISA) had developed sample units for teachers to use in conceptualizing their own units and lessons with the new content and practice

standards. This led to the creation of the following questions for the regional and local level surveys: “How familiar are you with the sample units and/or lessons from the Michigan Association of Intermediate School Administrators (MAISA)?”, and “How useful have MAISA’s sample units and/or lessons been for you?” These questions were presented identically to how the *Crosswalk* questions were presented previously. The results from the regional (PD provider) and local (teacher) participants follow in the same format as the data from the previous section.

“How familiar are you with the sample units and/or lessons from the Michigan Association of Intermediate School Administrators (MAISA)?”

“How useful have MAISA’s sample units and/or lessons been for you?”

	PD Providers	Teachers
Familiarity	4.36 (0.86)	2.99* (1.53)
Usefulness	3.71 (1.12)	2.92* (1.24)

1: Not at all familiar/useful, 2: Slightly familiar/useful, 3: Somewhat familiar/useful, 4: Moderately familiar/useful, 5: Extremely familiar/useful

Table 9: MAISA Sample Unit Familiarity and Usefulness

As shown in the table above, the professional development providers were quite familiar with these sample units and found them highly useful in working with teachers. In part this may have been due to a number of them being

involved in the development process of the lessons. One professional development provider spoke about the aims of the MAISA sample units:

> So the way that they're set up is that there's an overarching question and a graphic organizer that then pulls together these sets of coherent, of connected ideas. There are questions, focus questions that can focus instruction, and assessment. There are key concepts that are truly meant to be concepts, not vocabulary. And then within, so you have this overarching unit overview, and then there's one pilot lesson and one sample formative assessment task in each of the math units. They were never intended to be day-to-day lessons.

This quote encapsulates several of the reasons the professional development providers found the MAISA sample units useful. First, they thought the sample units were strong exemplars that would illustrate how teachers should approach units with respect to the *CCSSM*. Second, this participant highlighted the difference between concepts in the sample units as opposed to mere vocabulary. This emphasizes the professional development providers' desire for teachers to teach more deeply for understanding. Finally, the participant notes the conscious decision that was made for these MAISA samples to be units and not day-to-day lessons. The professional development providers thought it would be useful and instructive for teachers to develop their own lessons with both the content and practice standards in mind.

As seen in the table above, though, teachers were once again less familiar with this particular resource than the MDE officials or professional development

providers might have hoped. In fact, the mean familiarity for the teachers may be somewhat overinflated. When follow up interviews were conducted with teachers after the survey, some expressed confusion about the existence of MAISA units in mathematics. For example, when I brought up the topic with one teacher, he said, "Well, MAISA, are you talking about the language arts one, or there's MAISA math?" I responded that there were MAISA mathematics sample units, to which he responded, "Yeah, I'm familiar with the language arts MAISA units. I'm not familiar with MAISA mathematics units." Teachers were more familiar with the MAISA English language arts samples than their mathematical counterparts. This reason may be due to the ELA samples including day-to-day lessons where the authors of the mathematics units chose not to do so.

With that said, those teachers who were familiar with the MAISA sample units did find them useful. Seven of the ten interview participants said they were at least slightly familiar with the MAISA units on the survey. Of those seven, three were only slightly familiar and exhibited the English language arts confusion discussed above. The other four found the samples quite useful. One teacher discussed one of the fourth grade sample lessons:

> MAISA, *One Grain of Rice*, and the factor boards and things. They're not black and white sheets of paper. They're critical thinking, teamwork projects, discussions that get thought provoking happening. Those kids will never look at a grain of rice the same way ever again. You know? It's pretty cool. Changing their lives. Instead of practicing a million times in black and white, we have this pretty colorful chart, which is wonderful. But

> at the end of the day, they get to discuss it, talk about it, write about it, model it, draw it. All of those things that are going to help them internalize and carry that skill on to something else in their life.

In this sample lesson, *One Grain of Rice*, MAISA targets three content standards and four practice standards, including looking for and making use of structure when developing strategies and looking for and expressing regularity in repeated reasoning. The main portion of the lesson involves students using rice to make and verify conjectures about how large the pattern 1, 2, 4, 8, … gets after 30 terms. The teacher quoted above found using this lesson to be a rewarding experience. Despite briefly referring to skill acquisition at the end of her thought, she valued all the modes the lesson provided for her students to think about, discuss, and interact with the material. While not citing the practice standards by name, she valued including those aspects of instruction in her lesson.

SBAC released items.

Another resource that MDE thought would be useful for teachers was the set of Smarter Balanced Assessment Consortium (SBAC) released items. Michigan was a governing state in SBAC, and MDE officials were among the assessment's authors, before legislative action in 2013 made MDE pull out of the process. One state official noted the usefulness of SBAC released items in working with teachers in this way:

> Once the sample items from the tests were made available, teachers began to see that there's a different kind of instructional model needed.

> We've been telling them that, and that there are all manner of things that need to change. It can't be business as usual. Seeing the assessment models helped drive that home to them. So it will take a different kind of instruction.

Essentially, this state official saw the released items for the new *CCSSM* aligned assessment as a way to combat the complacency some of the professional development providers feared existed among the teachers, particularly after the teachers had worked with the *Crosswalk* documents. This led to the creation of the following questions for the regional and local level surveys: "How familiar are you with the Smarter Balanced Assessment Consortium (SBAC) program and its released items?", and "How useful have the SBAC released items been for you?" These questions were presented identically to how the previous questions in this section were presented. In addition, because Michigan changed assessments at a rather late date with respect to *CCSSM* implementation and the first administration of the assessments, the following question was added to the surveys: "In the time since the decision was made to not use the SBAC test during the 2014-15 school year, how have your views of the usefulness of the SBAC released items changed?" Participants used a five-point Likert scale to express the level to which their views of the usefulness of the SBAC released items had changed. The results from the regional (PD provider) and local (teacher) participants follow in the same format as the data from the previous section.

“How familiar are you with the Smarter Balanced Assessment Consortium (SBAC) program and its released items?”

“How useful have the SBAC released items been for you?”

	PD Providers	Teachers
Familiarity	4.48 (0.71)	2.89* (1.21)
Usefulness	4.43 (0.79)	2.52* (1.17)

1: Not at all familiar/useful, 2: Slightly familiar/useful, 3: Somewhat familiar/useful, 4: Moderately familiar/useful, 5: Extremely familiar/useful

Table 10: SBAC Released Items Familiarity and Usefulness

“In the time since the decision was made to not use the SBAC test during the 2014-15 school year, how have your views of the usefulness of the SBAC released items changed?”

PD Providers	Teachers
2.46 (1.38)	2.02 (1.21)

1: Not at all changed, 2: Slightly changed, 3: Somewhat changed, 4: Moderately changed, 5: Changed a great deal

Table 11: SBAC Usefulness Changes

The professional development providers enjoyed having access to the SBAC released items and used them with teachers for similar reasons. One noted that an important aspect of the released items was that they showed how the practice standards would be assessed as well as the content standards:

> That's what it's supposed to look like, you know? So that's really making sure you're getting to what you're supposed to be teaching in the classroom. So I'd say that was the first time we had a feel for what is this really going to look like, where we saw evidence of the practice standards being assessed.

This echoes what the MDE official had to say with respect to needing a new instructional model and not simply conducting "business as usual." Both MDE and the regional professional development providers viewed the SBAC released items as a way to push teachers in a positive direction with respect to teaching with the Standards for Mathematical Practice in mind.

Even when Michigan ultimately permanently pulled out of the SBAC, MDE officials and regional professional development providers still thought the SBAC released items would be useful for teachers. Essentially, the MDE officials who had been working on writing the SBAC assessment were now charged with writing Michigan's new assessment. Therefore, they knew it would appear rather similar to what the SBAC assessment would have. Also, the regional level participants mean usefulness rating for the released items was 4.43 on a five-point scale, and their views of that usefulness changed only slightly when the assessment was replaced.

Teachers' views were again mixed, though, mostly due to a lack of familiarity with the SBAC released items. The mean familiarity rating among the surveyed teachers for the released items was 2.89, which was less below the midpoint of the five-point familiarity scale. In some cases, they simply had not

encountered them. In others, they dismissed the possible usefulness of the items because, during the school year the teacher interviews were conducted, legislation caused many aspects of the assessment process (including what assessment would be used) to be highly uncertain.

Those who had more familiarity with the released items generally found them more useful. One teacher spoke about how she used her knowledge of the released items in her lesson enactment: “So just even the types of questions that I ask during a discussion, trying to use the right vocabulary and language that’s going to be used on the test so that the kids are familiar with it.” While the MDE officials and professional development providers may not have liked this teacher thinking at the vocabulary “that’s going to be used on the test” level, MDE and the professional development providers thought highly enough of the new test that they were open to teachers teaching to it. So this quote from a teacher shows what would likely be perceived by them as a move in the right direction.

Another teacher spoke of a professional development experience where she encountered some released items, how they were used, and what they made her consider:

> I felt the Smarter Balanced released items, as we explored them at the ISD, we tried to identify the grade level. So we really understood this is what’s expected at that grade level. As you tried to look at where the entry points were, ‘How does a kid even get started with a problem like this?’ That experience itself helped me understand how to build my own math workshop.

This teacher was subsequently able to make further math workshops for students at her school based on what she learned about the SBAC released items and how to use them at her ISD.

Additional resources.

To conclude this section, I asked participants about what types of additional resources would be useful to them in effectively implementing the *CCSSM*. To help scaffold the question, I asked it twice with respect to two broad categories: additional financial resources and additional professional resources. There is some overlap between these two categories; however, it was useful to see how the various participants interpreted the distinction when responding to the questions. For this section, because the MDE and regional professional development provider responses were so similar, the survey items and responses are presented first. The items were: (1) "To implement the *CCSSM* effectively, those in my occupation need more financial resources from the state (potentially including the ability to hire more staff, for example)." (2) "To implement the *CCSSM* effectively, those in my occupation need more professional (that is, non-financial) resources from the state." Participants could rate their levels of agreement with these statements on five-point Likert scales.

"To implement the *CCSSM* effectively, those in my occupation need more financial resources from the state (potentially including the ability to hire more staff, for example)."

"To implement the *CCSSM* effectively, those in my occupation need more professional (that is, non-financial) resources from the state."

	PD Providers	Teachers
Financial	4.46 (0.66)	3.86* (1.06)
Professional	4.12 (0.67)	4.28 (0.68)

1: Strongly disagree, 2: Disagree, 3: Neither agree nor disagree, 4: Agree, 5: Strongly agree

Table 12: Necessity of Additional Financial and Professional Resources

Officials at MDE and the regional professional development providers generally agreed that both additional financial and professional resources would be useful. These beliefs mostly centered on the ability to hire more people to lead more teacher professional development, or the ability to buy substitute teacher time in order to get teachers to such professional development sessions.

One may notice in the table above that while the teachers did agree that more financial resources would be helpful, their level of agreement was at a significantly lower level than that of the professional development providers. When asked about this disparity, teachers would note the major expense of buying new *CCSSM*-aligned curricula (which, depending on when they were bought, may have exhibited dubious levels of *CCSSM*-alignment). Now that

those curricula were in place, they didn't view themselves as having many more financial needs with respect to implementing the standards. They just wanted more professional development to learn how to best use the new curricula their districts had purchased.

CCSSM Readiness

In this section, various aspects of readiness amongst the teachers, students, and schools will be discussed. In particular, this includes perceptions of teacher readiness to teach with respect to the *CCSSM* and perceptions of student and school readiness for the new *CCSSM*-aligned assessments. This section provides supplemental data to address both of the research questions. The overarching findings in this area were that MDE and the professional development providers largely thought readiness would vary from district to district, school to school, even teacher to teacher. Meanwhile, the teachers were confident about their own capabilities regarding implementing the *CCSSM* well; however, they were less confident when considering their students' potential performance on the new assessments.

Teacher readiness.

The first survey item in this section for the professional development providers and teachers was: "Teachers in my region are (/I am) generally successfully implementing the *CCSSM* or are ready to do so." Note that the main text was the version of the item given to the professional development providers, and the parenthetical text was the version of the item given to the teachers. Participants responded with their level of agreement on a five-point

Likert scale. Other survey items in this section were formatted similarly and will be presented similarly.

"Teachers in my region are (/I am) generally successfully implementing the *CCSSM* or are ready to do so."

PD Providers	Teachers
3.44 (0.65)	4.00* (0.68)

1: Strongly disagree, 2: Disagree, 3: Neither agree nor disagree, 4: Agree, 5: Strongly agree

Table 13: Teacher Readiness for CCSSM *Implementation*

When the professional development providers were asked about teacher readiness in their region to teach with respect to the *CCSSM*, they knew there was a large degree of variance. With that in mind, a response like this from one of the professional development providers captures aspects of what all three interviewed professional development providers said:

> Yeah, I think we are giving ourselves too much credit by saying that teachers are ready, and I don't know that, when I look at the data of our school districts prior to the *Common Core*, and how much they were struggling, and knowing how much professional development and support services have been in our school districts, I'm not convinced that they're ready. I think there are still some teachers who haven't so much as

unpacked their standards. So I'm a little, I'm not just a little, I'm quite nervous about the results of the upcoming assessment in the spring.

As one can see in the table above, though, teachers were generally more confident about their readiness to successfully implement the *CCSSM*. If they expressed any hesitance about being ready in terms of their own teaching, it was expressed through qualifying their perceived amount of readiness based on the amount of professional development they had had regarding the *CCSSM*. In one case even a teacher who admitted to having had a good deal of professional development related to the *CCSSM* still felt as though she needed more:

> I would also say that I would like a continued professional development in [the *CCSSM*] because these, the kiddos are getting very savvy, and they are learning math in a whole new way than what my generation was taught. So my foundations are different than their foundations, and so when they're meeting together I am having to re-think the way I am teaching the kiddos and the, even the words I use, yeah, the rhetoric.

Next, professional development providers and teachers were asked if they were ready for the new assessments with the following survey item: "Teachers in my region are (/I am) generally ready for the new *CCSSM* aligned assessments."

“Teachers in my region are (/I am) generally ready for the new *CCSSM* aligned assessments.”

PD Providers	Teachers
2.64 (0.70)	3.31* (0.95)

1: Strongly disagree, 2: Disagree, 3: Neither agree nor disagree, 4: Agree, 5: Strongly agree

Table 14: Teacher Readiness for CCSSM *Aligned Assessments*

When the new *CCSSM* aligned assessments were brought up, the professional development providers’ perceptions of teacher readiness and teachers’ own perceptions of readiness dropped, as can be seen in the above table. This was partially due to the uncertainty regarding what assessment would be given to students.

Student and school readiness.

The other fears among professional development providers and teachers about readiness for the new assessments fell into two categories: those regarding the content of the assessments, and those regarding the computerized format of the assessments. To capture participants’ perceptions of these issues, three survey items were developed: (1) “Students in my region (/classes) are generally ready for the content of the new *CCSSM* aligned assessments.” (2) “Students in my region (/classes) are generally ready to take the new *CCSSM* aligned assessments on computers.” (3) “Technology infrastructure in my region

(/school) is generally ready for the new *CCSSM* aligned assessments." The survey results for each of these questions follow.

"Students in my region (/classes) are generally ready for the content of the new *CCSSM* aligned assessments."

PD Providers	Teachers
2.75 (0.90)	3.01 (0.98)

1: Strongly disagree, 2: Disagree, 3: Neither agree nor disagree, 4: Agree, 5: Strongly agree

Table 15: Student Readiness for CCSSM *Aligned Assessment Content*

"Students in my region (/classes) are generally ready to take the new *CCSSM* aligned assessments on computers."

PD Providers	Teachers
2.60 (0.82)	2.23 (1.17)

1: Strongly disagree, 2: Disagree, 3: Neither agree nor disagree, 4: Agree, 5: Strongly agree

Table 16: Student Readiness for Computerized Assessments

"Technology infrastructure in my region (/school) is generally ready for the new *CCSSM* aligned assessments."

PD Providers	Teachers
2.76 (0.78)	2.57 (1.23)

1: Strongly disagree, 2: Disagree, 3: Neither agree nor disagree, 4: Agree, 5: Strongly agree

Table 17: Technology Infrastructure Readiness

While teachers thought they were doing the best they could in terms of teaching the new standards, some were still skeptical that their students were understanding the mathematics to the extent demanded by the new assessments. One teacher commented, "I don't feel that they can, I don't feel that they're ready for the assessments because they have not had enough time or experience in a classroom that has embraced those mathematical standards. They don't view themselves as mathematicians," while saying that her students still requested more rote, computational types of problems. Again, while not mentioning the Standards for Mathematical Practice by name, the above quote shows that this teacher is worried about aspects of the new assessments that assess those practice standards.

Much more hesitancy was expressed about the computerized aspects of the assessments, though. When asked about readiness of schools across the state for the computerized tests, MDE officials knew that not all schools were ready, but that the state was moving in the right direction. One state official

noted that one strategy used to increase readiness for computerized testing was to spread the window for testing wider than had been the case for previous paper and pencil assessments. "If you look at the readiness for computer adaptive testing, you can spread it over three weeks as compared to a fixed form testing, everyone testing on the same day. Seventy-five percent of the schools [would be] ready [compared] to less than 10% of the schools ready."

Despite MDE's optimism, though, teachers in individual schools had mixed perceptions with respect to their schools' technological readiness. One teacher was in a school that had technology resources that she viewed as being more than adequate:

> I feel like, at least in my district, that we've been really lucky with the amount of technology we have. We've had a full computer lab for longer than I can remember. I have four student computers. This year I got an iPad. And the district bought seventy Chromebooks. So, third, fourth, and fifth was the only ones, we got them in January or February, and third, fourth, and fifth were the only ones allowed to use the Chromebooks, and we were doing the practice *M-STEP* tests online and stuff, so that the kids got used to the tools, what was going to be available, and how to use them.

That view was shared by three other teachers who were interviewed. On the other hand, a teacher from a school with fewer technological resources was concerned about her students' chances: "I don't think the tests are accurate information because if you can't use the equipment maybe you know the answer,

you just don't know how to make the equipment work." This sentiment was also shared by three other teachers who were interviewed.

Interactions with the State

In this section, participants' views with respect to interacting with the state regarding *CCSSM* implementation are examined. This refers to both direct interactions participants might have had with MDE as well as their perceptions of the political feud that emerged regarding the *CCSSM* within the state. This section provides supplemental data to address both of the research questions.

Interactions with MDE.

Early in the study, some members of MDE were concerned that others outside MDE might be frustrated by the compartmentalized nature of the organization. Because of the way MDE is structured, there are people working on curriculum and instruction, assessment, and school reform; however, they do not get the opportunity to work collaboratively as often as they wish. There was concern that that was potentially giving off a less than united message about *CCSSM* implementation. One state level participant spoke about this phenomenon in this way: "The School Reform Office does their work with priority schools. And, for example, the curriculum unit that's embedded within OEII does their work with curriculum and instruction. But it's very rare to have us really working collaboratively together." When later asked if this caused any problems with the schools MDE was working with, the participant continued:

> They absolutely have confusion over who's asking what, and we often hear how we're asking them to do redundant things in many offices. Not

knowing how to navigate MDE and where to go to ask questions. We've actually had this feedback several times with some evaluation work that we've been doing with the field, that we have poor communication inter-office, we're asking them to do redundant work, and then it's just difficult to navigate the various levels here.

Several state level participants echoed this concern about wanting to give a united message and being more accessible to schools. This led to the creation of the following survey item for the regional and local level participants: "Interacting with the various offices at MDE about *CCSSM* has been confusing and/or frustrating." Participants were asked to express their level of agreement with this statement on a five-point Likert scale.

"Interacting with the various offices at MDE about *CCSSM* has been confusing and/or frustrating."

PD Providers	Teachers
2.72 (0.94)	3.42* (1.41)

1: Strongly disagree, 2: Disagree, 3: Neither agree nor disagree, 4: Agree, 5: Strongly agree

Table 18: Interactions with MDE

When asked about this issue, the professional development providers were largely neutral, with a mean rating of 2.72 (close to neither agree nor disagree) on the item. Most of them were connected to MDE well enough and

knew whom they could go to for information and resources. So the compartmentalized nature of MDE was not an issue for them. While the teachers, on average, expressed a slightly higher level of frustration regarding trying to contact MDE, only a very small number of them had tried to do so. Therefore, while this was not a large problem for teachers in terms of the volume of them attempting to contact MDE, the small minority who did attempt to contact MDE became frustrated by the structure.

Political aspects of the *CCSSM* implementation.

Lastly, the effects of the political aspects of the *CCSSM* implementation on these three groups of people will be discussed. At the state level, there was frustration and disillusionment at the political nature of discussions of the *CCSSM*. For example, as mentioned earlier, assessment personnel at MDE had taken a leading role in authoring new assessments associated with SBAC. During the fall of 2013, the state legislature passed a bill saying that state money could not be used for anything related to the *CCSSM*. Therefore, all MDE involvement in authoring the SBAC or providing teacher professional development had to cease. The funding impasse ultimately lasted for six weeks; however, the duration was unknown during the time it was happening. Officials at MDE noted that these six weeks had a lasting impact. One commented that,

> We are now many months behind other states in getting people ready to do professional development around *Common Core*, particularly on assessment practices in *Common Core* because of that pause. We didn't

get in when they were doing it. Now the time has kind of passed, and we're playing catch up.

Similar concerns were voiced by other officials at MDE. They were professional educators hired to do meaningful work in education, but they felt micromanaged and deprofessionalized by the legislature.

Given these concerns from MDE and the political context the *CCSSM* occupied, the following survey item was developed for the regional and local participants: "The political issues pertaining to the *CCSSM* and the *CCSSM* aligned assessments have affected my work over the past year." Again, participants expressed their level of agreement using a five-point Likert scale.

"The political issues pertaining to the *CCSSM* and the *CCSSM* aligned assessments have affected my work over the past year."

PD Providers	Teachers
4.36 (0.81)	3.48* (1.08)

1: Strongly disagree, 2: Disagree, 3: Neither agree nor disagree, 4: Agree, 5: Strongly agree

Table 19: CCSSM *Political Issues Affecting Work*

As can be seen in the table above, the political issues affected the professional development providers and teachers, too, although at different levels and in different ways. Both groups generally agreed that they were affected, but the professional development providers agreed much more strongly

than the teachers, with a 4.36 rating versus 3.48. In general, the professional development providers said that the political issues pertaining to the *CCSSM* had affected them a great deal. One spoke about how complications involving the legislature inserting itself into the assessment process affected their ability to engage teachers:

> Well, it just makes it more challenging when you're working with districts for teacher buy in. So it seems like you have to always make sure that you're getting teachers to buy into what you're doing before you can even get them…you have to get them on the same page with you before you can even start working on improving skills and/or content knowledge, or whatever it may be. And so that's, that is how it has complicated it. I was referring primarily to the assessment, because I just feel like we've been jerked around way too much with the whole assessment issue. I, like I said, continue to plow forward, but it makes your work that much more difficult.

The professional development providers were having some level of difficulty getting the teachers to commit to the professional development when the assessments were still up in the air. In a high stakes testing environment where student assessment outcomes mean a great deal to teachers, it was important for the teachers to have some certainty about what the assessments would look like. Without that, the professional development providers felt somewhat handicapped.

Another professional development provider spoke about how these issues had changed her role in terms of what it meant to be a strong advocate for effective mathematics education:

> The support that we need right now from MDE is a common message. And they're trying to give us a common message, but the legislators are impeding their ability to give a common message right now. You know, when there's questions of whether these standards are going to be our standards, and part of my job then becomes coming and having to testify to the senate, that was not something, I'm not a political person. That's not my strength, but I had to testify in front of a group of senators about what was in the *Common Core* and why they're a good thing. That's not something I'm comfortable doing, and that is a change in my job, that I now have to be an advocate in a different way for education than I ever thought I'd have to be. Given the political environment, writing to legislators, and trying to get meetings with them and realizing they really have already made up their minds, and so they're not going to talk to me anyway. That's been a very enlightening process, but a very discouraging process of what's really happening.

This professional development provider echoes the sentiments of disillusionment that some members of MDE expressed. She had been a mathematics educator for years, but this was a new form of advocacy for quality mathematics education that she had never envisioned taking on. When she did so, she found it frustrating and discouraging that so many influential non-professional educators

had made up their minds with respect to the *CCSSM* based on dubious information.

While the teachers agreed that the political issues had affected their work, their level of agreement was significantly less than that of the professional development providers. When questioned about how they had been affected, most reported having fielded questions and concerns from parents of students or even their own family members. They differed from the professional development providers in their willingness to view themselves as apolitical actors. One representative quote from a teacher is,

> Yeah, it's a little frustrating. But to add to that, I'm still going to go and do my job every single day. And I feel like I know my kids, and I know what they need. And no matter what changes come in, they've always, in the last fifteen years, they've always seemed to be similar.

Teachers would say that they "weren't political people", seemingly as a way to avoid publically taking a side on the issue, and that they just wanted to do what they knew was best for their students despite whatever was happening in the legislature. Given their interactions with parents with views across the political spectrum with respect to the *CCSSM*, they may have viewed this as the safest public statement they could make with respect to the *CCSSM* to stay out of the fray. This seems to imply that they felt staying out of the discussion would allow them to be more effective teachers than publically taking a side.

Chapter IV: Discussion

Organization of the Chapter

The results of this study will be summarized sequentially within the four main results categories from the previous chapter (goals of the *CCSSM*, methods of support for teachers, *CCSSM* readiness, and interactions with the state) and placed in the context of extant literature. Next, recommendations and limitations of this study will be discussed.

Summary

Goals of the *CCSSM*.

The results regarding the goals of the *CCSSM* most directly answered the first research question: To what degree is there alignment between Michigan Department of Education (MDE) officials', regional professional development providers', and teachers' views of the goals of *CCSSM* implementation? Among the three groups of stakeholders considered in this study, there were areas of shared understanding and areas of disagreement regarding the goals of the *CCSSM*. First, there was disagreement between the stakeholders about whether the amount of new topics and grade level shifts in content were significant. Officials at MDE held a unified view that there were few new topics and grade level shifts in content. They especially downplayed the new topics and grade level shifts in content in comparison to changes in teaching promoted by the *CCSSM*'s Standards for Mathematical Practice. The teachers, however, found the changes in content to be significant. Furthermore, they viewed learning new ways of teaching familiar content as new content that they had to learn. The

professional development providers largely agreed with the teachers on this point, citing that they directly worked with teachers who were struggling with content issues. Related to these findings, there was disagreement about the amount of content covered by the *CCSSM* compared to Michigan's previous *GLCEs*. For the reasons discussed previously, teachers viewed the new standards as containing more content. This view was not shared by the MDE officials or the professional development providers.

On the other hand, there were significant areas of shared understanding among the three groups of stakeholders regarding the goals of the *CCSSM* as well. The MDE officials, professional development providers, and teachers all agreed that the transition to the *CCSSM* was more about a transition with respect to the teaching and learning of mathematics than a transition in content to be taught. More specifically, all three groups agreed that the *CCSSM* demanded more depth and rigor with respect to both how teachers conceptualize their teaching of mathematics and how students engage with and understand mathematics. All three groups generally viewed the transition to the *CCSSM* as a positive change; however, the degree to which the teachers agreed with this position was lower. Several teachers cited concerns about the *CCSSM*'s developmental appropriateness for students at their grade levels, a lack of time for themselves to prepare properly for the change, and a lack of immediate positive success with students.

As described in the first chapter, knowing the views of various stakeholders regarding what the *CCSSM* and its goals are is an important piece

of understanding the implementation process. Ghods (2014) echoes this, saying that one reason reforms sometimes fail is a lack of shared understanding between teachers and other members of the education system. In her study of fourth grade teachers in Illinois, Indiana, and Michigan, Ghods also noted that one important aspect of teachers' decision making with respect to implementing a reform is if the teachers valued the reform. Reece (2014) found that teacher perceptions of the *CCSSM* directly influenced the success of the implementation of the standards. Here, there was general agreement that the change to the *CCSSM* was positive, and that teachers would have to learn to teach for more depth and understanding. The results of this study show that the teachers do value the reform. Matlock et al. (2016) showed that teachers had a positive attitude with respect to implementing the *CCSSM*, particularly at the elementary level. Reece (2014) also found that teachers in Nevada viewed the change to the *CCSSM* positively, and that teachers knew they would have to teach with greater levels of depth. Walker (2016) also found strong positive feelings among teachers with respect to the *CCSSM*, and specifically with respect to the Standards for Mathematical Practice. Unlike some teachers in this study, teachers in her study had positive results with students when they were first trying to focus on the practice standards in their teaching.

With respect to similarity to previous standards, Porter et al. (2011) studied the degree of alignment between the *CCSSM* and many states' previous standards. Across all the states whose previous standards they compared to the *CCSSM*, they found only low to moderate alignment with the *CCSSM*. Porter et

al.'s results do not stand entirely in contrast to this study, though. First, for Michigan, the authors compared the second, third, fourth, and fifth grade *GLCEs* to the *CCSSM*. For each of those four grades, with an average of 16 states being compared at each grade level, Michigan's previous standards were the most closely aligned to the *CCSSM* of any state in the study at all four grade levels. Furthermore, Porter et al. determined alignment along two axes: content topics and levels of cognitive demand. Although the authors did not present state-by-state data broken out along these two dimensions, they noted that much of the non-alignment with states' previous standards was due to the *CCSSM*'s focus on higher levels of cognitive demand. This correlates well with this study's participants at all levels voicing a need for higher levels of depth and rigor in mathematics teaching.

Methods of support for teachers.

The results regarding the methods of support for teachers most directly answered the second research question: Do those outside MDE charged with the implementation feel adequately supported in effecting their part of the transition to the *CCSSM*? One main finding in this section of results was that the teachers were generally less familiar with various support mechanisms than officials at MDE hoped they would be. The three support mechanisms cited most often by MDE officials were the *Crosswalk* documents, sample *CCSSM* units created by MAISA, and sample released items from the new *CCSSM* aligned SBAC assessment. The other main finding in this section was that all stakeholders

would like for teachers to have more professional development opportunities as well as more time to thoughtfully implement the *CCSSM*.

The *Crosswalk* documents were made to show teachers in Michigan that the content of the *CCSSM* aligned closely with the content of Michigan's previous *GLCEs*. Relatively few teachers had heard of the *Crosswalk* documents, and the teachers who had only found them to be somewhat useful. This lack of teacher familiarity may have been partially due to the professional development providers' negative views of the *Crosswalk* documents. They thought the *Crosswalk* documents would allow teachers to think few changes needed to be made, which counteracted their effort to raise the level of mathematics teaching in their regions.

MDE officials and professional development providers thought highly of the sample *CCSSM* units prepared by MAISA. Teachers' views on the units were split. Among the teachers who had heard of the sample units and used them, they were highly regarded. Still, many of the teachers did not know sample units existed for the *CCSSM*. Many more teachers knew that sample units existed for the new English language arts standards, though. This may have been due to the latter samples providing day-to-day lessons.

Finally, stakeholders' views of the SBAC released items were similar to their views of the MAISA sample units. The MDE officials and professional development providers thought highly of them, particularly because they were well aligned to the *CCSSM* and showed how the Standards for Mathematical practice would be assessed. Teachers were, again, less familiar with the SBAC

released items, and there was split opinion on them among the teachers who were familiar with them. Some teachers who found the released items to not be useful did so because of the amount of uncertainty regarding what assessment would be given in the state.

The most general finding of teachers desiring more professional development with respect to the *CCSSM* is well substantiated in the literature. Romero (2015) found that such professional development was most effective when teachers found the presenters to be credible based on the presenters' past teaching experience. In this study of Michigan, teachers who were interviewed had only positive things to say regarding the regional professional development providers. The teachers in Walker's (2016) study desired professional development that took care to engage them at their level of understanding when the new standards were introduced. McGurn's (2014) study of teachers in Iowa, Kansas, Missouri, Oregon, and Vermont found that teachers most desired resources with respect to *CCSSM* implementation were more time to thoughtfully implement the standards and more professional development to help them do so. All of these findings align well with the results of this study.

With respect to one of the support mechanisms specifically considered in this study, Michigan's *Crosswalk* documents, one other study considered the analogous documents in another state. Sheppard (2013) studied teachers' views of Arkansas's *Crosswalk* documents. She found substantially similar results to this study: Few teachers had heard of the Arkansas *Crosswalk* documents, and those who had heard of them only found them somewhat helpful.

***CCSSM* readiness.**

MDE officials and the regional professional development providers viewed *CCSSM* readiness as very mixed from district to district, school to school, and teacher to teacher. In contrast, both teachers who took the survey and those who completed follow up interviews were generally optimistic regarding their success at implementing the *CCSSM* in their classrooms. Despite this, all stakeholders were unsure how ready students were for the content of the new *CCSSM* aligned assessment. Content aside, state level participants were confident about students' readiness to take the new assessment on computers. The professional development providers and teachers generally expressed more trepidation about students' abilities to succeed on a computer-based assessment. The concerns centered on students' levels of familiarity with computers and on schools' technology infrastructure relative to the amount of testing.

Sheppard's (2013) study found that teachers in Arkansas reported widely varying levels of readiness to implement the *CCSSM* in their own classrooms. While that disagrees with the self reports of teachers in this study, it does align with MDE and professional development providers' views. The Arkansas teachers' self reported levels of readiness varied considerably with whether they felt their district had a strong commitment to professional development around the standards. In addition, it is possible that the Arkansas teachers received substantially different professional development support in comparison to the teachers in the present study. In this study of Michigan, while the teachers

generally desired more professional development, they were generally confident about their ability to implement the *CCSSM* well regardless of how much professional development they had had.

Studies have shown mixed findings with respect to teachers' perceptions of readiness for the *CCSSM*, though. While Sheppard (2013) found the teachers to have mixed views of their own readiness, and this study found teachers perceiving themselves as implementing the standards well but unsure of their students' readiness for the level of academic rigor, Ghods (2014) found teachers to be optimistic with respect to both their own readiness and that of their students. She reported that 88% of teachers reported implementing the standards in their teaching, and 94% of the teachers thought the *CCSSM* was at the appropriate level for their students' mathematical abilities. More akin to Sheppard's (2013) results, Walker (2016) found teachers to be wary of both their own level of familiarity with the *CCSSM* and with the challenges they perceived students to be having with the new standards. Similarly, McGurn (2014) found that only 67% of teachers felt at least somewhat prepared to use the *CCSSM*. While the teachers in her study did not express worry about the grade level appropriateness of the *CCSSM*, they were concerned about their students not having the background knowledge to succeed with the *CCSSM* while the transition was happening.

One important aspect of *CCSSM* implementation that the various results discussed in this section serve to highlight is the varied timeframes for implementation in different locations. While states generally adopted the

CCSSM as their mathematics standards within a relatively short window of time, a great deal of variance in readiness can be seen within and across states three to five years after that time.

Interactions with the state.

During the first phase of the study, MDE officials expressed concern that the department's compartmentalized structure might confuse or otherwise negatively affect other members of Michigan's education system who might be seeking information about the *CCSSM* from the state. The professional development providers had relatively few problems in this area as they generally knew who to get into contact with and how to contact them about specific questions. Few of the teachers tried contacting the MDE with concerns about the *CCSSM*; however, those who did were often frustrated by the experience.

Also, the political controversy regarding *CCSSM* implementation affected all three groups of stakeholders, but in different ways. First, the professional educators at MDE felt somewhat hamstrung in their ability to do their job with respect to *CCSSM* implementation as well as possible because of all the political and legislative actions regarding the standards at the state level. Next, the professional development providers indicated that their work was greatly affected by the controversy. While being career-long advocates of quality mathematics education, testifying at sometimes hostile legislative hearings and lobbying legislators was not a form of advocacy that they were accustomed to or enjoyed. They also found it difficult to get engagement from some teachers at professional development sessions due to the uncertainty of the status of the standards and

the new assessments. Meanwhile, teachers agreed that the controversy around the *CCSSM* affected their work, but to a lesser degree. When asked about the issue during follow up interviews, teachers would consistently say two things. First, they said they would teach their students whatever the standards were in the best way that they knew how to do so. Second, they would extricate themselves from the controversy by identifying themselves as apolitical and not publically taking a side.

With respect to the teachers, the teachers in Romero's (2015) study felt similarly in control of their classrooms and expressed that they knew what was best for their students regardless of the current policy context. Romero's teachers differed, though, in that rather than calmly removing themselves from the contentious situation they were more emotionally involved.

The frustration found in this study on the part of the MDE officials and the regional professional development providers regarding the politically contentious environment the *CCSSM* came to occupy correlates with other literature. What they widely perceived to be a well constructed set of mathematics standards was adopted by the state board of education in 2010. Only two to three years later, during crucial stages of implementation, did the controversy appear to reach a critical mass. McDonnell and Weatherford (2016) discussed this phenomenon by comparing what they referred to as the politics of enactment versus the politics of implementation. Their argument was that it is relatively easy to enact a policy (here, adopt the *CCSSM*) with broad support from high level organizations that represent many stakeholders. Once the policy begins to be implemented,

though, organizations that originally gave their full-throated support to the reform moderate their stance as their constituents communicate with them about their experiences with the reform. This is what happened with some leading teacher organizations following the enactment and implementation of the *CCSSM*.

Finally, one of the professional development providers cited in the results chapter expressed difficulty regarding speaking to legislators about the *CCSSM* when it seemed they had already made their decisions. Results from a study in California by Polikoff, Hardaway, Marsh, and Plank (2016) support this professional development provider's view. They found some of the leading predictors of disposition toward the *CCSSM* were participants' approval levels for President Obama and for the state's current school funding scheme. With these associations, support for the *CCSSM* fell largely along partisan lines.

Unfortunately, many of these problems all too closely parallel the paths of previous mathematics education standards reform efforts. For an example of this, one can once again consider the California framework of the late 1980s and early 1990s (Wilson, 2003). This was a standards reform effort that sought strong alignment between standards, enacted curriculum, and assessments. Just as with the *CCSSM*, the policy levers affecting each of these aspects of implementation initially moved in harmony, but later began to move with less synchrony as controversy grew. In the cases of both the California framework and the *CCSSM*, McDonnell and Weatherford's (2016) treatment of the politics of enactment versus the politics of implementation seems apt. Both reform efforts began strongly, then suffered significant setbacks as the reforms began to enter

classrooms. In the end, the California framework lasted little longer than one seven-year revision cycle. It remains to be seen how long the *CCSSM* will endure.

Recommendations

This section will suggest recommendations for future standards implementation efforts in Michigan and elsewhere.

Treat shifts in content as significant.

Agencies charged with assisting teachers in implementing new standards should treat all shifts in content as significant. This is not to say that the shifts should be treated as overly significant if they are minimal; however, they need to be directly acknowledged and discussed. If, as all stakeholders agreed was the case with the *CCSSM*, the change in standards is more about changes in teaching and learning than it is changes in content, the professional development experiences focused on changes in teaching can use lessons involving new content as a context for their discussions.

***Crosswalk* documents should address content and practices.**

The MDE and other state education agencies made *Crosswalk* documents to highlight the relatively small shifts in content from their previous standards to the *CCSSM*. A fear arose among the professional development providers that these documents would turn the new standards into a checklist. To avoid this happening in the future, *Crosswalk* documents could highlight both shifts in content and shifts in teaching and learning related to practice standards. Granted, Michigan's previous *GLCEs* did not have practice standards; however,

if there is fear about the new standards being treated as “business as usual” as one MDE official put it, then the *Crosswalk* documents could be used to highlight desired changes in practice as well.

Limitations and Recommendations for Further Research

Aside from the limitations already discussed in the methods chapter, it must be acknowledged that this is a case study of only one state. Generalizability to other states could depend on how similar those states are to Michigan. For example, Michigan has a robust intermediate school district system that employs full time, subject specific professional development providers. The experiences of those in other states that do not have an analog to the ISD structure or similar consistent access to professional development providers may differ. Therefore, similar studies should continue to be done in other states. In that fashion, this study will become part of a mosaic of results regarding differing stakeholders’ views of the implementation of the *CCSSM*.

With respect to stakeholders, the scale of this study only allowed for the inclusion of MDE officials, professional development providers, and elementary teachers. Ideally, studies with a wider variety of stakeholders should be conducted. These other stakeholders include teachers from across the K-12 spectrum, building administrators, district administrators, parents, and policy makers.

APPENDICES

APPENDIX A

Regional Survey

1) Place of Employment:

2) Job Title:

3) Years of experience in present job:

4) Degree(s) obtained and major(s):

5) There really is not much new mathematics in the *CCSSM*, nor are there that many grade level shifts in when mathematics topics should be taught. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

6) The transition to the *CCSSM* is less about a transition in mathematical content for teachers and students than it is about a transition in teaching as expressed in the Practice Standards. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

7) Compared to Michigan's previous *Grade Level Content Expectations* (*GLCEs*), I think the *CCSSM* covers (less content., about the same amount of content., more content.)

8) Compared to Michigan's previous *GLCEs*, a greater level of depth and rigor in mathematics is needed for teachers and students to meet the *CCSSM*'s standards. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

9) I view Michigan's transition to the *CCSSM* as a positive change. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

10) How familiar are you with the Michigan Department of Education's (MDE's) *Crosswalk* documents that compare the prior Michigan *GLCEs* with the *CCSSM*? (Not at all familiar, Slightly familiar, Somewhat familiar, Moderately familiar, Extremely familiar)

10a) (If "Not at all familiar" was not selected:) How useful have MDE's *Crosswalk* documents been for you? (Not at all useful, Slightly useful, Somewhat useful, Moderately useful, Extremely useful)

11) How familiar are you with the sample units and/or lessons from the Michigan Association of Intermediate School Administrators (MAISA)? (Not at all familiar, Slightly familiar, Somewhat familiar, Moderately familiar, Extremely familiar)

11a) (If "Not at all familiar" was not selected:) How useful have MAISA's sample units and/or lessons been for you? (Not at all useful, Slightly useful, Somewhat useful, Moderately useful, Extremely useful)

12) How familiar are you with the Smarter Balanced Assessment Consortium (SBAC) program and its released items? (Not at all familiar, Slightly familiar, Somewhat familiar, Moderately familiar, Extremely familiar)

12a) (If "Not at all familiar" was not selected:) How useful have the SBAC released items been for you? (Not at all useful, Slightly useful, Somewhat useful, Moderately useful, Extremely useful)

12b) (If “Not at all familiar” was not selected:) In the time since the decision was made to use the *M-STEP* test during the 2014-15 school year, how have your views of the usefulness of the SBAC released items changed? (Not at all changed, Slightly changed, Somewhat changed, Moderately changed, Changed a great deal)

13) Did you attend one of MDE’s regional *CCSSM* Rollout sessions in 2010? (No, No because I was not in my current position in 2010, Yes)

13a) (If “Yes” was selected:) How useful was the MDE Rollout session for you? (Not at all useful, Slightly useful, Somewhat useful, Moderately useful, Extremely useful)

14) How familiar are you with MTRAx Interactive? (Not at all familiar, Slightly familiar, Somewhat familiar, Moderately familiar, Extremely familiar)

14a) (If “Not at all familiar” was not selected:) How useful has MTRAx Interactive been for you? (Not at all useful, Slightly useful, Somewhat useful, Moderately useful, Extremely useful)

15) I have worked with a Mathematics and Science Partnership grant in my region. (No, Yes)

16) To implement the *CCSSM* effectively, those in my occupation need more financial resources from the state (potentially including the ability to hire more staff, for example). (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

17) To implement the *CCSSM* effectively, those in my occupation need more professional (that is, non-financial) resources from the state. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

18) Priority schools are supported in making the *CCSSM* transition more than other schools. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

19) Teachers in my region are generally successfully implementing the *CCSSM* or are ready to do so. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

20) Teachers in my region are generally ready for the new *CCSSM* aligned assessments. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

21) Students in my region are generally ready for the content of the new *CCSSM* aligned assessments. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

22) Students in my region are generally ready to take the new *CCSSM* aligned assessments on computers. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

23) School technology infrastructure in my region is generally ready for the new *CCSSM* aligned assessments. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

24) I work closely with school/district math coaches in my region. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

25) There is a significant movement to “opt out” of the *CCSSM* and/or the *CCSSM* aligned assessments in my region. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

26) Interacting with the various offices at MDE about *CCSSM* has been confusing and/or frustrating. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

27) Teachers in my region have had difficulty unpacking what *CCSSM* standards mean. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

28) The political issues pertaining to the *CCSSM* and the *CCSSM* aligned assessments have affected my work over the past year. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

29) Would you like to say more about anything pertaining to any of the questions I have asked? If so, please do so here.

30) Are there aspects of *CCSSM* implementation that are important to you in your job that were not discussed in this survey? If so, please describe them.

APPENDIX B

Local Survey

1) Job Title:

2) What grade(s) do you currently teach? Please check all that apply: (Pre-K, Kindergarten, First, Second Third, Fourth, Fifth, Sixth (all subjects, self-contained classroom), Sixth (mathematics), Seventh (all subjects, self-contained classroom), Seventh (mathematics), Eighth (all subjects, self-contained classroom), Eighth (mathematics), Other (please specify on the next question))

2a) (If "Other" was selected:) Please specify what you mean by responding "Other" to the question "What grade(s) do you currently teach?"

3) Including this year, how many years of experience do you have teaching the grade(s) you are currently teaching?

4) Over the course of your career, what grades have you taught? Please check all that apply: (Pre-K, Kindergarten, First, Second Third, Fourth, Fifth, Sixth (all subjects, self-contained classroom), Sixth (mathematics), Seventh (all subjects, self-contained classroom), Seventh (mathematics), Eighth (all subjects, self-contained classroom), Eighth (mathematics))

5) Including this year, how many total years of teaching experience do you have?

6) Place of Employment:

7) Is your school a priority school? (No, Yes)

8) Degree(s) obtained and major(s):

9) During your professional experience, have you worked under other standards prior to the *Common Core State Standards for Mathematics* (*CCSSM*)? (Yes, I have worked under previous standards; No, my entire career has been under the *CCSSM*)

10) (Suburban region only:) Are you a member of the [teacher math committee]?

11) (Suburban region only:) For tracking purposes that will help me to characterize survey respondents, who forwarded you the email for this survey? Please answer with a name.

12) How familiar are you with the *CCSSM* Content Standards for the grade(s) you teach? (Not at all familiar, Slightly familiar, Somewhat familiar, Moderately familiar, Extremely familiar)

13) How familiar are you with the *CCSSM* Standards for Mathematical Practice? (Not at all familiar, Slightly familiar, Somewhat familiar, Moderately familiar, Extremely familiar)

14) When planning lessons, with respect to the *CCSSM* Content Standards, I think the Standards for Mathematical Practice are (much less important., less important., equally important., more important., much more important.)

15) There really is not much new mathematics in the *CCSSM*, nor are there that many grade level shifts in when mathematics topics should be taught. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

16) The transition to the *CCSSM* is less about a transition in mathematical content for teachers and students than it is about a transition in teaching and learning (as expressed in the Standards for Mathematical Practice). (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

17) Compared to Michigan's previous *Grade Level Content Expectations* (*GLCEs*), I think the *CCSSM* covers (less content., about the same amount of content., more content.)

18) The transition to the *CCSSM* allows me to explore mathematical topics more deeply with my students. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

19) Compared to Michigan's previous *GLCEs*, a greater level of depth and rigor in mathematics is needed for teachers and students to meet the *CCSSM*'s standards. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

20) I perceive the *CCSSM* Content Standards to be less like a checklist than I did Michigan's previous *GLCEs*. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

21) There are more clear learning progressions in the *CCSSM* than in Michigan's previous *GLCEs*. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

22) I view Michigan's transition to the *CCSSM* as a positive change. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

23) It has been easier to find and/or access useful resources related to the *CCSSM* than to Michigan's previous *GLCEs*. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

24) Have *CCSSM* aligned professional development (PD) opportunities been available to you? (Note: This is not asking whether you ultimately attended them, merely if the opportunity to do so was available.) (No, Yes)

25) I have had adequate opportunities for PD related to the *CCSSM*. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

26) Have you attended *CCSSM* aligned PD? (No, Yes)

27) (If "Yes" was selected:) Have you attended *CCSSM* aligned PD provided by your intermediate school district (ISD) and/or regional Math and Science Center? (No, Yes)

28) (If "Yes" was selected on question 24:) Have you attended *CCSSM* aligned PD provided by your school and/or district? (No, Yes)

29) In general, my *CCSSM* aligned PD experiences have been (Not at all useful, Slightly useful, Somewhat useful, Moderately useful, Extremely useful)

30) Does your school and/or district have a math coach/consultant? (No, Yes)

31) How familiar are you with the Michigan Department of Education's (MDE's) *Crosswalk* documents that compare the prior Michigan *GLCEs* with the *CCSSM*? (Not at all familiar, Slightly familiar, Somewhat familiar, Moderately familiar, Extremely familiar)

31a) (If “Not at all familiar” was not selected:) How useful have MDE’s *Crosswalk* documents been for you? (Not at all useful, Slightly useful, Somewhat useful, Moderately useful, Extremely useful)

32) How familiar are you with the sample units and/or lessons from the Michigan Association of Intermediate School Administrators (MAISA)? (Not at all familiar, Slightly familiar, Somewhat familiar, Moderately familiar, Extremely familiar)

32a) (If “Not at all familiar” was not selected:) How useful have MAISA’s sample units and/or lessons been for you? (Not at all useful, Slightly useful, Somewhat useful, Moderately useful, Extremely useful)

33) How familiar are you with the Smarter Balanced Assessment Consortium (SBAC) program and its released items? (Not at all familiar, Slightly familiar, Somewhat familiar, Moderately familiar, Extremely familiar)

33a) (If “Not at all familiar” was not selected:) How useful have the SBAC released items been for you? (Not at all useful, Slightly useful, Somewhat useful, Moderately useful, Extremely useful)

33b) (If “Not at all familiar” was not selected:) In the time since the decision was made to not use the SBAC test during the 2014-15 school year, how have your views of the usefulness of the SBAC released items changed? (Not at all changed, Slightly changed, Somewhat changed, Moderately changed, Changed a great deal)

34) Did you attend one of MDE’s regional *CCSSM* Rollout sessions in 2010? (No, No (I was not in my current position in 2010), Yes)

34a) (If “Yes” was selected:) How useful was the MDE Rollout session for you? (Not at all useful, Slightly useful, Somewhat useful, Moderately useful, Extremely useful)

34b) (If “No” was selected:) Did someone ever present to you about one of MDE’s regional *CCSSM* Rollout sessions? (No, I don’t remember, Yes)

34c) (If “Yes” was selected:) How useful was the presentation about the MDE Rollout session for you? (Not at all useful, Slightly useful, Somewhat useful, Moderately useful, Extremely useful)

35) How familiar are you with MTRAx interactive? (Not at all familiar, Slightly familiar, Somewhat familiar, Moderately familiar, Extremely familiar)

35a) (If “Not at all familiar” was not selected:) How useful has MTRAx Interactive been for you? (Not at all useful, Slightly useful, Somewhat useful, Moderately useful, Extremely useful)

36) I have done work and/or PD associated with a Mathematics and Science Partnership grant? (No, I don’t know, Yes)

37) To implement the *CCSSM* effectively, those in my occupation need more financial resources from the state. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

38) To implement the *CCSSM* effectively, those in my occupation need more professional (that is, non-financial) resources from the state. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

39) To implement the *CCSSM* effectively, those in my occupation need more professional resources from the ISD. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

40) To implement the *CCSSM* effectively, those in my occupation need more resources from the school and/or district. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

41) To implement the *CCSSM* effectively, those in my occupation need more professional resources from the school and/or district. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

42) Priority schools are supported in making the *CCSSM* transition more than other schools. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

43) My teaching has changed, or will need to change, in a way that is significant to me because of *CCSSM* implementation. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

43a) (If “Agree” or “Strongly Agree” was selected:) That significant change in your teaching is (exclusively about content., more about content than how you teach., equally about content and how you teach., more about how you teach than content., exclusively about how you teach.)

44) Currently, I am confident in my knowledge of mathematics. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

45) As a result of the transition to the *CCSSM* and any associated PD I have done, my confidence in my knowledge of mathematics has (greatly decreased.,

somewhat decreased., neither increased nor decreased., somewhat increased., greatly increased.)

46) Currently, I am confident in my teaching of mathematics. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

47) As a result of the transition to the *CCSSM* and any associated PD I have done, my confidence in my teaching of mathematics has (greatly decreased., somewhat decreased., neither increased nor decreased., somewhat increased., greatly increased.)

48) My curriculum is well aligned to the *CCSSM*. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

49) I am generally successfully implementing the *CCSSM* or am ready to do so. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

50) I am generally ready for the new *CCSSM* aligned assessments. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

51) Students in my class(es) are generally ready for the content of the new *CCSSM* aligned assessments. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

52) Students in my class(es) are generally ready to take the new *CCSSM* aligned assessments on computers. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

53) Technology infrastructure in my school(s) is generally ready for the new *CCSSM* aligned assessments. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

54) Which option best describes your view of your school's (or schools') *CCSSM* implementation process? (Relatively smooth transition over several years, Relatively abrupt transition a few years ago, Relatively abrupt transition this year and/or last year, There hasn't really been any transition, Other (please specify on the next question))

54a) (If "Other" was selected:) What did you mean by "Other" on the previous question?

55) How familiar do you believe your school's (or schools') administrators are with the *CCSSM* Content Standards? (Not at all familiar, Slightly familiar, Somewhat familiar, Moderately familiar, Extremely familiar)

56) How familiar do you believe your school's (or schools') administrators are with the *CCSSM* Standards for Mathematical Practice? (Not at all familiar, Slightly familiar, Somewhat familiar, Moderately familiar, Extremely familiar)

57) With respect to the *CCSSM* Content Standards, I believe my school's (or schools') administrators think the Standards for Mathematical Practice are (much less important., less important., equally important., more important., much more important.)

58) I work closely with ISD level mathematics consultants and/or PD providers. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

59) There is a significant movement to "opt out" of the *CCSSM* and/or the *CCSSM* aligned assessments in my school(s). (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

60) Interacting with the various offices at MDE about *CCSSM* has been confusing and/or frustrating. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree, I haven't attempted to interact with MDE about *CCSSM*)

61) I have had difficulty unpacking what *CCSSM* standards mean. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

62) With respect to various other initiatives happening in my school(s), I consider the transition to the *CCSSM* to be a relatively high priority. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

63) With respect to various other initiatives happening in my school(s), my school's (or schools') administrators consider the transition to the *CCSSM* a relatively high priority. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

64) The political issues pertaining to the *CCSSM* aligned assessments have affected my work over the past year. (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, Strongly Agree)

65) (Suburban region only:) Did you participate in the pilot and review of the MAISA sample units?

66) Would you like to say more about anything pertaining to any of the questions I have asked? If so, please do so here.

67) Are there aspects of *CCSSM* implementation that are important for you in your job that were not discussed in this survey? If so, please describe them.

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