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Implementing the Common Core State Standards for Mathematics

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COLLEGE OF EDUCATION

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Susan Hinkley

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Abstract

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Doctoral Study Submitted in Partial Fulfillment

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Abstract

Current research and declining test scores indicate that changes in educational practice are required for successful implementation of the Common Core State Standards for Mathematics (CCSSM). Using a constructivist change theory framework, this grounded theory study explored the experiences 6 purposefully selected, experienced teachers at an Upstate New York school district had related to the implementation of the CCSSM. The research question investigated the experiences that educators had related to implementing the CCSSM and the accompanying New York State mathematics modules. Observation notes, interview transcripts, and teachers' journals were collected and analysed simultaneously through coding, constant comparison, theoretical sampling, and memoing. The core concern that emerged was the lack of alignment between the standards and the curriculum being used to teach them. This lack of alignment was related to oversized and repetitive lessons, as well as the de-emphasis on teaching the mathematical practice standards that are a large part of CCSSM. These factors caused teachers to invest large amounts of time re-writing curriculum. Findings suggest that administrator-supported adaptive professional development is required to strategically address experienced educator needs while allowing for educator autonomy in curriculum design. The project, an adaptive professional development plan, will support experienced educators as they enact modifications to curriculum in order to address the changes in teacher practice and student learning that are needed to align instruction with CCSSM . This project can be used on a wider scale and can contribute to the knowledge base of implementation models for educators to enact the changes in instruction necessary to improve student mastery of the CCSSM.

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Table of Contents

List of Tables

List of Figures

Section 1: The Problem

Since the 1980s, schools in the United States have been inundated with mandates and a push for higher standards (Johanningmeier, 2010; Kulm, Wilson, & Kitchen, 2005; Montgomery, 2012; Paik et al., 2011; U.S. Department of Education, n.d.). Low test scores and high drop-out rates have created and sustained public concerns about the quality of K-12 education for the past 3 decades (Ferris, Hentschke, & Harmssen, 2008; Reese, 2013). In 1994, in response to 90% of schools receiving Title 1 funds under the 1965 Elementary Secondary Education Act (ESEA), the Clinton administration reauthorized ESEA and set a standards-based agenda for Title 1 funds (Groen, 2012). Again in 2001, under the Bush administration, the law was transformed and renamed No Child Left Behind (NCLB).

States lowering their standards, the narrowing of the curriculum, and a lack of educator buy-in were attributing factors to the failure of the NCLB legislation (Groen, 2012). States were mandated to implement standard-based instruction and standardized assessments in order to receive funding. If districts did not make adequate yearly progress (AYP) on the state assessments as defined under the NCLB law, they faced sanctions. Standards were different for each state and soon states began lowering their standards to avoid sanctions (Groen, 2012; Lehr, 2010; Mulvenon & Robinson, 2014; Stephenson, 2006). Testing became the focus of instruction and in an attempt to cover numerous standards, instructional practices became limited to a rush to teach to the test. Quality instruction that fosters student achievement had been replaced by a narrowed curriculum (Desimone, 2013; Liebtag, 2013; Nichols & Berliner, 2008). Furthermore, researchers

have found that due to lack of educator buy-in there was little to no implementation of state standards at the instructional level (Liebtag, 2013). The narrowing of the curriculum to lower level skill and drill, lowering of standards, and lack of educator buy-in led to a downward performance on assessments.

Relative to other countries, there has been a downward performance for United States students on international assessments, as well as on national assessments (Schmidt & Houang, 2012). Twenty-six percent of 12th graders were proficient in mathematics (National Center for Education Statistics, 2015) and 23% of students required remedial education when they enter college (National Center for Education Statistics, 2013.). The number of students successfully completing college was not keeping up with workforce needs (Bridgeland, Milano, & Rosenblum, 2011; Camevale & Rose, 2011). Students were facing high expectations as they prepare to attend college or begin careers. The National Council of Teachers of Mathematics (NCTM), educators, business leaders, politicians, and parents were calling for education to better prepare students to compete in today's economy.

In response to the perceived problems with the United States curriculum under NCLB, the state-led Common Core State Standards for Mathematics (CCSSM) were released in 2010 (Council of Chief State School Officers, 2014). The CCSSM were written by the Council of Chief State School Officers and The National Governors Association Center for Best Practices. States now have a set of more rigorous common mathematics standards that are supported by NCTM and they were becoming ingrained in education policy (NCTM, 2016). Forty-two states, four territories, the District of

Columbia, and the Department of Defense Education Activity have adopted the new standards (Common Core State Initiative, 2016).

Although many researchers have agreed that the new CCSSM are focused, rigorous, and coherent compared to those of top achieving countries, they also agreed that they are a considerable change in instructional practice from the previous standards (Cobb & Jackson, 2011; Porter, McMaken, Hwang, & Yang, 2011). Without updating instruction and curriculum to align with the CCSSM standards, students will not receive the full benefit of the new curriculum, which is clearly reflected in the decline of assessment scores (EngageNY, 2014). The recent release of student state test scores for a rural Upstate New York school district has indicated a gap between current teaching practice and the assessments designed to assess mastery of the CCSS. In the following section, I discuss the issues that this district faces when aligning teaching practices and implementation of the new CCSSM.

Definition of the Problem

Researchers have found traditional instructional practices currently being implemented across the United States lack sufficient alignment with the new Common Core State Standards and state assessments (Cobb & Jackson. 2011; Porter et al., 2011; Schmidt & Houang, 2012). This has led to considerable changes in practice (Bostic & Matney, 2013). Educators need to align their current teaching practices with the CCSSM in order to promote student achievement (Fulmer, 2011). Therefore, with this study I explored the problem of alignment between curriculum and instruction with the new

CCSSM, as highlighted by the decline of student scores on the New York State math assessments.

The new CCSSM direct what content to teach, but not how to teach the standards in engaging and effective ways (Beckmannn, 2011, Porter et al., 2011). The lack of appropriate direction for implementation leaves states, districts, and educators with a new curriculum to be introduced to students with traditional classroom instruction (Harris, 2012a), traditional professional development practices (Tournaki, Lyublinskay, & Carlon, 2011) and traditional leadership practices (Terry 2010). Furthermore, researchers have found there to be little alignment between standards that were already in place under NCLB and the new CCSSM (Porter et al., 2011). Some researchers have suggested that implementation of the adopted standards will be a difficult task (Bostic & Matney, 2013; Cobb & Jackson, 2011; Porter et al., 2011; Schmidt & Houang, 2012).

In 2013, the New York State assessments were the first to be aligned with the CCSSM (New York State Education Department, 2013). With more rigorous assessments driven by higher standards, New York State districts have experienced a decline in students' assessment scores (EngageNY, 2013). Districts now had the task of aligning content, instruction, and classroom assessments with the new CCSSM. The release of these 2013 state assessment scores underscored the need to shift to a new and different curriculum aligned to these assessments. New York State has offered a free aligned mathematics curriculum for districts to adopt (EngageNY, n.d.). The school chosen for this study was one of the New York districts that chose to implement the New York State mathematics modules curriculum. With this study, I explored educators' experiences as

they implemented the CCSSM to understand what is needed to foster successful implementation. The results can enable the district to make informed professional development and curricular decisions.

Rationale

Since the adoption of the CCSSM, there has been a decline in student assessment scores across New York State (EngageNY, 2013, 2014). Some researchers suggested mathematics instruction has not changed much since the 1960s (Hiebert, 2013; Kessinger, 2011). Furthermore, there is little alignment between the previous instructional practices under NCLB and what is required under the new CCSSM (Cobb & Jackson, 2011; Porter et al., 2011). Implementation of the new standards requires ample changes in practice for districts and educators. Educators need to develop a complete understanding of the standards and the changes that are needed in order to successfully implement the CCSSM (Davis, Choppin, Drake, & McDuffie, 2014; Maye, 2013; Penuel, Fishman, Gallagher, Korbak, & Lopez-Prado, 2009; Terry, 2010). Districts will need to provide professional development that considers educators' needs (Bostic & Matney, 2013) and provide the type of leadership that motivates educators to act upon the new standards (Terry, 2010). Evidence of the problem at the local level and from professional literature is presented below.

Evidence of the Problem at the Local Level

A decline in state assessment scores coupled with new standards indicates a gap between instruction and assessment. The New York State Education Department (2013) released the 2012-2013 student test results on September 10,

2013. The math and English language arts (ELA) test results for Grades 3 through 8 reflected a decline in state assessment scores across New York State for the years 2009 through 2013, with a significant drop from 2012 to 2013 (Figures 1 & 2). In his memo concerning the release of the scores, New York State Commissioner King stated that a decrease in test scores was not reflective of school or student performance; rather they were the first tests to assess the new Common Core State Standards that were adopted in 2010, reflective of a change in content assessed (New York State Education Department, 2013). The new state assessments reflect a shift to measure the new standards. Commissioner King called for everyone to work together to address the rigorous demands of the new curriculum standards.

The 2013-2014 test results were released on August 14, 2014 (New York State Department of Education, 2014). Statewide students had some growth in mathematics and slight progress in ELA (Figures 1 & 2). Board of Regents Chancellor Merryl H. Tisch stated that although it would take time for changes in the classrooms to be reflected in student assessment scores, growth related to educator dedication and districts focusing on providing the supports that educators need to raise student achievement was evident.

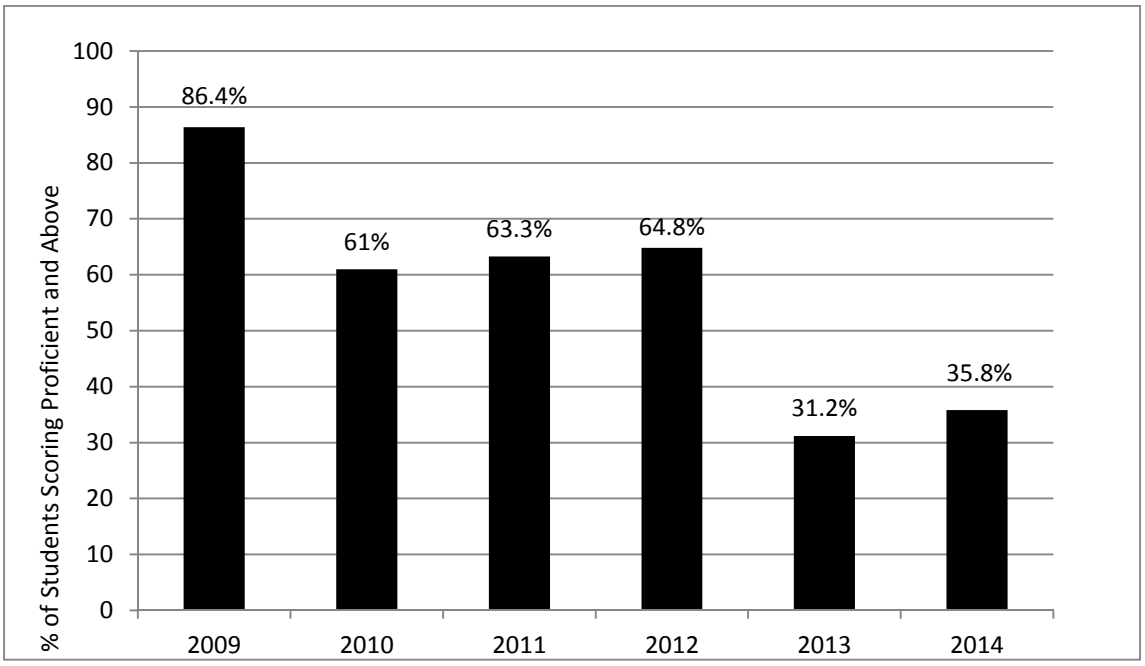

Figure 1. Bar graph showing the percentage of students across New York State Grades 3 through 8 that met or exceeded proficiency at Level 3 or 4 on New York State Math assessments from 2009 to 2014. Adapted from *A New Baseline : Measuring Student Progress on the Common Core Learning Standards,* by EngageNY, 2013, Retrieved from http://www.p12.nysed.gov/irs/ela-math/2013/2013-08-06FINALELAandMathPRESENTATIONDECK_v2.pdf, and *Measuring Student Progress in Grades 3-8 English Language Arts and Mathematics,* by EngageNY, 2014, Retrieved from http://www.p12.nysed.gov/irs/ela-math/2014/2014Grades3-8ELAMath-final8-13-14.pdf.

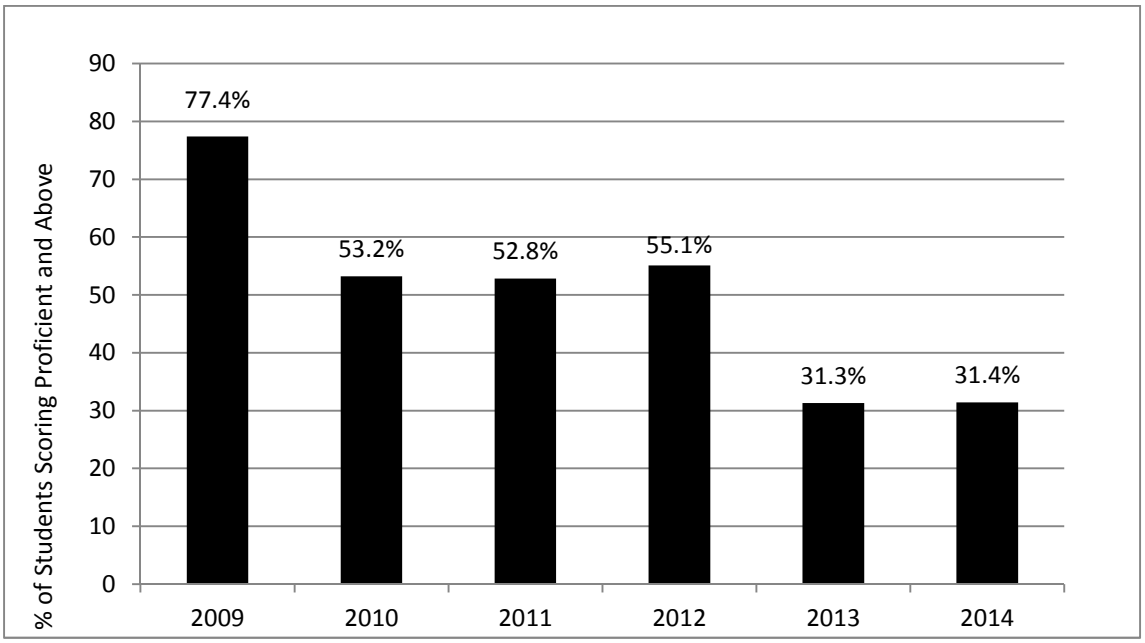

Figure 2. Bar graph showing the percentage of students across New York State Grades 3 through 8 that met or exceeded proficiency at Level 3 or 4 on New York State ELA assessments from 2009-2014. Adapted from *A New Baseline : Measuring Student Progress on the Common Core Learning Standards,* by EngageNY, 2013, Retrieved from http://www.p12.nysed.gov/irs/ela-math/2013/2013-08-06FINALELAandMathPRESENTATIONDECK_v2.pdf, and *Measuring Student Progress in Grades 3-8 English Language Arts and Mathematics,* by EngageNY, 2014, Retrieved from http://www.p12.nysed.gov/irs/ela-math/2014/2014Grades3-8ELAMath-final8-13-14.pdf

The district chosen for this study, as well as other districts across the state, have experienced a drastic decline in the 2012-2014 state assessment scores (Figures 3 & 4). Working toward improving student state assessment scores, the district leaders decided to pilot the new aligned mathematics modules released by New York State. This study explored educators' experiences concerning the implementation of the CCSSM and the New York State mathematics modules.

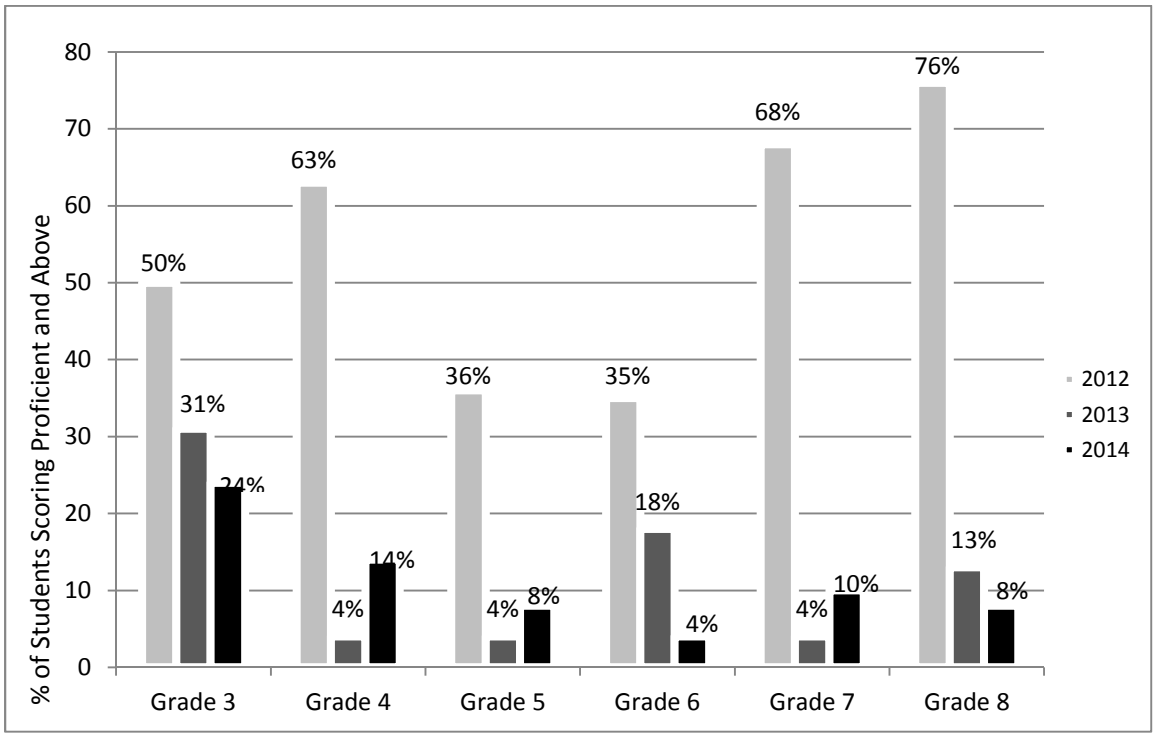

Figure 3. Bar graph showing the percentage of students Grades 3 through 8at the local school site that met or exceeded proficiency at Level 3 or 4 on New York State math assessments from 2012 to 2014. Adapted from New York State Education Department assessment of the local school as of 2014.

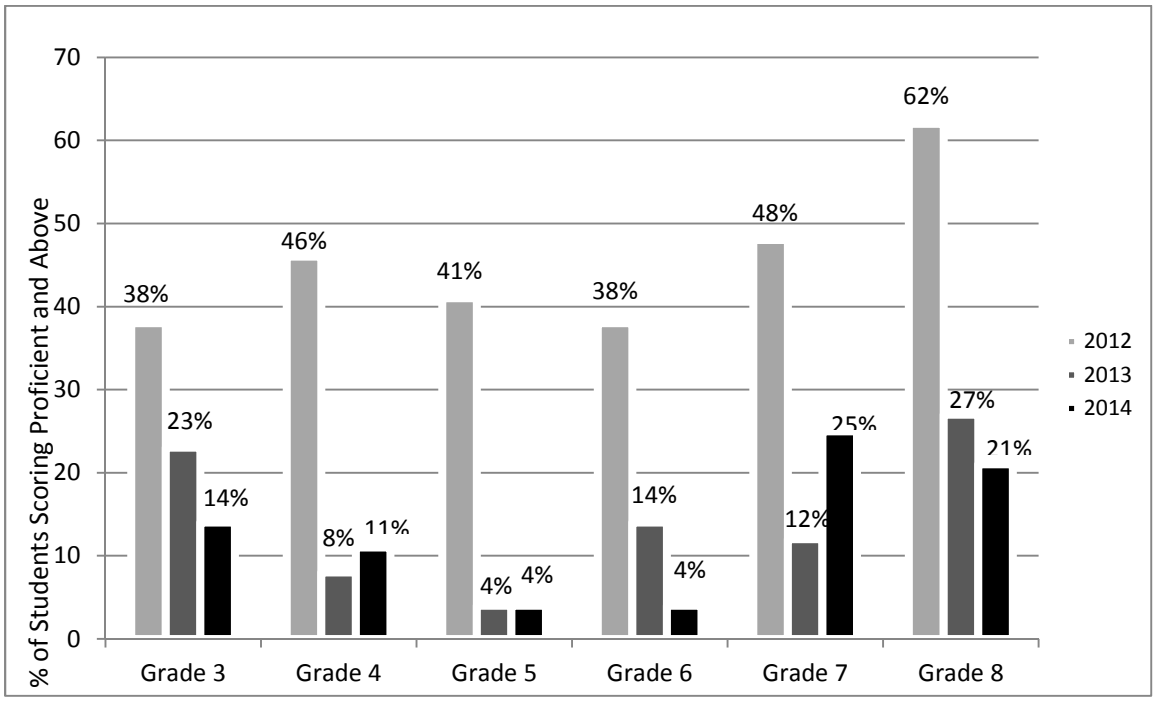

Figure 4. Bar graph showing the percentage of students Grades 3 through 8 that at the local school site that met or exceeded proficiency at level 3 or 4 on New York State ELA assessments from 2012 to 2014. Adapted from Adapted from New York State Education Department assessment of the local school as of 2014.

Evidence of the Problem from the Professional Literature

Past mathematics reform efforts have failed to bring about instructional changes in practice. There is little alignment between current instructional practices and what is required with the CCSSM. Professional development needs to be structured so that educators can fully understand the CCSSM and what changes need to be made. Leaders will need to consider educator needs and motivate them to make the necessary changes in instructional practices.

Mathematics reform efforts. Although there have been various reform efforts since the 1960s, mathematics instructional practices in the classroom have not changed

(Terry, 2010). Districts superficially comply with the laws through the typical bureaucratic processes of monitoring various requirements. Teaching and learning has not evolved much from a "back to basics" approach of computation and algebraic manipulation (Kessinger, 2011). Researchers have found pressures from high-stakes testing became the focus of instruction, narrowing the curriculum to skill and drill (Harris, 2012a). Harris (2012a) found instruction to be mostly teacher directed, with little opportunity for student discussions. Furthermore, Maye (2013) found the majority of instruction in classrooms to be lower level learning tasks that can be placed on the revised Bloom's taxonomy at the simple levels of acquisition of knowledge and recall of information (Krathwohl, 2002). In 2010, the state-led CCSSM were released (Council of Chief State School Officers, 2014). In comparison to the past initiatives, the new CCSSM are condensed and based on greater conceptual understanding, as well as fluency. The new initiative requires current instruction to be realigned to the new standards.

Alignment. If curriculum and instruction are aligned to the standards, student achievement can improve (Martone & Sireci, 2009; Fulmer, 2011; Polikoff, 2012, 2015; Polikoff & Fulmer, 2015; Squires, 2012). Infusing rigor into teaching and learning requires a tight alignment between new curriculum (standards), instructional practices, and learning tasks (Maye, 2013). Some researchers have found little-to-no alignment between standards currently guiding classroom practices and the new standards (Cobb & Jackson, 2011; Porter et al., 2011). Further, Schmidt and Houang (2012) found the new CCSSM rigorous when compared to top achieving countries. Implementation of the new standards will require a change in instructional practices and districts will need to provide

educators with the necessary ongoing professional development to align the new standards with instructional practices and to infuse rigor into their lessons.

Professional development. Educators have not developed a deep understanding of the new standards and the changes in practice that are necessary to implement the CCSSM (Davis et al., 2014; Maye, 2013; Penuel et al., 2009; Terry, 2010). Misunderstanding the standards and uncertainty about both rigor and higher order thinking skills impede the implementation of the more rigorous CCSSM. In order to meet CCSSM mandates, administrators and educators need to work with and understand the standards and requirements (Terry, 2010). Further, educators need time to process the standards while at the same time evaluating their own values and beliefs. Educators have reported that they attribute students' lack of success with mastering standards to student and family factors, student motivation, limited time to cover standards, and their own lack of skills and strategies to engage students in the standards as challenges they face implementing standards (Harris, 2012b). Professional development in the past has not incorporated dialogs about instructional change. Discussion, collaborative work, and feedback are important if educators are to change instructional practices and attitudes about implementation of the CCSSM and student achievement.

Educator needs. Implementation of federal policy at the state and local levels is challenging (Polikoff, 2012). Reform efforts in the past have not succeeded in part because they failed to consider the needs of educators (Hiebert, 2013; Penuel et al., 2009; Priestly, 2011; Priestly & Miller, 2012). District leaders must consider educators' perceived needs when developing professional development plans (Bostic & Matney,

2013). Distributing information to educators and directing them to implement it without allowing for collaborative work to understand what change is necessary, and how to make that change, will develop a resistance and lack the educator buy-in that is essential for a change in practice (Terry, 2010). School leadership will need to motivate educators to act upon the new standards.

Leadership. Through motivating educators to enact a change in instructional practices when implementing the CCSSM, school leadership can have a positive effect on student achievement (Terry, 2010). Educators' attitudes can have a negative effect on motivation, making it difficult for school leaders to motivate them. Some educators hold negative attitudes and low expectations for certain groups of students (Harris, 2012b). Educators blame students and the students' life situations rather than classroom instruction for their lack of ability to master the new standards. They feel disempowered to make the necessary changes. The changes called for through the new initiatives require leadership that builds capacity and strengthens instructional leadership (Terry, 2010) through high expectations and trusting relationships (Harris, 2012a). Leadership that fosters a positive climate, changes ineffective norms, and redirects negative beliefs will support the changes needed to successfully implement the CCSSM.

Definitions

Common Core State Standards for Mathematics (CCSSM): Standards for each grade level that define what students should know and master in mathematics. The intended purpose of the standards is to ensure that students are prepared for college and careers when they graduate (Council of Chief State School Officers, 2015).

Constructivism: The theory of constructivism is based on the premise that the ability and motivation to know and learn is a natural phenomenon where knowledge is discovered and actively constructed (Fiume, 2005; Lamanauskas, 2010). Humans construct knowledge from prior knowledge (Lamanauskas, 2010) and knowledge becomes modified through physical and social interaction (Fiume, 2005).

Curriculum alignment: Alignment is the degree to which elements work together and are in agreement with each other (Kurz, Elliott, Wehby, & Smithson, 2010). Alignment between content (standards), instruction, and assessments creates an environment that supports educators' successful implementation and students' mastery of the standards. Therefore, alignment assists in successfully meeting the goals of federal policy (Polikoff, 2012).

Significance

This study can enhance the knowledge of stakeholders at this district about the successful implementation of the CCSSM. Through exploring educators' experiences implementing the new standards, the district leaders and educators can make informed decisions about the amount and type of professional development and other resources that are needed to support the processes of implementation. The study can motivate administrators and educators to employ effective strategies that improve successful implementation. The research provides recommendations that can improve educator and leadership strategies that can aid in the successful implementation of CCSSM. Finally, this study contributes to the research on successful implementation models that can aid other districts in implementing new curricula.

Research Question

Some researchers have suggested that the new CCSSM are more rigorous and focused than the prior state standards being practiced in many districts across the nation (Schmidt & Houang, 2012). Even though the new CCSSM are fewer standards based on conceptual understanding as well as mathematical fluency (New York State Education Department, 2013), the current practices that have been in place since the 1960s have consisted mostly of basic skill and drill (Kessinger, 2011). To successfully apply the new standards at the classroom level, many researchers have agreed that they will require a considerable change in practice from what is currently in place under NCLB (Porter et al., 2011) and educators will need substantial and ongoing professional development that addresses their needs (Balyer, 2012; Penuel et al., 2009). Given that the CCSSM are newly adopted and there is not yet an abundance of research on the implementation processes experienced by educators, conducting research studies that examine these processes is crucial for the development of successful models. Understanding educators' experiences helps districts to make informed decisions about what works and what does not in order to provide appropriate supports and professional development related to the implementation of the CCSSM.

The purpose of this study was twofold: (a) to understand what was needed at a New York school district to successfully implement the CCSSM based on the educators' experiences; and (b) to generate a grounded theory that could help build a framework to guide implementation practices. This grounded theory study utilized qualitative data from educator interviews, surveys, and observations. The following central research question

was designed to guide this study: What experiences do educators at an Upstate New York school district have related to implementing the CCSSM and the New York State mathematics modules?

Theoretical Base that Informs the Study

Educational change theory is supported by ample literature; researchers have suggested that for decades numerous reform efforts have failed to penetrate the classroom and have an effect on changing teaching practices (Hiebert, 2013; Priestly, 2011; Priestly & Miller, 2012; Rutherford, 2005). The poor success rate of externally initiated innovations is attributed to short-term innovations that and fail to recognize the complexity of school systems (Good, 2011; Priestly, 2011; Rutherford 2005). Implementation of initiatives requires a deep understanding of the nature of school complexity (Priestly & Miller, 2012). Currently, reform strategy in the United States has been structured around standards (the content to be taught), materials (textbooks), and state assessments (Reyes, 2014). The focus is on curriculum and not the complex interactions of day-to-day teaching and curricular concerns (Priestly, 2011; Reyes, 2014).

Government-imposed initiatives reach the students through curriculum and teachers, as well as the interactions between the students, teachers, and curriculum (Reyes, 2014). It is important to address the interactions amongst humans in the classroom context of teaching and learning for the successful implementation of government policy (Hargreaves & Fullan, 2012). Theory needs to address issues that arise when educators engage with policy that promotes change (Priestly, 2011). Social cultural activities do not change through reading and writing documents that prescribe

change (Hiebert, 2013), but by exploring what people do and think, and how they interact with content, materials, contexts, and beliefs. This allows a reflective positioning by those engaging with new policy to enact changes in teaching. Fullan (2014) suggested educational change must not only focus on organizational and structural aspects such as disseminating information on standards, materials, and assessments; it must also focus on the contexts educators are working in and their cultural relationships within the school community. These relationships can help or hinder the implementation processes undertaken by educators (Priestly & Miller. 2012). Further, with the theory of andragogy, Knowles (1970; McGrath, 2009) stressed the importance of determining the professional needs of adult learners in order to support new learning, such as learning to implement the new standards. The theory of constructivism suggests learning will require educators to make connections to their prior knowledge about teaching practices and content in order to construct the new knowledge necessary to implement the new CCSSM (Fiume, 2005; Lamanauskas, 2010). This grounded theory study utilized qualitative methods to examine educators' interactions with content, materials, contexts, and beliefs and allow for the reflective engagement necessary to respond to what works and what does not while they are implementing the CCSSM. Open-ended interview questions and an observation protocol were designed to examine what educators do and think, and to explore their learning needs. Data were analyzed for reoccurring patterns and themes related to these experiences. In the following paragraphs, I discuss the review of literature for three main factors that help shape and define the work educators are engaged in as

they implement the CCSSM: curriculum alignment, professional development, and leadership.

Review of Literature

I began the search for literature on the implementation of standards-based reform with the Walden University Library search engines. I located literature on the history of standards-based reforms and included it at the end of the literature review. The information that I garnered from the literature on the history of standards-based reforms was used to inform and narrow the search for literature on the implementation of the CCSSM. The history of standards-based reforms and the problems that may have contributed to implementation issues led me to use the following search terms: *standards*, *alignment*, *standards-based reform*, *professional development*, *educational change*, and *leadership*. These terms were used in various combinations with one another. As the search began to reach saturation, I used Google Scholar to locate more literature that addressed the implementation of the CCSSM. As a result, I included literature on curriculum alignment, professional development, and leadership in the main section of this literature review. This information illustrates the problems that may accompany the implementation processes and the need to examine these processes through an exploration of educators' experiences. I used the information to build an understanding of standards-based reform and implementation, which led me to search the terms *andragogy*, *constructivism*, and *educational change theory* that I used to frame the study.

Curriculum Alignment

A lack of alignment between the standards with curriculum, instruction, and assessment makes it difficult for teachers to act upon and implement the standards (Penuel et al., 2009; Polikoff, 2015; Polikoff & Fulmer 2013; Squires 2012). Students' mastery of standards is contingent upon whether or not the state assessments are aligned to those standards (Fulmer, 2011). Alignment of the standards and assessments with classroom instruction assures students are afforded the opportunity to learn the standards (Fulmer, 2011; Martone & Sireci, 2009; Polikoff, 2015; Polikoff & Fulmer 2013; Squires 2012). Furthermore, the validity of test scores is also contingent upon the alignment of the standards with curriculum, instruction, and assessments (Kurz et al., 2010).

Squires (2012) presented research that suggested alignment between written (standards), taught (materials such as textbooks), and tested (state and classroom assessments) curriculum is crucial for improved student achievement. This alignment affords students the opportunity to learn and practice the tested content. Researchers suggested that there is a weak alignment between textbooks (materials) and standards (Polikoff, 2015; Squires, 2012). Educators can increase student achievement significantly if they examine the strengths and weaknesses of curriculum materials' alignment with the standards. Further, a lack of alignment between instruction and what is assessed, such as content on the state assessments, causes a lack of student achievement (Squires, 2012). Therefore, it was recommended that educators align instruction and formative assessments with standardize assessments. Squires stated that there are many standards and materials, such as textbooks, that tend to cover more topics than can be taught in a

year. Further, textbooks and instructional materials tend to overemphasize procedural skills and deemphasize the conceptual skills that are emphasized in the new standards (Polikoff, 2015; Squires, 2012). Depth of coverage and instruction time spent on concepts embedded in the standards must be carefully determined, and learning activities must be aligned to multiple standards (Squires, 2012). Lastly, the Squires recommended a management system, such as curriculum mapping with common assessments, will ensure the curriculum has been taught and assessed. Educators must successfully complete the precise and difficult alignment tasks in order to implement the standards in a way that shows improvement in student achievement.

Schmidt and Houang (2012) conducted a study to determine if the newly adopted CCSSM exhibit the same focus, rigor, and coherence that the curricular standards of top achieving countries exhibit. Utilizing the international model of coherence for standards applied to the top achieving countries in mathematics, known as the A+ Model, the authors created an overlay graphic comparing the coherence of the CCSSM with those of top achieving countries. The authors developed a quantitative indicator to determine the degree of congruence. They found the CCSSM are consistent with the internationally developed A+ standards for focus and coherence. They further reported evidence of rigor indicated by topics covered. Conversely, when the authors applied the same methodology to compare the current state standards (under NCLB) with the CCSSM, they were inconsistent and ranged from 60% to 80% (Schmidt & Houang, 2012). Their findings indicated that the newly adopted CCSSM are focused, coherent, and rigorous when compared to other top achieving countries; the newly dropped state standards under

NCLB and that are still in use today are not. They suggested the task of implementing the new CCSSM will not be easy and will require sustained professional development for educators.

Porter et al. (2011) enlisted 35 specialists from 18 states to conduct a content analysis to compare the intended curriculum of the new Common Core State Standards in ELA and mathematics with the curriculum for the current state standards under NCLB and the standards put out by NCTM. The purpose of their study was to compare and contrast the new curriculum and previously enacted curriculum to determine changes in practice necessary for states to implement the new common core curriculum. They found low to moderate alignment of state standards under NCLB with the NCTM standards and the CCSS. The authors found moderate alignment when comparing content standards at specific grade levels; they then considered aggregated strands at the 3 to 6 and 3 to 8 grade levels to determine if the content was aligned across grade levels. Their conclusions were the same for these strands (Porter et al., 2011). They further considered the alignment between Common Core State Standards content and the state assessment content still in place under NCLB. Because they also found low-to-moderate alignment between the new standards and the assessments still in place under NCLB, they concluded that the implementation of the CCSS represents considerable change from current states' curriculums and assessments.

Cobb and Jackson (2011) critiqued the analysis of the CCSSM presented by Porter et al. (2011). Cobb and Jackson's assessment was in favor of their findings and they agreed that the newly adopted CCSSM are focused, coherent, and rigorous when

compared to other top achieving countries; the newly dropped state standards under NCLB and that are still in use today are not. Cobb and Jackson were also appreciative of Porter et al. for utilizing a number of different methodologies. Cobb and Jackson added a strong cautionary note about the need for effective implementation models, which aid districts in developing the capacity to address the significant changes in practice and learning needs for educators inherent in the implementation of the CCSSM.

Kurz et al. (2010) examined the curriculum of 18 general and special education teachers and the curriculum's alignment to the state standards. They further investigated the correlation between alignment and achievement using three formative assessment scores and the corresponding state test scores of 238 students. Data were gathered from the Surveys of Enacted Curriculum (SEC) administered to the teachers and from student test data. Data were analyzed and compared by using the SEC analysis of alignment and calculating *z*-scores. Results showed low alignment between the standards, teachers' content plans, and what content was actually taught, whereas alignment was highly correlated with student achievement (Kurz et al., 2010). The researchers also suggested that teachers placed more emphasis on their own planned curriculum opposed to the state's intended curriculum (the standards).

Dingman, Teuscher, Newton, and Kasmner (2013) conducted a comparative analysis by analyzing several strands of mathematical content in the newly adopted CCSSM and then comparing their results to a previously conducted analysis of prior state standards. The prior analysis conducted by groups of researchers for the Center for the Study of Mathematics Curriculum was on state standards in use before the release of the

CCSSM. This prior analysis involved identifying standards with state-level, grade-level, and content-strand identifiers. Dingman et al. conducted an analysis of the CCSSM using the same criteria and identifiers as the analysis conducted of the content of the standards in use prior to the CCSSM. The results of the CCSSM analysis were compared to the results of the analysis of the state standards conducted prior to the CCSSM. The results suggested shifts from prior state standards to CCSSM in the grade levels at which some of the content was taught, changes in the number of grade levels at which topics are to be taught, changes in the emphasis on topics, and changes in the level of mathematical reasoning (Dingman et al., 2013). The authors suggested that these differences will alter mathematics instruction and the results underscore the challenges faced by educators. Teachers need to adjust their practices to align with the CCSSM. The authors further suggested CCSSM should be reviewed and adjusted when warranted.

Current school initiatives in the United States are focused on curriculum (standards) and not on teaching practices (Reyes, 2014). Reyes (2014) reviewed literature on the movement to the CCSSM. The author discussed CCSSM and textbooks and the shift toward technology-based resources, pressure of accountability, which is measured on the end-of-the-year assessments. Similar to the research discussed above, the author suggested, teachers require professional development and support to align their teaching practices with the new standards. Citing reviews that find current mathematic textbooks insufficient and unacceptable for use with the CCSSM, Reyes suggested sufficient time needs to be afforded to locating and developing textbooks and materials that support teachers' implementation of the CCSSM. Currently, only technology-based textbooks are

digital versions of traditional textbooks. Supplementary internet-based materials are becoming available, as well as new digital textbooks. Further, educators need to become familiar with the new assessments that are being developed by Partnership for Assessment of Readiness for College and Careers and the SMARTER Balanced Assessment Consortium to replace existing state assessments (Reyes, 2014). The author concluded that it is critical to gather data that will aide in understanding the impact and success of the initiative in supporting student learning and achievement.

In conclusion, researchers have found alignment between written, taught, and assessed curriculum directly affects student achievement (Polikoff, 2012, 2015; Squires, 2012). Researchers have found there to be insufficient alignment between the new standards and the curriculum still in place from NCLB (Cobb & Jackson, 2011, Dingman et al., 2013; Porter et al., 2011; Schmidt & Houang, 2012). Researchers have further suggested that the task of alignment is not easy and there is a need for effective implementation models (Cobb & Jackson, 2011; Schmidt & Houang, 2012). Given the importance of alignment to the success of implementation and student achievement, the literature highlighted the importance of professional development and ongoing support that focuses on alignment of the new standards with classroom practice and assessments (Fulmer, 2011; Kurz et al., 2010; Martone & Sireci, 2009; Penuel et al., 2009; Squires 2012). Further, researchers have found alignment is not enough to encourage implementation. Strategies need to consider the specific needs of teachers and schools (Kurz et al., 2010). There is also a need to seek out instructional materials, such as textbooks and materials that support teachers' instruction of the CCSSM (Reyes, 2014).

Educator and district leader needs must be considered through professional development if the implementation of policy standards is to be successful (Liebtag, 2013).

Professional Development

The quality of teaching is impacted by teacher education (Wang, Odell, Klecka, Spalding, & Lin, 2010), and accountability policies have rarely led to major instructional change (Diamond, 2012). The history of education reform has shown reform efforts are not sustained if grave consideration is not given to professional development (Wang et al., 2010). The standards are multifaceted, and implementation is a complex task that requires a significant change in teaching and professional development practices. Teachers need to develop a deep understanding of the standards and what needs to be taught (Liebtag, 2013). Deep understanding requires a considerable amount of support and professional development to assure alignment of the standards with curriculum, instructional practices, and assessments during implementation of the CCSSM (Bostic & Matney, 2013; Cobb & Jackson, 2011; Richardson & Eddy, 2011). To assure implementation in the classroom, districts need to provide teachers with the type of continuous professional development that monitors their needs (Liebtag, 2013). Further, some researchers suggest developing the initiative at a slower pace so that curriculum is not overlooked and the necessary professional development is considered (Herrera & Owens, 2001; Main, 2012).

Tournaki et al. (2011) found the professional development model should include continuous, inquiry-based learning. The authors studied 153 teachers and the effectiveness of a professional development program in three domains: planning and

preparation, classroom environment, and instruction. The teachers participated in ongoing professional development sustained throughout the year. They attended a common typical district traditional style workshop that utilized the didactic theory of teaching where information was transmitted through lecture without follow up discussions on classroom implementation (Tournaki et al., 2011). However, half of the participants additionally participated in an alternative professional development as well as what the district offered, while the other half did not. The additional professional development workshops were focused on subject matter content and how students engage in learning, were ongoing and sustained throughout the year, and employed collaborative, inquiry-based learning for the teachers (Tournaki et al., 2011). The rating instrument Tournaki et al. used was based on the *Enhancing professional practice: A framework for teaching* by Danielson (2007). Two videotapes of 45- to 50-minute classroom sessions for each of the 153 teachers were collected and analyzed as observational data. Teachers received scores of 1 to 4 on planning and preparation, classroom environment, and instruction. Mean scores of the observer's ratings were calculated from both videotaped sessions on each domain. Control data for the covariates of both the total number of professional development sessions attended and the number of years of teaching experience were also collected (Tournaki et al., 2011). Data were analyzed using a multiple regression model to determine the relationship between variables. Significance levels were set at $p = <.05$ and $p = <.01$.

The professional development was significantly related to instruction and not significantly related to planning and or classroom environment. Because the professional

development was focused on instruction and not on planning or classroom environment, this finding was predictable (Tournaki et al., 2011). The number of years of teaching experience was significantly related to all three domains. The authors suggested that the typical single-day models of professional development utilized by the district were inadequate and professional development that is ongoing and sustained throughout the year could yield significant benefits. They suggested that professional development only affects the targeted domain (Tournaki et al., 2011).

Montgomery (2012) suggested that professional development that focuses on teachers' professional identities can affect the degree to which teachers' lesson planning reflects the standards. In a grounded theory study, Montgomery set out to answer the following questions: (a) How, and to what degree, do practicing teachers consider the standards when planning lessons or units? (b) How do the standards manifest themselves in actual classroom practice? The author interviewed nine teachers: three with 10 or more years in the classroom, three who were Fellows at a site of the National Writing Project, and three with 5 or fewer years of teaching experience. The teachers were interviewed twice; the first interview was a set of questions designed to yield information on how the teachers implemented standards. The second set of interview questions was developed based on the data analysis from the first set of questions. The data from the interviews were coded and analyzed. Montgomery (2012) stated that although the small sample provided a limited scope, the teachers in this study faced many of the same challenges with similar kind of student populations as many other teachers across the nation. The

experiences they have in the classroom are shared by other teachers throughout the country (Montgomery, 2012).

Two themes arose from the interviews with the teachers in this study. Montgomery (2012) found teachers gave little-to-no consideration to the standards during planning and were more focused on their own goals. Teachers identified their own subject matter knowledge and the needs of their students as more important than the standards developed by the state. These statements speak to their strong professional identity. Strong professional identity is defined as an identity where teachers trust in their abilities based on how well they know their students, subject matter, and researched-based best practices. Teachers' professional identities were driving their lessons and superseding bureaucratic mandates. The researcher concluded that this was not an anti-authoritarian stance by the teachers. Therefore, the author suggested professional development on effective classroom practices and gives them an opportunity to become familiar with the standards so they can increase confidence, pedagogy, and professional autonomy.

Bostic and Matney (2013) partnered with school districts in four Midwest counties to help them design professional development that would facilitate the changes needed to successfully implement the CCSSM. They surveyed 148 elementary and 22 middle school mathematics teachers to determine their professional development needs for implementing the newly adopted CCSSM. Teachers completed surveys that asked about their perceived professional development needs for content and pedagogy. The survey data were analyzed by calculating the percent of teachers that responded to each

item and then multiplying each item by the ratings they received, thus arriving at a total score for each item. They found that what teachers identified as professional development needs aligned with students' prior performance on high-stakes assessments (Bostic & Matney, 2013). Therefore, they concluded that these teachers were successful at targeting their appropriate professional development needs. The teachers identified a better understanding of CCSSM as the highest perceived need for pedagogy professional development, followed by conceptual knowledge of mathematical content embedded in the CCSSM. The authors suggested that the recent adoption of the CCSSM requires major instructional changes and sustained professional development regarding the CCSSM (Bostic & Matney, 2013). Further, administrators must consider teachers perceived needs when developing professional development plans.

In conclusion, the CCSSM requires a considerable change in practice, continuous support, and professional development that monitors teachers' needs (Bostic & Matney, 2013; Cobb & Jackson, 2011; Richardson & Eddy, 2011). Professional development that is highly focused on planning, classroom environment, and instruction can affect the degree to which teachers are successful at implementing the CCSSM (Tournaki et al., 2011). Developing a deep understanding of the standards and what is necessary for their implementation requires professional development that is focused on teachers' professional identities (Montgomery, 2012) and methods that employ inquiry-based learning. (Tournaki et al., 2011). Leadership behaviors that support teachers' professional identities can play an important role in designing professional development that motivates teachers to successfully implement the CCSSM (Terry, 2010).

Leadership

Teachers in the classrooms are the direct catalyst for implementing the CCSSM and changing the instructional and learning environments for students. It is at the classroom level where teachers can innovatively respond to initiatives (Bodman, Taylor, & Morris 2012). Principals direct and support teachers and are in a position to bring about school change (Finnigan, 2012). Policy decisions occur at the government and administration levels, rather than the classroom level, and leadership that fail to support and motivate teachers while they engage with policy initiatives at the classroom and instructional levels have been shown to have little effect on the implementation of those policies (Finnigan, 2012). Accountability policy and resources alone cannot bring about instructional change without effective principal leadership to help bring policy to the classroom level (Harris, 2012b).

Finnigan (2012) conducted a qualitative study of three low-performing schools in Chicago for the purpose of understanding the role leadership and motivation play in effecting change in the current policy context. Two schools that participated in the study had moved off probationary status and one remained for more than 5 years. The researcher utilized fifty–two teacher interviews and four focus group interviews, with additional principal interviews to collect data. All interview data were recorded and transcribed verbatim. Emerging analytical data and related literature were utilized to develop a coding scheme. Leadership was found to be one of the most important factors attributing to the success of the two schools that moved off probationary status. The principals in these two schools responded to policy by promoting a shared vision and

goals, communicating high expectations, and monitoring performance. The failure of one school to move off probationary status was attributed to lack of leadership practices in response to the policy. Therefore, the findings indicated that principal leadership is crucial to implementing policy. Implications of this study confirmed administration has the capacity to support and motivate teachers to change practices.

Terry (2010) conducted a case study to explore the problems faced by a superintendent and administrators implementing NCLB. In the narrative, the author recounts the experiences of the superintendent as he works through the problems he faces after reviewing the unyielding district's AYP reports. The superintendent scheduled a meeting with a trusted colleague to determine if he could help identify and begin to address the current problems. The results of the meeting indicated that through bureaucratic processes the district was able to address mandated requirements such as: federal grant spending, highly qualified teachers, and implementing state assessments (Terry, 2010). His colleague suggested the failure of the district's school improvement efforts was attributed to leadership issues. The superintendent admitted that they continued to disseminate NCLB information and teachers were working hard at implementing the policy mandates; he did not know what more they could do to meet NCLB requirements. When asked what they have done thus far to meet NCLB requirements, he further admitted they did not completely understand all the requirements. Interviews with district administrators indicated the leaders of the district indeed did not fully understand NCLB and therefore, were unable to change teaching and learning practices so students could master the standards required by NCLB. The study

found that the administrators' typical top-down bureaucratic response to NCLB set up an atmosphere of fear, avoidance, and superficial compliance (Terry, 2010). The superintendent stated there was atmosphere of opposition to NCLB that was evident in the administrators' complaints. The administrators had not processed the NCLB challenges in contrast to their own beliefs and practices. Further, the administrators did not understand that shared responsibility for decisions made about implementation would aid in the process of the initiatives penetrating the classrooms. To further complicate the task of implementation, the administrators did not spend much time monitoring classroom instruction. The researcher concluded their leadership practices were not sufficient for fulfilling the educational reform initiatives. The superintendent was left with the task of building leadership capacity with the goal of gaining a better understanding of the standards, implementation processes, and classroom instruction.

Standards-Based Reform

The debate over what mathematics instruction should be, and why, has fostered the development of standard-based reform since the 1980s.The history of standards-based reform is presented here and with the purpose of providing an understanding of the problems associated with implementing standards in the past and the reasons for reauthorization. Standards-based reform is not new, nor is the issues faced by educators when new policy is adopted.

NCLB policy. In 1965, the federal government enacted the ESEA (Groen, 2012). Under this law, Title 1 funds were created in response to the war on poverty and racial integration. By the 1990s, poverty became very broadly defined and 90% of the schools

were receiving some aide under ESEA. In 1994, the Clinton administration reauthorized ESEA and set a standards-based agenda for Title 1 funds. With the primary intent of addressing the educational needs of low income, migratory, handicapped, neglected, and delinquent students, the law was transformed in 2011 and renamed NCLB. Title 1 monies were retargeted to the poorest schools and NCLB identified specific socio-economic and ethnic subgroups of students and held districts accountable for the progress of these targeted populations (Groen, 2012; Montgomery, 2012). Under the Bush administration, there was a political interest in identifying failing schools. Schools that did not make progress that was required by NCLB faced penalties (Montgomery, 2012). Also at this time, conservative groups allocated Title 1 funds to be distributed as vouchers to families that moved their children out of failing schools and into private institutions (Groen, 2012). The vouchers were not enough to cover tuition at private institutions and benefitted only those that could make up the difference. This left the poorer students attending public schooling where resources had declined.

Voters opposed allocating Title 1 funds for private institutions and the measure failed (Groen, 2012). NCLB moved away from fulfilling social needs of the underserved populations to a political movement of accountability driven by administrative concerns. Funds were given based on whether or not students made AYP on standardized test scores. If students did not meet AYP, schools were sanctioned and required to implement interventions.

Under accountability mandates states were required to create standardized assessments in ELA and mathematics (Groen, 2012). These mandated assessments

resulted in ELA and math being the focus of curriculum. Art and music were disappearing and science and history were not afforded adequate focus. Furthermore, money was spent on testing and not on instruction. Through NCLB, schools only needed to demonstrate that they were educating students by meeting AYP and how to educate students was not defined under the law. In addition to this narrowing of the curriculum, pedagogy became teaching to the test. Student assessment scores were made public and used to evaluate teachers. Classroom time was spent preparing the students to take the mandated assessments, which moved curriculum along at a pace before students were ready to proceed to the subsequent lessons. Since individual states set their own standards, these standards were soon lowered to avoid sanctions for low-performing schools. Given there were different sets of standards for each state, comparison between the states became impossible. At the same time, NCTM was moving forward with the development of quality mathematical standards.

NCTM Standards. The need for qualified mathematicians, scientists, and engineers that could produce a space program capable of competing with the Russians in the 1950s brought about an immediate call for improving mathematics education in the United States (Hekimoglu & Sloan, 2005; Johanningmeier, 2010). Identified as the New Math reform, curriculum was based on logical principles and promised to decrease the gap between college and high school math. Lack of professional development for teachers led to the 1970s reform emphasizing computation identified as Back to Basics reform. Teachers were viewed as ill-equipped with content knowledge and in 1989 the NCTM developed yet another curriculum that stressed less skill and drill and more

attention to problem solving. This prompted the emergence of the constructivist theory and the current NCTM standards in the teaching and learning of mathematics.

The 1989 set of NCTM standards were designed to prepare students for the information age and to compete in today's economy. As a result, the standards included technology, reasoning, designing models, thinking creatively, and problem solving. Differences in achievement existed for African American, Hispanic, Native American, female, and low-income students. Striving for equity in mathematics education, the standards are based on enrichment, fairness, empowerment, and cultural diversity (Hekimoglu & Sloan, 2005; NCTM, 2016).Stakeholders became concerned about the future of mathematical education (Beckmann, 2011). There was not a clear understanding about the decreased attention to skills and increased attention to understanding of the processes of math, and how best to achieve high quality teaching and raise student achievement (Hekimoglu & Sloan, 2005; NCTM, 2016). The NCTM standards deemphasize the abstract arithmetical computation and symbolic representation, for example the teaching of formal proofs, in favor of concrete understanding and cooperative learning. The NCTM defines mathematic literacy as confidently being able to reason, problem solve, make connections, communicate, anduse various mathematically representations (NCTM, n.d.). Having both computational skills and conceptual understanding will enable students to solveproblems that they encounter in their daily lives. In 2000 the NCTM expanded their definition of mathematic literacy to include functioning as a member of a changing world through mathematical knowledge. A

reflection on these current NCTM standards was important for the revision of the next set of standards, the CCSSM (Dickey, 2013).

CCSSM. Proponents of the CCSSM argued the development of standardized mathematics curriculum would encourage the development of well aligned instructional materials and creates an equal opportunity for all students to learn mathematics. Conversely, critics argued that standardization would curb differentiated instruction and content (Dingman et al., 2013). The movement toward standardization continued and in 2010 and resulted in a final guide that outlines common standards for K-12 mathematics curriculum. As of 2016, forty-two states, the District of Columbia, 4 territories, and the Department of Defense Education Activity, and have adopted the new CCSSM (Common Core State Initiative, 2016).

Members of the National Governors Association Center for Best Practices and the Council of Chief State School Officers developed this set of high-quality academic standards that build on the 1989 and 2000 NCTM standards (Dickey, 2013). The CCSSM state the content students should know, the exit criteria at each grade level, and build on the mathematical foundation from the previous grade. They require a greater conceptual understanding and application of skills, along with the development of procedural skills and fluency than the previous standards under NCLB. The new standards are more rigorous and focused on fewer topics, and they have greater coherence across grades.

Kessinger (2011) examined the National Defense Education Act of 1958, the ESEA of 1965, The National Assessment of Educational Progress, *A Nation at Risk, America 2000, Goals 2000,* and the NCLB Act of 2001. In addition to providing an

overview of these initiatives, the author highlighted the connections between each initiative and how the theory of education has not changed even as the goals under the different laws and policies changed. Although there was a call for higher standards and improved mathematical content with each initiative, it was countered by the traditional belief that schools were failing so they should go back to teaching the basics, primarily dealing with factual knowledge.

Implications

Initiatives in the past have failed to raise student achievement (Kessinger, 2011). The failure of past initiatives has been attributed to policy and district leaders disseminating content, materials, and assessments, without supporting educators with adequate self-directed professional development based on their current needs (Hargreaves & Fullan, 2012). In 2013 the New York State Education Department released the first state tests to assess the new CCSSM (New York State Education Department, 2013) Although students across the state had been experience a decline in assessment scores from 2009 through 2013, there was a significant drop from 2012-2013 when the more rigorous tests aligned to the new standards were first enacted (EngageNY, 2013). The release of the 2013 test scores indicated that although the assessments are aligned to the new standards, current traditional classroom practices and strategies are not successful at implementing the CCSSM. The CCSSM do not provide districts with direction for how to successfully teach the new standards, only what content to teach (Beckmannn, 2011, Porter et al., 2011) leaving districts and educators with an entirely new curriculum to be

implemented with traditional classroom and professional development practices (Harris, 2012a; Tournaki et al., 2011).

The sharp decline in the 2013 state assessments highlighted the need for districts to alter their current instructional and professional development practices to align with the new standards. In order for educators to successfully implement the CCSSM at the classroom level, they must first develop a complete understanding of standards and the necessary changes in practice (Beckmann, 2011, Porter et al., 2011). Therefore, educators must be provided support and professional development that addresses their needs regarding the implementation of the CCSSM and district leaders must consider those needs when designing professional development plans (Bostic & Matney, 2013).

When conducting this study, I anticipated the potential findings could reveal the educators' concerns and needs they have while implementing the CCSSM. These potential results could then be utilized by the district leaders to implement a professional development plan designed to address the local educators' needs and stimulate discussion concerning the implementation of the CCSSM. Based on the results of the study, the educators could engage in inquiry-based, self-directed professional development sessions where the content and structure is guided by the local district and educator needs.

Summary

Educational change theory suggests the problem of the low success rates for standards-based reform efforts to raise student achievement can be attributed to the failure of policy to address what goes on with the day-to-day instructional practices and student learning (Hargreaves & Fullan, 2012). Instruction takes place in the classroom

when teachers and students interact with the content and each other. In order for changes in instructional practices to occur, it is necessary to address the human and social characteristics of teaching and learning in the classroom. When implementing the CCSSM, it is important for district leaders to consider quality professional development that addresses educators' needs.

The 2010 CCSSM require a new curriculum to be implemented, however many districts are utilizing traditional classroom and professional development practices (Harris, 2012a; Tournaki et al., 2011). The gap between traditional practices and practices that are required under the new initiative was supported by research findings on alignment (Cobb & Jackson, 2011; Porter et al., 2011; Schmidt & Houang, 2012). Alignment between curriculum, instruction, and assessment is crucial for successful implementation of the standards and student achievement (Fulmer, 2011; Martone & Sireci, 2009; Polikoff & Fulmer, 2013; Squires, 2012). Furthermore, the literature highlighted the issue of locating aligned materials such as textbooks and technology-based supplementary materials (Reyes, 2014). Some researchers anticipated this change in practice would require ongoing sustained professional development that helps teachers build an understanding of the new standards and what changes they need to make in order to successfully implement them (Terry, 2010). The type of professional development and leadership behaviors employed has been found to effect the degree to which implementation is successful (Diamond, 2012; Finnigan, 2012; Terry, 2010). Past failure of reform efforts to raise student achievement and the need for professional development (Kessinger, 2011) is highlighted by low student assessment scores in 2013 and 2014.

Professional development in the past has not utilized adult learning theory. Knowles' theory of andragogy stresses the importance of determining adult learning needs (Knowles, 1970; McGrath, 2009). Constructivism states that people learn by applying the new knowledge to their past experiences and situations (Fiume, 2005; Lamanauskas, 2010). An environment that supports the implementation of the CCSSM is one that addresses the human and social characteristics of teaching (Hargreaves & Fullan, 2012) and one where teachers determine their needs and have an opportunity to engage with and learn about the new standards (Fiume, 2005; Lamanauskas, 2010; Knowles, 1970; McGrath, 2009). Such learning experiences motivate teachers during the implementation processes (Finnigan, 2012). Leadership that fails to support and motivate teachers while they engage with the new policy at the instructional level may have little effect on the successful implementation of the newly adopted CCSSM.

The literature underscores the challenges faced by district leaders and teachers as they determine how to successfully align their curriculum to the new standards, search for aligned materials, change their instructional practices, plan professional development activities, and consider leadership practices. Exploring the experiences of educators as they take on these challenges that they face implementing the CCSSM can provide the knowledge necessary to make informed implementation decisions that are evidence-based, as well as contribute to the development of successful implementation models. The following methodology section describes the participants, data collection methods, and data analysis methods for this grounded theory study where I explored the implementation experiences of educators at a rural Upstate New York School district.

Section 2: The Methodology

Student achievement is contingent upon alignment between the CCSSM and instruction. Researchers have found alignment to be insufficient (Cobb & Jackson, 2011; Porter et al., 2011; Schmidt & Houang, 2012), which leaves educators with the task of making considerable changes in their instructional practices (Bostic & Matney, 2013). The purpose of this study was twofold: (a) to understand what was needed at a New York school district to implement the CCSSM based on the experiences of the educators; and (b) to generate a grounded theory that can guide educators' practices. I designed this study to answer the following question: What experiences do educators at a rural Upstate New York school district have related to implementing the CCSSM and the New York State mathematics curriculum modules? This is a broad, open-ended question that is exploratory and seeks to generate a hypothesis rather than test one; therefore, it was best answered through a qualitative study (Corbin & Strauss, 2008). A ground theory research design was chosen to address the research question generated for this study.

Grounded Theory Research Design and Approach

Grounded theory research is an inductive process in which the researcher places him- or herself in the participants' setting and gathers observational data to be analyzed for understanding and developing a theory (Bogdan & Bilken, 2009; Merriam, 2009). A grounded theory method was an appropriate method selection to answer the research question and generate a theory about successful ways to implement the CCSSM that can aid in building a framework to help guide the participants' implementation practices.

In the emerging grounded theory design, a theory emerges from the data (Creswell, 2012). I did not define the variables for the purpose of testing them as in a quantitative study; rather, by analyzing data gathered from observing and recording descriptions, I sought information on the central phenomenon of the processes and experiences of these educators in relation to the implementation of the CCSSM (Birks & Mills 2011; Corbin & Strauss, 2008; Creswell, 2012). Data from individual and focus group interviews, observation, journals, and memos gathered at the participants' site were analyzed for the emergence of a theory. Survey research and other experimental designs would not have been effective methods for answering the question and developing a theory.

Survey research indicates how variables or a phenomenon are distributed across a population (Merriam, 2009). This study could have been addressed with survey research if I wanted to answer "what is" questions such as: which educators were most successful implementing the CCSSM, which standards were implemented the most, or even which standards were the most difficult for educators to address. Other quantitative experimental approaches would have been appropriate if I wanted to know what determines or causes the successfulness of the implementation of the CCSSM (Merriam, 2009). These quantitative designs result in numerical findings and are concerned with how much or how many of a certain variable(s).

Conversely, qualitative research such as grounded theory is concerned with understanding a population's experiences and employing analysis that can affect and improve practice. This study was qualitative and I sought to explore the participants'

experiences implementing the new CCSSM to understand how these educators thought about and adjusted to the new standards, as well as the processes they engaged in during their implementation. A desired outcome was to generate a theory that can aid educators and district leaders in building a framework to help guide implementation practices to help foster successful implementation of the new standards.

Ethnography, phenomenology, and case study designs are qualitative and have features in common with the grounded theory design (Creswell, 2012; Merriam, 2009). These three designs are alike in that they are used to examine situations through the lived experiences of participants, similar to grounded theory research. Data are collected from interviews, observational fieldwork, documents, records, and artifacts at the site of the participants. Analysis is then conducted by coding and categorizing these data. The data categories are then compared with one another by employing a constant comparative analysis. Although these qualitative methods are similar, they each have a unique focus and, therefore, variations in the way data are collected and analyzed (Merriam, 2009).

Ethnography focuses on cultural beliefs, values, and attitudes shared by a particular group (Merriam, 2009). Ethnography results in a rich description of the cultural meanings people make of their lives. Phenomenology focuses on the understanding of an often intense affective and emotional mutual experience. Interviews are the primary source of data and a phenomenology study results in a description of an emotional experience such as love, anger, or betrayal. Neither of these research methods focuses on exploring a situation or process. With this study, I intended to explore educators' experiences and generate a theory explaining the processes and situations that take place

during the implementation of the CCSSM that can aid in building a framework to help guide implementation practices. Although grounded theory and case study both focus on exploring situations, the grounded theory method is different from case study; it seeks to explore the processes of a situation in order to formulate a theory that emerges from the data (Creswell, 2012; Merriam, 2009). For these reasons, a grounded theory study was a more appropriate choice than other qualitative designs to address my research question. The grounded theory research tradition and approach is described in the following section.

Research Site

The participants at this site were purposefully selected to help me explore educators' experiences with implementing the new standards. This was in order to understand what is needed at this district to successfully implement the CCSSM and develop a grounded theory that can aid in building a framework to help guide implementation practices. Through this grounded theory study, I uncovered relevant patterns of challenges and successes that explained the participants' experiences implementing the CCSSM (Glaser, 2002). Purposeful theoretical sampling occurs when the researcher purposefully samples individuals or a site based on their ability to help the researcher develop or uncover concepts within a theory (Creswell, 2012). Deciding a starting point for a grounded theory study employs the researchers' knowledge of where to find information about the phenomenon they wish to study (Breckenridge & Jones, 2009; Corbin & Strauss 1990; Glaser & Strauss, 1967). Based on my goal of uncovering the participants' main concerns regarding their implementation of the CCSSM, I

conducted the study in a school where the educators are currently working on implementing the CCSSM. Further, based on my knowledge that I would find individuals at this school that are implementing the new CCSSM and are representative of educators implementing the CCSSM, I began this study by purposefully selecting a rural Upstate New York school as the research site.

Grounded theory strives to uncover conditions relevant to the phenomenon under study and determine how the participants respond to changing conditions and the consequences of those responses (Corbin & Strauss 1990). My intent was not to focus on the participants, but to determine what conditions have an impact on the implementation of the CCSSM by focusing on the processes, strategies, and practices they were using to implement the standards (Corbin & Strauss 1990). In a grounded study the researcher does not focus on sampling people but the behaviors as they act and interact, sampling the incidents, events, and happenings surrounding the work they are doing in light of the phenomenon (Corbin & Strauss 1990; Corbin & Strauss 2008; Glaser 2002). I investigated the work that these educators were doing implementing the CCSSM, how they were acting and interacting, the conditions that either facilitated or impeded their work, and the consequences that were a result of their work (Glaser, 2002).

Participants

From the population of educators at this rural Upstate New York school district, data were generated from a sample of six educators who agreed to participate in the study. I gained access to the participants by asking the superintendent for district approval and submitting a formal proposal, which was required to conduct the study. I

discretely complied with the guidelines set forth by the district leaders and obtained a letter of cooperation (see Appendix B for letter of cooperation). I distributed educator participation invitation letters explaining the study, in addition to consent forms, to the in-house mailboxes of all 23 educators at this district (see Appendix C for invitation letter). Seven educators agreed to participate and returned signed consent forms. I selected six educators based on the following three attributes: (a) they agreed to participate and returned consent forms (b) they had recent experiences implementing the standards and the New York State math modules, and (c) they are experienced classroom educators. Once I selected the participants, we discussed confidentiality and then I began data collection. After the focus group interview, I omitted one participant from the study because that individual lacked experiences with the CCSSM. Later in the study, the development of a new category led me to add another participant. The final study was based on data collected from a total of six participants. The participants had between 8 and 31 years of teaching experience. Four of them had 4 years of experience implementing the CCSSM and modules, one had 3 years, and one had 1 year of experience (Table 1).

Table 1

Participants' Years of Experience Teaching and Implementing the CCSSM

Educators	Total number of years of teaching experience	Total number of years of experience implementing the CCSSM and New York State math modules
Educator 1(1A)	16	4
Educator 2 (4A)	31	4
Educator 3 (5A)	17	4
Educator 4 (MA)	12	4
Educator 5 (SA)	18	3
Educator 6 (CCA)	8	1

Relationship to the participants. At the time of this study, I was employed at the district as a fourth grade teacher; I had a 19-year-long professional working relationship with two of the participants and had known the remaining four since the beginning of their employment at this district. I held no supervisory position over the participants. The research design had minimal risks to participants. Participants were objectively selected from the total population to best inform the study, not for the purpose of supporting my views or to create a favorable view of the school. After working in this very small district for 19 years, I was acutely aware of the consequences of breached confidentiality, particularly with the intimate nature of a district this size. These relationships and insider knowledge were advantageous to my understanding of what it is like to be an elementary

teacher facing challenges while implementing the CCSSM in this particular setting. Having similar experiences regarding the implementation of the CCSSM placed me in a position to validate the participants' experiences and concerns, providing them a source for reflection during data collection (Bogdan & Biklen, 2007).

The CCSSM have become highly controversial among politicians, the public, and school personnel. I have become knowledgeable about the CCSSM and have developed a personal point of view that is favorable towards the new standards. The participants were aware of my philosophical beliefs, knowledge, and experiences I have concerning the CCSSM. Given the fact that my knowledge of the CCSSM and that bias may differ from the participants', it is possible they perceived me as being critical of what they said and did (Bogden & Biklen, 2007). Or, it is possible the participants controlled and manipulated their statements into what they thought I would consider quality perspectives on the CCSSM. This could have led to the participants revealing false perspectives as opposed to their true feelings and perceptions that were important to them. Nonetheless, I remained neutral in the data collection process and encouraged participants to express their true beliefs.

I needed to identify with the group by having a sympathetic ear and not discussing opposing positions. I kept a reflective journal to guard against expressing or showing my bias or passing judgment, as well as for the purpose of building relevant knowledge. I also kept the record of my personal reflections to compare contradicting and corroborating perceptions during data analysis. My knowledge, viewpoints, and experiences that differed from the participants needed to be taken into account. I

developed strategies such as keeping my opinions to myself and validating the participants' experiences and personal viewpoints over my own for the purpose of turning potential difficulties into advantages during data collection.

Measures for protection of participants. Confidentiality was discussed and confidentiality agreements signed by me were distributed (see Appendix D for confidentiality agreements). All information collected from the data sources was kept confidential. Information was only used to construct the research report and not discussed with outsiders. Pseudonyms were used and no identifying information was reported. Data are stored in a secure locked location at my residence and will be destroyed after the 3-year time period required by the university has expired.

Data Sources

Prior to data collection and analysis, I obtained Institutional Review Board approval (# 06-08-15-0273558). In a grounded theory study data are collected from any sources that will supply information concerning the area of study and the concepts that are emerging from the data (Corbin & Strauss 1990, 2008; Creswell, 2012; Dillon, 2012; Holton, 2008). In this study I utilized a combination of data sources for the purposes of comparing and verifying emerging data to achieve triangulation (Corbin & Strauss 1990; Creswell, 2012; Merriam, 2009). In order to support the free flow of the participants' ideas and classroom activities, I chose to conduct interviews and observations, in addition to collecting educator journals. The interviews lasted for an average of 38 minutes; I audio recorded and then transcribed them into Word immediately following the interviews. The observations lasted for an average of 37 minutes and I recorded as many

events, reactions to events, student and educator activities, interactions between educators and students, and conversations as possible and then filled in the gaps in from memory shortly after leaving the observation site (Merriam, 2009). All data were entered into Word by date, pseudonyms, employment status and any other identifying notations that made pieces of the data easily retrievable (Merriam, 2009). Data collection continued for four weeks until all sources were exhausted, categories were saturated, and there was an emergence of regularities.

Focus group interview. The focus group interview gave the participants the opportunity to consider their own views about implementing the CCSSM while also considering the views of other educators (Merriam, 2009). Open-ended interviews are not dictated by predetermined topics and directions; therefore they allow the free flow of ideas and produce the densest data (Corbin & Strauss, 2008; Creswell, 2012; Hallberg, 2006). This structure allowed me to collect high-quality data through stimulated talk amongst the group that addressed my research question (Bogdan & Biklen, 2007). Since the goal was to uncover and bring to the forefront the participants' main concerns regarding implementation of the new standards (Holton, 2008), I began with the following opened-question: Would you tell me about your experiences implementing the CCSSM? Once this question was asked, the participants were free to elaborate and guide the content of the interview and I was in a position to ask them to expand on or clarify their thoughts (Creswell, 2012; Hallberg, 2006).

A common occurrence while using this open-ended interview style is that participants may not have much to say or there may be periods of silence during the

interview (Corbin & Strauss, 2008). Therefore, I designed backup questions rendering the interview protocol semi-structured (see Appendix E for semi-structured interview protocol). The semi-structured focus group protocol questions were designed to guide a discussion and elicit information about the CCSSM: (a) the participants' feelings and attitudes (Hallberg, 2006) about the CCSSM and their effectiveness to achieve their intended goals, (b) to what extent they feel they will need to change their teaching practices and instructional materials, (c) the impact of the CCSSM on student achievement, (d) what successes they are experiencing, (e) what needs they have, and (f) what they feel the ideal implementation processes would be (see Appendix E for semi-structured interview protocol questions). To elicit more information about their experiences with the CCSSM during the interview, I asked follow up questions, and/or probes, requesting participants expand on or clarify responses that are relevant to the conversation (Creswell, 2012).

Observations. Observations were important to study the workplace and gave me first hand experiences with what was actually happening (Corbin & Strauss 2008; Creswell, 2012, Merriam, 2009); I conducted observations in conjunction with interviews (Merriam, 2009). Through observation I was able to compare what I heard from the participants during interviews to what was actually happening in the classrooms (Corbin & Strauss, 2008). I was also able to observe interactions that the participants may not have been able to articulate during interviews (Corbin & Strauss 2008; Creswell 2012; Merriam, 2012). Merriam (2009) suggested observations give researchers an opportunity to observe selectively and attend to and discover concepts specific to the research

questions. It was possible these discoveries had become routine to the participants and they may not have mentioned them during interviews, thus adding to the understanding of the context under study that may not have been possible without conducting observations. Observations allowed me to gather data on the experiences of those participants who may have had trouble verbalizing their ideas during interviews. Taking on a strictly observer role allowed me to capture more of what is routinely happening in the classroom setting (Creswell 2012; Merriam, 2009). Conversely, a participant/observer role can have a more positive outcome as it gives the researcher the opportunity to experience the happenings from the views of the participants (Creswell, 2012). As a colleague of the participants, I have experience in the same substantive area facing the challenges that come with the implementation of the CCSSM; therefore, I possess the knowledge and sensitivity required to relate to their experiences. To minimize my effect on the situation, I chose to remain strictly an observer and limit my obtrusiveness in order to capture a true sense of typical, everyday classroom activities and processes. I conducted my observations with a narrowed focus on the participants' practices and strategies so I could develop an understanding of their experiences in respect to implementing the CCSSM.

Creswell (2012) suggested an open-ended protocol to record descriptive and reflective observational notes. An open-ended observation protocol was designed to describe and reflect information on the implementation of the CCSSM as it takes place during a math lesson (Creswell, 2012) (see Appendix F for the open-ended observation protocol). I used this protocol to gather field notes during observations of firsthand

experiences and behaviors as they occurred in the classroom. I also wrote memos on the protocol reflecting my thoughts related to hunches, insights, and themes that emerged.

Individual interviews. The individual interview protocol was designed to elicit information from the participants: (a) a description of the their responses to the CCSSM, (b) the effects of the CCSSM on student achievement, (c) what supports they have and what they still need, and (d) their experiences with the CCSSM (see Appendix G for individual interview protocol). To elicit additional information about their experiences with the CCSSM, I asked follow up questions, and/or probes, requesting participants expand on or clarify responses that emerged during prior data collection (Corbin & Strauss 2008; Creswell 2012; Hallberg, 2006). The individual semi-structured interviews gave me the opportunity to privately discuss the participants' personal views that they may not have been comfortable expressing in a group setting (Creswell, 2012). The time lapse between the focus group interview and the individual interviews gave the participants time to think through ideas and concepts discussed during the focus group interview, allowing them to expand on and provide a deeper explanation for them during their individual interviews. The individual interviews were a conversation between the participants and me (Bogdan & Biklen, 2007). I analyzed the data generated from them to inform the content of my questions for subsequent interviews. The interviews became more structured for the purpose of gathering relevant, comparable data as data analysis revealed themes.

Educator journals. Educator journals allowed me access to data that were representative of participants' personal experiences, attitudes, beliefs, and views

concerning the implementation of the CCSSM (Bogdan & Biklen, 2007; Creswell 2012; Merriam, 2009). Personal journals are a first person narrative about what the participants deem important (Merriam, 2009). Personal journal entries are useful to learn about the working lives of participants and are a record of their thoughtful attention to their own words (Creswell, 2012). Journals provided me with detailed evidence of the participants' experiences, attitudes, beliefs, and views concerning the implementation of the CCSSM (Bogdan & Biklen, 2007). For the purpose of developing a substantive theory, journals allowed me to collect data about their lives as educators, what they think is important, and what interpretations they are garnering from the CCSSM. Participants were asked to record in the journals as they have experiences that are related to the implementation of the CCSSM. Educator journals were distributed to the participants at the start of data collection and were collected at the end. The data collected from the personal journals of four of the participants and were compared to previously collected data. The journal data helped develop the properties of educator buy-in to the math modules and lack of student independence.

Researcher memos. Writing researcher memos starting from the first set of data being coded through the end of the study is useful when generating a theory (Birks & Mills, 2011; Corbin & Strauss, 1990; Dillon, 2012; Glaser & Strauss, 1967; Hallberg, 2006). Writing memos allowed me to keep track of concepts, categories, and codes that helped guide me to the next steps in data collection, coding, and analysis (Corbin & Strauss; Holton, 2008). Writing memos also helped me to stimulate new ideas related to the data and to decide which concepts were well developed and which were not (Corbin

& Strauss, 2008). Through writing memos, codes for the data and relationships between those codes were revealed (Holton, 2008). Categories were verified and core categories (the densest categories) emerged. During memo writing I conceptualized about how the categories were related, which lead to generating questions about the data and an emergent theory (Corbin & Strauss, 1990; Holton, 2008). The thought processes and written work that went into recording memos made it possible to take raw data to a conceptual level (Holton, 2008). Some researchers write summaries of their memos or diagrams, helping them to gain a clear organized picture of what their data analysis indicates (Corbin & Strauss 2008). I recorded memos throughout the process of data collection and used them to develop emerging understandings of the participants' experiences implementing the CCSSM (Bogdan & Biklen, 2007) (see Appendix H for summary of researcher memos). I also used the memos as a reflectivity process where I reflected upon and controlled for my biases concerning the CCSSM.

Early on, my memos mostly consisted of lists that I would consistently revisit; I rearranged concepts into groups, which then developed into categories. Further into my analysis, I kept more detailed memos about the connections emerging between the categories, their properties, and their dimensions. Simultaneously, I continued to keep running lists and categorizing my concepts on graphic organizers. I frequently revisited and rearranged the category lists and graphic organizers. As the categories became denser, I could identify those that were becoming core categories. I created a summary of my memos to help develop both the core categories and emergent theory. At this point,

the theory began to develop through making inferences and connecting all the core categories (Figure 5).

Theoretical Sampling

For the purpose of developing an emerging theory, the researcher jointly collects, codes, and analyzes data to decide where and what data to collect next (Holton, 2008; Glaser 1967). The CCSSM were new in 2010 and the development of a knowledge base about their implementation is currently in the beginning stages for most districts. Purposeful theoretical sampling allowed me to discover concepts related to educators implementing the new CCSSM (Corbin & Strauss, 2008). Therefore, purposeful theoretical sampling was important to my inquiry about the CCSSM, as well as for generating questions and concepts that future research on the new initiative may be based upon.

In grounded theory, based on the researcher's knowledge of where to sample and on what information will most likely answer the research questions, the researcher begins a study with a target population and purposefully selected a data source (Breckenridge & Jones, 2009; Corbin & Strauss 2008; Glaser & Strauss, 1967; Hallberg, 2006). To begin my investigation, I collected the first set of data from a focus group interview with the sample group of six educators who agreed to participate. Grounded theory utilizes theoretical sampling of data in conjunction with theoretical data analysis (Bogdan & Biklen, 2007; Corbin & Strauss, 2008; Corbin & Strauss 1990; Creswell, 2012; Glaser & Strauss 1967; Merriam, 2009). I developed concepts through constantly comparing concepts from the first set of data with subsequent data sets, followed by questions about

those concepts (Corbin & Strauss, 2008; Holton, 2008). I based decisions about subsequent data collection, including which sources and participants to seek out, on the questions and concepts that emerged from and were responsive to the analysis of data from the focus group interview (Corbin & Strauss, 2008; Corbin & Strauss 1990; Holton, 2008). As the data analysis revealed a need to interview, observe, and analyze to further develop a theory, I sought out activities and documents from the six participants who were best suited to supply the appropriate data to address my questions and refine the concepts. All subsequent data collection and analysis followed this procedure. I remained flexible and followed leads that supported the collection of more data based on what data were most likely to address questions that arose from simultaneously collecting and analyzing the previous sets of data analyzed. Corbin and Strauss (2008) describe theoretical sampling as a reoccurring cyclic pattern of: (a) collecting data, (b) analyzing the data, (c) discovering emergent concepts, (d) generating questions from the concepts, and (e) collecting more data based on those concepts and questions. This cyclic pattern continues to until concepts are saturated, well defined, and explained in depth. With each data collection and analysis, I stayed focused on subsequent data collection related to the implementation of the CCSSM at this district. The questions that grew from my analysis and concepts that unfolded from each previous set of data became more specific and refined as I sought more data sources. This cyclical process continued throughout my research until the concepts were saturated and no new data were generated in respect to the participants' experiences implementing the CCSSM.

Open Coding

In a grounded theory study the goal of data analysis is to understand and produce a theory about a process using concepts and categories that emerge from data (Dillon, 2012). I began my analysis of data by using open coding (Birks & Mills, 2011; Corbin & Strauss, 2008; Dillon, 2012; Holton, 2008). Open coding broke down the raw data, allowing me to develop new ways of thinking about the phenomenon under study (Corbin & Strauss, 1990) and then determine a direction in which to take the study (Holton, 2008). In the open coding phase, I broke down data line by line into chunks of raw data, and then generated concepts that represent each chunk of that data (Corbin & Strauss 1990; Corbin & Strauss 2008; Hallberg, 2006; Holton, 2008). I read through the data and assigned code names to the concepts of actions, events, interactions, and processes related to the research questions (Corbin & Strauss, 1990; Dillon, 2012). I wrote analytical notes in the margins of the documents under analysis (Dillon, 2012).

Constant Comparative Analysis

From the analysis of the first set of data through to the generation of the theory, I employed constant comparative analysis (Corbin & Strauss, 1990; Holton, 2008). I began by comparing incidents to incidents and looking for similarities and differences (Birks & Mills 2011; Corbin & Strauss, 1990; Glaser & Strauss, 1967; Holton, 2008). I gave similar incidents code names and compared new incidents to previously developed codes, testing the previous codes with new data to see if they were persistent. With further analysis, I compared codes to codes. Over time, I grouped the codes by similarities and assigned them category names. Upon further analysis, I identified the conditions under

which the categories exist, their properties, and their dimensions, which then formed subcategories (Corbin & Strauss, 1990). I compared subcategories to their respective categories by reconstructing the data in new ways and formulating relationships, which I then compared to new data (Corbin & Strauss, 1990; Corbin & Strauss, 2008; Dillon, 2012). I determined the sustainability of relationships by keeping those that were repeatedly supported with new data for further comparisons, while I revised those that were weak and discarded those that were not sufficiently supported (Corbin & Strauss, 1990). Through repetition and variation the categories became saturated and I identified the core categories as those that were the densest and most relevant to the concerns of the participants. Through constant comparative analysis I was able to make theoretical connections, aiding in the generation of theory (Birks & Mills, 2011; Corbin & Strauss, 1990; Glaser & Strauss, 1967; Holton, 2008).

Core Category

As the comparison of data continued, I committed to a set of emergent core categories that accounted for the most variation in data and explained the main concern of the participants (Corbin & Strauss, 1990; Dillon, 2012; Holton, 2008). These core categories occurred frequently, were related to all other categories, and were central to the study (Birks & Mills, 2011; Holton, 2008). At this point with the emergence of a pattern, when all new analysis rendered codes that only fit into the existing categories and core categories were identified, I began selective coding (Holton, 2008; Dillon, 2012).

Selective Coding

I focused selective coding on the core categories and the main idea presented in the research (Corbin & Strauss, 1990). I strived to develop a complete theory by delimiting coding to only those variables that related to the core categories (Holton, 2008). I filtered out data that were regarded as not having ample importance to the developing theory (Dillon, 2012). Using these categories, I summarized, described, and clarified the grounded theory (Birks & Mills, 2011).

Data Analysis Results

Through analysis of data collected from a focus group interview, individual interviews, observations, educator journals, and my researcher memos, I identified concepts, theoretical connections, and categories that facilitated the development of a grounded theory. The following theory emerged: Although educators have bought-in to the CCSSM, implementation has been challenging. They are faced with module and standard challenges, as well as student learning obstacles and changes in practice. Addressing specific educator needs can help to foster the successful implementation of the standards. Collecting, coding, and recording data, the findings, the emergent theory, and quality and accuracy are discussed in the following paragraphs.

Collecting, Coding, and Recording Data

As mentioned previously, I began data collection and analysis with a focus group interview. I used the open codes and categories from the focus group interview to guide probing questions in the follow-up individual interviews and observations (Corbin & Strauss, 2008). Thus, new data were generated that were responsive to and derived from

the initial categories from the focus group interview (Corbin & Strauss, 2008; Hallberg, 2006; Holton, 2008). After conducting follow-up individual interviews and observations, I added initial codes and themes to the data corpus and I continued to employ open coding with all data until a theory began to emerge. I determined relevance of the emerging theory by comparing new concepts and categories, and the properties of those categories, to existing ones by looking for repeated concepts and similarities and differences between concepts (Corbin & Strauss, 2008; Corbin & Strauss, 1990; Laws & McLeod, 2004). Those concepts that did not repeatedly surface or relate through comparison I deemed irrelevant to the study and dropped (Corbin & Strauss 1990). As the codes became saturated, they became substantive codes and core categories. Once the core categories emerged, I began selective coding; at this time I also collected and coded educator journals. I coded only the data relevant to the emerging theory and filtered out irrelevant data (Birks & Mills, 211; Dillon, 2012; Holton, 2008). This allowed me to make theoretical connections, which led to theory development (Corbin & Strauss, 1990; Glaser & Strauss, 1967).

On Monday of the first week of data collection, I conducted a focus group interview with six participants. It was audio recorded and lasted for one hour and eight minutes. Later that same night, I transcribed the interview and then open coded it the following morning. During open coding, I read through the transcript data and hand coded it by underlining sentences and groups of sentences reflecting single themes. In the margins, I hand recorded words and researcher comments that reflected these themes. I then revisited the data and assigned each piece of the transcript a concept code name, a

word or group of words that represented the ideas in the data. I organized the concepts and themes under the central idea of implementing the CCSSM and the math modules. After further examination of the data, I grouped the concepts together based on similar attributes and organized them under category names that represented their similarities. The focus group interview codes fit into eight categories: *program alignment, math modules, student learning obstacles, math standards, teacher changes beliefs/practices, tests, ELA,* and *general standards* (Table 2). Math standards and modules and student learning problems were the two largest and densest categories.

Table 2

Emergent Categories and Supporting Evidence

Category	Data Source	Evidence
Program Alignment	Focus Group	1A- "The only thing I do like with math is that it goes through the grades so that everybody is learning the same thing all the way through, you know because I think that was a big problem."
Math Modules	Focus Group	4A- "But in math I think that's why it's a little bit more straightforward, the other thing is I just find math to be amazing, it amazes me what these kids can do, absolutely amazes me and I really like the math modules, I really do." MA- "I can use some of these examples in the math modules, but I cannot use all of them, I mean we might as well beat our heads against the wall."
Student Learning Obstacles	Focus Group	5A- "And there are a lot of new terms that they had never heard. . . . Decomposition, they did not know that. They didn't, they didn't know decomposition. Yea so when I asked them about breaking fractions they didn't know that they broke them into units. . . . Or the way they had them break it down in the module, the fourth grade module, is to start with 5/6 and then you decompose it by breaking it down into 1/6 plus 1/6 plus 1/6 and so they just didn't know that term. So then we talked about how food decomposes and breaks down and we did a little hands on today, cut strips and made fractions with thirds and two thirds so they know that two thirds equals one third plus one third and three thirds equals the whole strip, the value of the whole is one. Things like that, I found that out with some of the vocabulary so far."

(table continues)

Category	Data Source	Evidence
Student Learning Obstacles	MA Interview	MA- "But I noticed that the skills, the self-independent skills, I'm not seeing any jump or anything, it's bad, it's really bad…they have no clue how to start on their own, how to move a seat even to get into a group." MA- "Yea, because you know the problem a lot of times with math is…sometimes they can't answer a question because they don't know the vocabulary. They don't, it's a different language, you know I said even 'Inverse, anybody know what inverse is?' And my 6th grade class goes 'Nope.' I said to them, 'Well it really just means opposite, but I want you to know when you hear the word inverse, in your head I want you to say opposite, opposite, opposite.'"
Math Standards	Focus Group	MA- "Like the math standards give you a map, a one page map. It gives you the major themes the standards are kinda, you know, small." MA- "The part that's always tricky is not so much the standards, but it's the math practices, because that the stuff that's a little less tangible."
Teacher Changes in Beliefs/Practices	Focus Group	SA- "I think the style of teaching is different, like when I first started teaching (standards) it was very much group work and students, the whole inquiry based learning now. It's more where the students are doing the work and you reinforce what they're learning, and you support it, but it not as much where you're spitting it at them."
Tests	Focus Group	4A- "Do you know what bothers me too is the math test was fraction laden. Why do they go through all this stuff that they have been taught through the whole year and then it was fraction upon fraction upon fraction and that was the last according to the module, that's the last module that you even get to."

(table continues)

Category	Data Source	Evidence
ELA	Focus Group	5A- "Actually the ELA is pretty scripted, but there's just so much of it that there's no way you can cover it…the modules, they're pretty scripted."
General Standards	Focus Group	4A- "You need it straight up and simple, because everybody is too busy to sit there and decipher this stuff, it's like you know what, just say it."
Teacher Needs	SA Interview	SA- "But I think it would be important for us to give us time to and I think that's part of being a professional, that we would actually use that time to go 'Ok I have this book, let me sit with my binder and look go through going ok, I can use this one this one this one, target it, I can do formative assessments on it, and a summative assessment on it, and by the end of this book, these ten or twenty standards are completed', that would be amazing. . . . I just noted it was nice to talk to other people as professionals, to have that professional discussion. I think we get caught up sometimes where we don't have that time to just talk as adults."
Alternate Sources	SA Interview	SA- "I just quickly scanned through it, I liked that it was like, I can just do this. It's already pre-packaged, makes sense of it."
Student Learning Strategies	MA Observation	Unique teaching strategy having students discover an incorrect step in problem solving … Students are very comfortable with this "fix the mistake" approach Ss begins to share and forgets what it is called … T says "It's up there" and points to the word wall …T Ss says "Congruent" and finishes …this is the teacher that mentioned word wall being an effective strategy for teaching math vocabulary during the focus group

(table continues)

Category	Data Source	Evidence
Teacher Directed Instruction	MA Observation	T demonstrates how to write the rule step by step Ss listen. The students copy the statement of congruence. T puts points up on SmartBoard
Student Engagement	MA Observation	Students are kept engaged during teacher directed even when her back is to them. . . . These students seem very in control of their learning they can agree, disagree, pick out mistakes, and ask questions. . . . Students appear excited about the secretive project
Educator Buy-in	CCA Interview	CCA- "When I think about my own education…the strategies and the ways that I figured things out, it's all because some teacher taught me some strategy, and I was fortunate enough to be able to remember the strategy and apply the strategy, but I really, mathematically, have no idea what I'm doing. So my understanding is that the new standards help teach kids, well, not only what they're doing, but why, like that deeper understanding of math."
Math Module and Standard Challenges	5A Interview	5A- "Time, I need time, we need time. I need time to, and here's another thing, is, they give you a box of modules and say "Here you go!" I mean, so I'm kind of, I'm you know, I'm learning along with my kids, because I'm having to take it all upon myself, see what they want, see how they want it taught, and then I'm bringing in a bunch of my own."
Changes in Practice	SA Interview	SA- "Where it's supposed to be student driven, and students taking the lead on things and students being aware of the standards in that way…Student directed and everything like that, teaching has, it definitely has changed, I mean, just the style of teaching, like, I think there is always a conflict within the teacher that you're used to doing lecture, and I think there's a place for lecture where there's like, note taking and teacher directed, but I think there also has to be a balance where you do have the student figuring it out."

I entered these categories into a Word chart on a password protected computer. I reexamined the data, and omitted the information in the ELA column since my focus was on math. I also omitted one participant because her contributions were strictly related to ELA. I color coded the entire transcript so as to not miss any relevant data pertaining to the remaining seven categories. I broke the focus group interview into chunks of data that I color coded to represent each category and entered it into Excel on a password protected computer. I entered each color coded chunk of the transcript in the right column, initial codes in the middle, and category names in the far left column (see Appendix I for Categories and Subcategories). The data that I collected from the participants gave me the evidence to support each category, direct the next data collection, and compare with new incidents and codes from subsequent data generated.

Currently this year, participant SA has not yet been assigned math students but was implementing the CCSSM and the New York State modules for the previous four years; to date this year, SA has been implementing ELA standards. During the focus group SA was in a unique position to contribute information about math standards, standards in general, and how math standards compare to ELA standards. I was interested in how SA interpreted the focus group conversation concerning the categories that were formed and exploring if a relevant relationship between ELA standards and math standards existed. The literature review shows there is ample research that has suggested educators need to change their instructional practices with the adoption of the new standards, one of the less dense categories from the focus group data analysis. I was

interested in how SA's teaching practices have changed; therefore, I chose to conduct a follow up interview with SA.

I also conducted the interview with SA during the first week of data collection, on the afternoon following the focus group interview. It lasted for 35 minutes and I audio recorded and transcribed it later that same day, in the same manner as the focus group interview. Then I color coded and entered the transcript into Excel on a password protected computer (see Appendix I for Categories and Subcategories). Comparing new incidents to the codes from the focus group interview led to the development of two new categories to explore further: *educator needs* and *alternate sources*. I coded all other incidents into existing categories, rendering math modules and student learning obstacles even denser. This comparison of data prompted me to seek out an observation and an interview with MA to further explore the two new categories of *teacher needs* and *alternate sources* (see Table 2 above) and two subcategories of *students learning obstacles* that emerged during the focus group interview and the individual interview with SA: *the lack of student motivation* and *independence*.

On Thursday of the first week of data collection, I conducted an observation followed by an interview with MA. The observation was 37 minutes and the interview was 35 minutes. The purpose of conducting the interview after the observation was so that we could discuss student motivation and independence as it was observed during the lesson. I recorded the observation on an open-ended observation graphic; I recorded what I was visually observing in the left column and my reflections in the right hand column. I followed the same procedures for analysis of data from the observation, including coding,

entering into an Excel sheet, and comparing to existing data, all in a timely manner (see Appendix I for Categories and Subcategories). While analyzing the data from MA's interview and observation, I expanded on the use of alternate sources and student independence, prompting me to further explore the category of *student learning obstacles* and its relationship with both math vocabulary and student independence. Data analysis from this third interview confirmed and solidified the dimensions of the *student learning obstacles* category. I combined the *standards and modules categories* and renamed it *math standards and modules challenges*. While comparing the observation data with those collected previously three new categories emerged, which were then further developed with subsequent observations: *teaching/learning strategies*, *teacher directed instruction*, and *student engagement*. To explore the lack of *student independence* and *motivation*, I conducted two additional interviews: one with 5A and one with 4A. Data analysis from these two interviews saturated all the categories and no new incidents were surfacing. Further, *math standards and module challenges* emerged as the core category as it was the densest, it related to all other categories, it explained the most variation among participants, and it explained the core concerns of the participants. At this point, I began selective coding of the data.

I revisited the data from each source many times, constantly writing memos, making comparisons between data sets, reworking the data analysis, and developing an accurate understanding of the participants' experiences implementing the CCSSM and the New York State math modules. After further analysis, the *program alignment, alternate sources, teaching/learning strategies,* and *teacher-directed instruction*

categories were redistributed into the remaining categories, rendering them even more relevant. For instance, 1 A described the alignment between grade-level content as a big problem so it was combined into the *math standards and module challenges* (Table 2). Further, SA described how they scanned through other supplemental materials. Likewise, other participants expressed how spending time seeking alternate sources is a challenge. Although *teacher-directed instruction* was observed, student-directed instruction was also employed suggesting that it be combined with *changes in beliefs and practice along with student-directed instruction* (Table 2). The *tests* category was divided between *teacher needs and math standards/module challenges,* and *student engagement* was merged into *student learning obstacles*. For example, 4A described how a fraction laden state assessment needs to be aligned to the content taught (Table 2). It was also expressed that there was a need for professional development time to accomplish this task. Further, MA expressed the need to develop student independence so students could engage in the new content. *Educator changes in beliefs and practices* category were redistributed between *changes in practice* and *educator buy-in*. For instance, SA described how teaching has become more student inquiry-based (Table 2). Likewise, CCA described the new teaching and learning strategies as ones they value because the strategies help students develop a deeper understanding of math concepts. Four categories related to the core category of *math standards and module challenges* remained: *educator buy-in, student learning obstacles, changes in practice,* and *educator needs.*

Questions about the connections between the core category and the remaining related categories led me to the conclusion that although educators hold positive views of

the standards and modules, they are faced with many math standards and modules core challenges and are concerned about their ability to successfully implement the CCSSM. Two related, dense categories of challenges that emerged from data analysis as important concerns for the participants were *student learning obstacles* and *changes in practice*. The educator needs identified by the participants can be viewed as solutions to the challenges they face while implementing the CCSSM.

To further explore the *educator needs* category and how it relates to student independence and *changes in practice* from the perspective of a curriculum coordinator, I scheduled an interview with CCA. I returned to the field in order to determine if the related challenges under the two categories *student learning obstacles* and *changes in practice* were significantly relevant to the participants and sufficiently dense to become part of the theory. To further develop the property of student independence (under *student learning obstacles*) and student-directed learning (under *changes in practice*), I determined it was necessary to conduct additional observations. I conducted three more observations, one each with 1A, 5A, and 4A. Data were collected, analyzed, recorded, and compared in the same manner for all these subsequent observations and the additional interview. Subsequent observations lasted for an average of 37 minutes and the interview lasted for 38 minutes. Lastly, I collected four educator journals which I then entered into an Excel sheet (see Appendix I for Categories and Subcategories) and compared to the previously collected data at the end of the study.

Findings

From the initial open coding of the focus group interview, the core category of *math standards and modules challenges* became continuously denser and more saturated, which represented the core concern of these educators as they try to successfully implement the CCSSM. Data analysis revealed that in addition to the core category, two categories of related challenges that hinder successful implementation emerged: *student learning obstacles* and *changes in practices*. Another dense category that emerged from data analysis is *educator buy-in*, with all of the participants having bought-in to the new teaching philosophy that underlies the CCSSM, pointing to strong educator support for the new standards and curriculum. Lastly, *educator needs* emerged as a dense and relevant category supported substantially by data collected from all participants; these needs must be thoroughly addressed to improve the implementation process. These needs can be analyzed to develop solutions that address some of the challenges identified in the study and serve as a resource for the district leaders and educators in their efforts to successfully implement the CCSSM, as well as in the future when implementing curriculum in other curricula areas. The following graphic illustrates the emergent theory, the category of *educator buy-in*, the core category of *math standards and module challenges*, the two related challenges categories of *student learning obstacles* and *changes in practice*, and the category of *educator needs*. Figure 5 below illustrates the relationships between the categories and the more complete emergent theory: Although educators have bought-in to the CCSSM, implementation has been challenging. They are faced with module and standard challenges, as well as student learning obstacles and

changes in practice. Addressing specific educator needs can help to foster the successful implementation of the standards (Figure 5). The following paragraphs discuss each category in more depth.

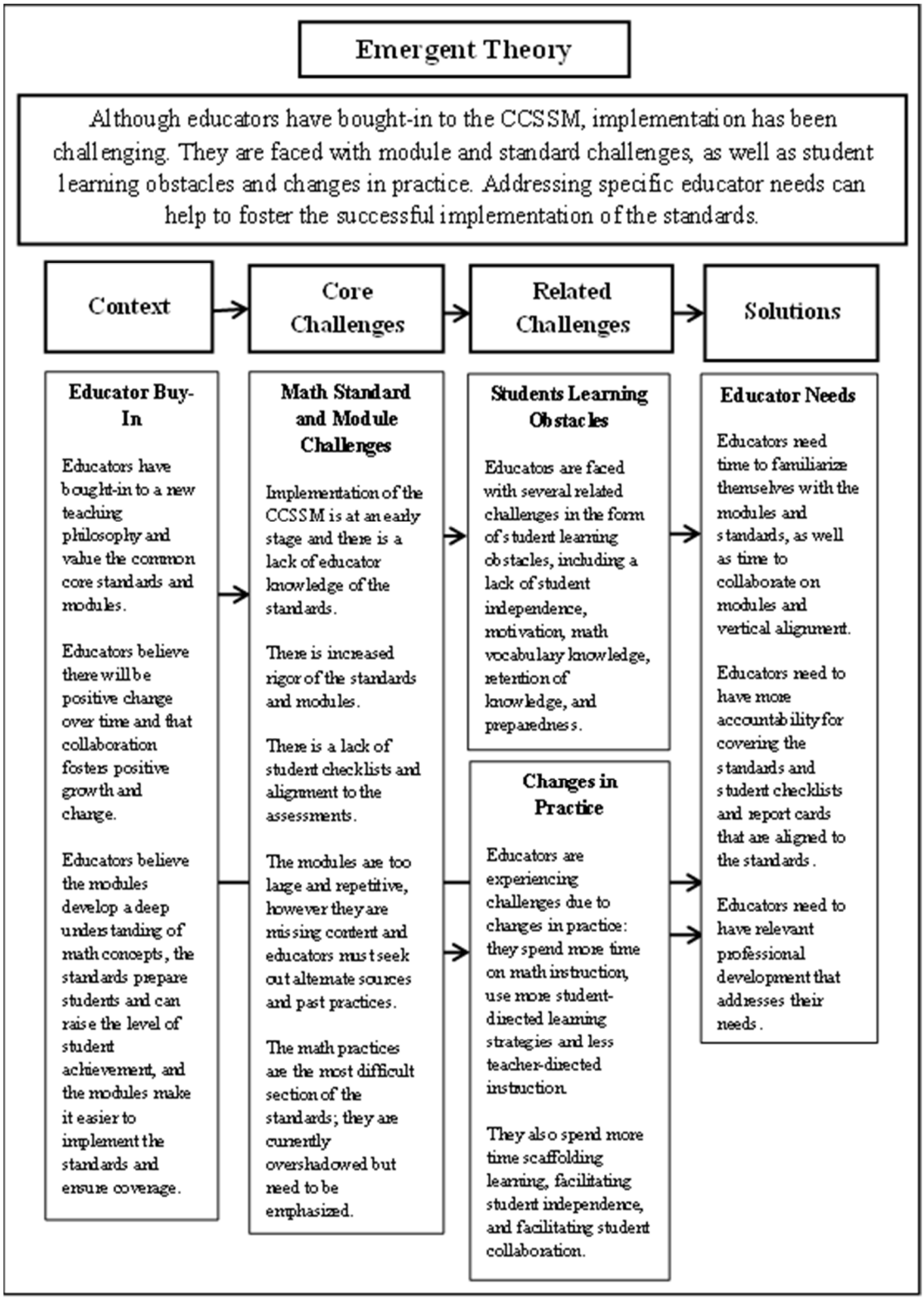

Figure 5. Graphic illustrating the emergent theory.

Math standards and module challenges. Researchers have suggested with shifts from prior state standards to the CCSSM educators need to familiarize themselves with the standards and mathematical practices, as well as align their curriculum and classroom materials with the standards (Dingman et al., 2013; Penuel et al., 2009; Schmidt & Houang, 2012). These changes in knowledge and practice highlight the challenges faced by educators while implementing the CCSSM, including the emphasis on different mathematical topics and changes in the level of mathematical reasoning (Dingman et al., 2013). Although the participants in this study have bought-in to the standards and modules, they face many implementation challenges; this is supported by data analysis that indicated these challenges were identified from every data collection source and all participants. These challenges emerged as the densest category and the core concern of the participants. The following properties were identified through data analysis under the math standards and module challenges category: (a) implementation of the CCSSM is at an early stage, (b) lack of educator knowledge about the standards, (c) increased rigor of the standards,(d) lack of alignment to state assessments, (e) lack of a standards checklist, (f) the modules are too large and repetitive, (g) the modules are missing content, (h) educators must seek out alternate sources and past practices, (i) the math practices are the most difficult section of the standards, and (j) the math practices are overshadowed by the need to cover the content standards but should be emphasized.

Although implementation is at an early stage, the participants believe that there will be a positive change over time. Findings also indicated that the challenge of increased rigor of the standards directly relates to the participants' belief that the CCSSM

develops a deeper understanding of math concepts, as the new initiative requires students learn the conceptual foundations of math rather than memorization of facts, formulas, and algorithms. Challenges related to those under the core category were described in the following two dense categories: *student learning obstacles* and *changes in practice*. It is possible that student preparedness is directly related to a lack of student checklists, with many students advancing to the next grade level without properly mastering the content from the previous grade level and leaving them without the necessary knowledge to be successful. Also, student independence may be related to the rigor of the math practices, as they are the most difficult to master and require a significant level of student independence to complete.

Implementation of the CCSSM is at an early stage. This district began implementing the CCSSM in 2011 and many of the participants have been implementing the standards for the past four years. This timeline is quite short for educators to overhaul their curriculum and implement an entirely new system without sufficient guidance and professional development from the administration. Further, at the time of this study, the students at this district were on their fourth year of instruction with these new standards and curriculum, with most having just as many, if not more, years of instruction based on the previous standards under No Child Left Behind (NCLB). These students are just beginning to acquire a knowledge base concerning the CCSSM that continues to grow every year the standards are implemented. It is clear that the implementation is still at an early stage, simply making the newness a challenge intrinsically. This property that emerged under the category of *math standards and module challenges* is related to the

idea that educators believe there will be positive change over time, under the category of *educator buy-in*, which contributes to the theoretical development of although the educators have bought-in to the standards and modules, they face many challenges with the implementation processes. CCA explained in an individual interview:

> If we step back and look at a whole, if we think about the first time that we introduce the math modules, and we think about it, you know, at the end of this year or the beginning, or last year, or the beginning of this year, I bet there has been significant improvement…This is the first year that there's been true consistency with every grade. (see Appendix I for CCA interview lines 217 and 494)

Lack of educator knowledge of the standards. Educators need to develop a deep understanding of the standards and what needs to be taught to successfully implement the CCSSM (Liebtag, 2013). The participants identified a lack of educator knowledge of the standards as a significant challenge in implementing the CCSSM. The relative newness of the initiative, along with a lack of time for the participants to familiarize themselves with the new content, has resulted in a general lack of knowledge about the standards for the educators in this district. As 4A expressed during the focus group interview:

> I think that there's a lot of people who don't follow them, and for many reasons, one might be they don't get to it, one might be, I think a lot of people it's because they don't understand it. Um, not understand it, not understand the standards. (see Appendix I for focus group interview line 528)

5A further stated in an individual interview:

> Time, I need time. We need time. I need time to, and here's another thing, they give you a box of modules and say "Here you go!" I mean, so I'm learning along with my kids, because I'm having to take it all upon myself, see what they want, see how they want it taught, and then I'm bringing in a bunch of my own. (see Appendix I for 5A interview line 652 and 654)

During an interview CCA discussed the challenge of developing expertise in multiple disciplines with the current time constraints, "That's really reality in elementary because even if you didn't sleep, you don't have enough time to be, you can't be an expert in everything, and you teach everything, you're it" (see Appendix I for CCA interview line 706).

Increased rigor of the standards and modules. Researchers have found the CCSSM are more rigorous than the previous standards under NCLB (Cobb and Jackson, 2011). The participants expressed that they feel the standards and modules have increased mathematical rigor. They generally identified the increased rigor as a positive change, however they often did so explaining that although positive it is also a challenge. The rigor of the standards requires the students not only to solve math problems, but also to defend their answers by explaining why and how they solved them. The standards also require the knowledge of more sophisticated math vocabulary. The participants described teaching and learning to develop the skills and knowledge necessary for both the educators and the students as challenging. MA explained during an individual interview:

> It's increasing the rigor, I see that, I see like, the fact that rigid motion is a word I would never have used with them but I use it all the time now, um, vector is a, I

> would call that a ray. I would never call it a vector with my class. I call it a vector and I know, now that I use vector here, when they get to [X class] and they start hearing vector in [X class], they're gonna go, "Oh, it's something I already know!" (see Appendix I for MA interview line 471)

MA further noted in their journal, "I am pleased with the rigor and have had some good experiences implementing the common core" (see Appendix I for MA journal line 510). Similarly, in an individual interview CCA stated, "I think they're hard, I think that they're challenging. They're not what students have been used to" (see Appendix I for CCA interview line 485).

Lack of alignment to the assessments. If students are to be given the opportunity to learn the standards, then those standards and assessments must be aligned to classroom instruction (Fulmer, 2011; Martone & Sireci, 2009). Alignment of the standards with curriculum, instruction, and assessments is necessary for successful student performance on state assessments (Kurz et al., 2010). During data analysis, lack of alignment to the assessments emerged as a reoccurring pattern in the data. State assessments were designed to assess the standards that are being covered in classrooms and it became clear that the participants feel that certain areas carried much more weight than others. It was a challenge for the participants not knowing which content was going to be a large percentage of the assessments and which was going to be a less, leaving them unable to adjust their instruction time, depth, and breadth accordingly. If the depth of content covered on the state assessments is communicated to the participants, they would have a clear understanding of how deeply to cover each section of modules curriculum. During

the focus group 4A expressed frustration with the large percentage of the test focusing on fractions:

> Do you know what bothers me too is like the math test was fraction laden and it's like, why do, why do they go through all this stuff that they have been taught through the whole year and it's like, it was fraction upon fraction upon fraction and that was the last according to the modules, that's the last module that you even get to. (see Appendix I for focus group interview line 103)

MA added that that New York State Education Department posts information about what content is covered on the state assessments, "They have that right online, you don't even have to look at the state data, they have a sheet that tells you what percentage is what" (see Appendix I for focus group interview line 125). Although there was sufficient support for the educators concern about the state assessments, one participant did not express concern about them. During the focus group interview SA expressed concern that focusing on assessment content as opposed to standards could prove to be problematic. SA stated, "Is that going to be the future focus? You mean so if we focus on fractions, well then they go [will], 'Forget about fractions" (see Appendix I for focus group interview line 132). During an individual interview SA further stated, "And as far as the test goes, they don't put a lot of weight on the test…they put it on the standards" (see Appendix I for SA interview lines 482 and 483).

Lack of standards checklists. There was a consensus among participants that the lack of a condensed checklist to easily assess how well students have mastered content was a challenge. Without quickly and easily being able to assess what content had been

mastered and to what depth, participants were unable to pinpoint what areas needed additional attention, leaving students to move onto the next grade level without fully mastering all of the content. While discussing having a checklist of the standards during the focus group, 1A stated, "I think, because we discussed it one time, because originally they wanted to make the report cards align with all the standards" (see Appendix I for focus group interview line 136). During an individual interview MA further explained:

> Well that's the thing when we talked about it at the focus meeting, if we had that standard as a sheet and check it off…and send the kids, like, give it to the kids, say "Take this on to [X] class with you" and she'd go "Oh, didn't do module 8", you know, so that, I get that benefit, I teach [X], [X], and [X]. I know what [X] had, what they didn't, I know where I ran short. (see Appendix I for MA interview lines 40 and 41)

The modules are too large and repetitive. Participants described the modules as too large and current time limits make it impossible to use them in their entirety to cover all the content standards. The participants expressed frustration about not having time to examine and cut down the module lessons in order to cover all of the required standards within the time frame. Throughout the study the participants continued to express frustration about the redundancy of the module lessons. In their journal, MA noted:

> The modules are set up so that I will fail to accomplish all the content before the year even starts. Module lessons are set up to take a longer period than I get to teach daily. So I need to spend much time figuring out what to cut vs. keep. Why

> couldn't the modules simply have been created for 40 minute blocks of time? (see Appendix I for MA journal lines 241-244)

During 1A's observation, I noted that this participant cuts down modules from about four pages to two pages (see Appendix I for 1A observation line 228). Further, 4A noted in their journal, "I do feel that there is a lot that goes with the modules, but you can pare it down if you need to" (see Appendix I for 4A journal line 233). During an individual interview 4A further explained, "It's too much, yea they could cut it down to about half. You could still introduce the same amount of topics, but you cut it down, cut the time down, cut it all down…yup, I've never gotten through five (modules)" (see Appendix I for 4A interview lines 142 and 145).

IA noted in their journal, "I feel the math modules are great, though they are a bit repetitive" (see Appendix I for 1A journal line 202). During the focus group 1A further explained, "Because it is a little cumbersome…yea in [grade level removed] the books like this [shows with a finger gesture] for adding to 10 and subtracting 10. Like how many little bonds can you build? It's like, you know, once they get it they get it" (see Appendix I for focus group interview lines 282 and 286). Both MA and 5A discussed how there is too much time spent repeating instruction on the same concepts. 5A explained:

> I also think that the modules that I've worked with so far are very repetitive. Like, they just keep repeating it over and over and over and over again . . . I am, I am because it's so repetitive, it says the same thing over and over and over, where when you first teach you take the one sheet and you know, I'm teaching with that

> one sheet but then you're able to send them with the whole packet because it just keeps repeating and repeating and repeating. (see Appendix I for 5A interview lines 162 and 169)

While discussing this challenge during the focus group interview MA stated, "I can use some of these examples in the math modules, but I cannot use all of them, like, I mean we might as well beat our heads against the wall" (see Appendix I for focus group interview line 255). 5A added, "It does kill it to death" (see Appendix I for focus group interview line 256). MA continued with, "You know, but the module spent a whole lesson on that, I get the importance of it, but no, I can't spend a whole lesson on it" (see Appendix I for focus group interview line 257).

The modules are missing content. Although the modules are comprehensive and designed to cover the standards, some participants believe that they are missing content. They are not placing sufficient emphasis on some content that takes more instruction time to master, while often spending too much time on others. The participants explained that the modules do not always cover certain concepts effectively or efficiently, therefore they are seeking out alternate sources or turning to past practices that have been proven effective to use when teaching certain concepts. MA stated:

> But the lesson I was doing today is not a common core lesson, like, I'm not handing them out a common core thing . . . because in the common core they only do translations in vectors. They don't do it the way that you really have to know it for the regents. (see Appendix I for MA interview line 203)

Likewise, 5A explained how the modules are always missing content:

> I think it introduces us to being able to pull from other places and bring more information in and get the whole package. I don't think it provides the whole . . . I haven't actually followed it to the "T" . . . because there is always a little piece missing. (see Appendix I for 5A interview line 170-173)

Educators must seek out alternate sources and past practices. Reyes (2014) has suggested attention will need to be given to locating materials that support educators' instruction of the CCSSM. The researcher also suggested that new digital textbooks and supplementary internet-based materials are becoming available. Likewise, data analysis revealed that the participants are seeking out alternate sources to supplement the modules and mixing some past proven effective practices with the modules to help them adjust their teaching practices. Participants sought out sources from a number of different places, including the internet, old books and resources, and practices and lessons they have used in the past. They expressed the need to seek out alternate sources because, as mentioned previously, the modules do not cover all of the concepts effectively or efficiently. MA explained how they use past practices in lieu of the modules, "I looked over the module and I thought, I'm gonna do a better job on this the way I know I've done it." (see Appendix I for MA interview line 205). During their individual interview, 5A stated:

> Alternate sources, yea well, I have a couple of math books, old math books . . . there's a couple of different ones, there's Trailblazers and then there's an old, old one . . . I remember using them in sixth grade and they were really good books. (see Appendix I for 5A interview lines 805, 806 and 813)

MA explained, “Today’s lesson wasn’t a module lesson, so like, I used an internet source that has translations that shows them how to do it” (see Appendix I for MA interview line 830). Likewise, at an individual interview, 4A declared:

> Oh as much, as much hands on things as I can find, I do some from some from what is that book we do . . . Trailblazers, yup . . . I liked the trailblazers and doing uh, you know, whatever those things are, the manipulatives . . . to do place values, yea I like the manipulatives. (see Appendix I for 4A interview line 792-795)

The math practices are the most difficult section of the standards. Not only are the math practices the most difficult section but they require a higher level of student independence. During their individual interview 4A stated, “No, the math practices are where it gets hard because the students need to decide what to do, they need to decide what ruler to use or how to measure something . . . this is the way I practice math (see Appendix I for 4A interview line 461). During an individual interview, MA explained, “Part of it is with the math practices kids have to decide which tools to use. Well if you’re not independent, how are you going to decide which tools to use? You’re gonna wait to be told what to use! Independence is huge for our math practices”(see Appendix I for MA interview line 473). MA also stated in the focus group:

> The part that’s always tricky is not so much about the standards, but it’s the math practices, because that’s the stuff that’s a little less tangible. Right, that’s like, alright, you’re not really teaching that directly, you’re giving them jobs to do . . . and then I said “some people used a piece of paper, some took their pen and started using their pen because they didn’t have a ruler” well, that was a good

> thing, I didn't tell them what they could use. They started to think "What could I use to figure that out?" . . . So that's the part that's hard, that's like, the practice, it doesn't say how to teach that, so somehow they're supposed to get that. (see Appendix I for focus group interview lines 519, 522 and 524)

During an individual interview CCA described how the math practices, as opposed to the standards, help educators teach the different techniques and approaches to division:

> Division for example, when I was uh, grading the, it was the fourth grade ELA state assessment from last year, just the way that kids attacked the division, there were three or four different ways that I certainly wasn't familiar with, that students were able to arrive at not only the correct answer, but their process was correct. So the fact is that there are different ways to arrive at the correct answer, but the standards do not teach that, the practices emphasize that for teachers. (see Appendix I for CCA interview line 488)

The math practices are overshadowed but should be emphasized. Participants described the math practices as an add-on, a section that is placed at the end of the standards and one that is to be addressed if educators have enough time. Although the math practices were identified as the most difficult section of the standards, the participants explained that it is unwise that they are overshadowed by the content standards and that instead they should be emphasized to successfully implement the standards. The participants described the math practices as engaging and one of the best tools in fostering student independence. By initiating student engagement and student-directed learning, the math practices help students to master the concepts and ideas in

their own unique way, leading to a deeper understanding of the standards. The math practices are necessary, not optional, for the students to understand and integrate the new concepts. MA stated, "I believe that this is the most important part of the Common Core Standards (math practices) . . . yet it is treated as an additional items that maybe you can address, if time allows" (see Appendix I for MA interview lines 506 and 507). Further, during an individual interview CCA stated:

> So as far as the goals, you know, it always lends itself back to those math practices. Isn't it more important that our kids are practicing the practices, than they are doing all of the worksheets and every single problem in every single module in every single unit, in every single lesson? (see Appendix I for CCA interview line 492)

Although these educators face many challenges concerning the implementation of the standards and modules, they have bought-in to them and feel they have a positive effect on students.

Educator buy-in. During data analysis, educator buy-in emerged as a dense, relevant category. The following are properties of this category as revealed through data analysis: (a) educators have bought-into a new teaching philosophy, (b) educators believe there will be a positive change over time, (c) educators value the CCSSM and modules, (d) educators believe that collaboration fosters positive growth and change, (e) educators believe the modules develop a deep understand of math concepts, (f) educators believe the standards prepare students and raise the level of student achievement, and (g) educators believe the modules make it easier to implement the standards and ensure

coverage. This positive educator perception reveals that one of the top key stakeholders in the education system is ready and willing to drive change when equipped with the proper tools and support to overcome the challenges they face. These participants are faced with a myriad of challenges while implementing the CCSSM, many of which are represented in the core category of math standard and module challenges. During data analysis two additional dense categories of related challenges emerged: *student learning obstacles* and *changes in practice*. Despite being faced with significant challenges, data analysis indicated that these educators remain positive in their views of the CCSSM and believe they can work towards successful implementation.

Educators have bought-into a new teaching philosophy. Data analysis revealed that the participants have bought-in to the new teaching philosophy underlying the CCSSM, which is a significant change from that of NCLB (Porter et al., 2011). CCA explained how they value the new teaching philosophy and how it benefits the students learning and success:

> I see the value in the, to me it's a change, um, students are being asked to not simply, you know, do a procedure because the teacher says to do this procedure to figure out a problem, they really have to truly understand what they're doing, but even more why. So to me that's good, like, teaching kids multiple ways to uh, attack a problem, to solve a problem. And it might not be the way that necessarily, you know, the student gets right away, but because they get to ultimately choose, so I think they're good. (see Appendix I for CCA interview line 485)

MA expressed how they have bought-in to a new teaching method due to the fact that it is successful in promoting student achievement, “Complex fractions is the way to teach dividing fractions, I’m a believer in that, and I wasn’t before. Kids do not have to remember a rule anymore” (see Appendix I for focus group interview line 630). SA replied with “Cause it’s not a trick anymore, its actual math” (see Appendix I for focus group interview line 631). MA went on to further describe the new teaching practice with, “Yea, it’s what you’re actually doing…Complex fractions I thought ‘That’s crazy…’ but then I go ‘oh, look at that, they all know it!’ They used to all get it wrong and now we’re dividing fractions they all got it” (see Appendix I for focus group interview line 632 and 633). This indicated that both MA and SA have bought-in to a new way of teaching a concept. During an individual interview SA further stated:

> From my point of view, I think, so, because I’d always heard that standards are really important, so I did this whole thing where I have . . . once we get the session going the kids read off the standard and then they look at the agenda and go “oh we’re gonna be working on that during this part” just to kinda give it, to kinda validate what we’re doing. So I thought standards are like, a really important part and then there are people coming into my classroom “so what are you doing with the standards?” and I’m like “I’m doing what you guys are doing, like we’re talking about them”. (see Appendix I for SA interview line 598)

Educators believe there will be a positive change over time. Another property of the *educator buy-in* category that emerged was educators believe there will be a positive change over time. The participants have seen a positive growth in both student mastery

and educator implementation of the standards, and they believe there will be more positive changes over time. The participants described how students develop a deeper mathematical understanding of the concepts being covered in the standards, preparing them to achieve higher each year the standards are implemented. The educators also feel they gain a deeper understanding of the processes and techniques that best implement the standards, allowing them to refine their teaching practices in order to foster student success and mastery of the standards. This supports the concept that the educators have bought-in to and are expecting to continue with the new standards and modules and that the implementation processes will be refined as they address the challenges they are facing. 5A explained in an individual interview:

> So I think we really started in 2011 . . . and that, and I just want to say one more thing, that's actually what the kids do, they do notice. They'll comment on, they'll say "oh yea, we did that in our modules last year", so they are remembering some things. And they love them, the kids love them. (see Appendix I for 5A interview line 193 and 194)

CCA stated during an individual interview:

> "So just like anything else, just like any good teacher, they're going to have to give it a try, they're going to have to modify, they're going to learn from one year to the next what's better, and then that might change based on the group of kids that they have." (see Appendix I for focus group interview line 492)

In a journal entry 4A noted, "I have been using math modules, at first it was difficult but as time goes on I realize how much the students learn" (see Appendix I for 4A journal line 231). During an individual interview 4A further stated:

> I know that every year I learn more, and so I learn, and plus they come up with more, they understand more. So, I make changes in so far that I don't, I don't uh, I'm not, I guess I'm more comfortable with them. So like I can say "Oh ok, I can move on, I know it's gonna be taught more so I can move on…Every year is different and I'm always changing, I'm always changing I guess…to cover more of the material and to make sure that they, you know, leave hopefully with fractions this year." (see Appendix I for 4A interview lines 564, 569 and 570)

Educators value the CCSSM and modules. The emergence of the educator-buy-in category revealed that the participants value the CCSSM and the modules. During the past couple of years, the participants have seen good results concerning student achievement. They noted that the students have been mastering the concepts more quickly. When educators value the standards and modules they may be willing to take on the core challenges they face, the student learning obstacles, and the changes they need to make in instructional practice to ensure implementation at the classroom level. During an individual interview 5A stated:

> It is a wonderful thing. And she's seeing this particular teacher, she's seeing good results, she feels that they're good results, and the TA that's working with me this year said that she thinks this is the brightest [grade level removed] grade class to come up, [grade level removed] grade class, in a long time. Like, she can see the

> difference, so she actually thinks going through the modules now for a couple years these kids . . . it's starting to show, they're starting to pick up a little bit quicker. (see Appendix I for 5A interview lines 188 and 189)

During an interview MA also explained how they are using content they never would have before teaching with the modules:

> I feel like the common core part of my lesson today, clearly I've taken on a couple things that I would have never brought up before, ever . . . without the modules, would've never done a few things that are in here. (see Appendix I for MA interview lines 832 and 833)

Further, 4A described the modules as being valuable to the students' learning:

> I think that the modules, which is what I use, the modules are, I don't know, I really do like them because I feel like, you know, they teach the kids a lot of different things and they bring a lot of things in there, but I think…so yea, so I feel like it's, it's good for kids. I don't know, it's teaching them a lot of different things too. (see Appendix I for 4A interview lines 140 and 141)

Educators believe that collaboration fosters positive growth and change.

Another property that emerged from the data analysis and supported *educator buy-in* was that the participants believe that collaboration fosters positive growth and change; they value experiences where other educators share knowledge and best practices. Participants believe they can learn a lot from many forms of peer collaboration, from simply sitting down to have a professional discussion to observing another educator's classroom to departmental meetings. This supports the concept that participants believe that although

they are presented with many challenges, they can overcome them through collaborating with colleagues. In an individual interview, SA explained:

> No, you can't tell them, it's funny though, just having discussions and talking, it's amazing, like I said the number of people who have come into my room to see what I'm doing with the standards up on my wall, like, I didn't know people were talking that much about it, but teachers talking to each other and "this is how I'm making it work", kinda takes away some of the fear and unknown. And then some people are like, well let's see how that goes, you let me know how it goes, which I'm OK being like, the test dummy or whatever for it to see, you know, does this work? (see Appendix I for SA interview line 606)

During an interview 5A stated:

> I have had time to look at them, as far as concentrating; no. I am meeting with a couple of people. I have well, I have because actually the um, the high school teachers gave me a copy of all the standards and they kinda broke it down . . . I'm not really familiar with it, I'm waiting, I'm waiting until tomorrow to be able to see if they can enlighten us a little bit with that and see, if, that's what I'm hoping for. And there you know, that says it all, we're able to collaborate tomorrow, we're able to learn a little bit more from people who actually do know. I'm hoping that's gonna help me a lot. (see Appendix I for 5A interview line 463 and 465)

4A suggested it would be valuable to spend conference days sharing information between the educators:

> I just think there has to be a little bit more organization, you know, there has to be more help for the teachers, and on these conference days there needs to be more information shared between the teachers. It's a communication issue, that's most of it. (see Appendix I for 4A interview line 645)

MA discussed how they would like to see educators collaborate on a school focus, such as finding solutions to students' lack of independence that is hindering their success with the standards:

> Our school thing, that would be great, and then we can all sit and brainstorm, instead of looking at the data and all that kinda stuff, let's sit and brainstorm about what independence looks like at each grade level, and what we can do with each grade level to foster that. (see Appendix I for MA Interview line 668)

SA stated:

> I just, I just noted it was nice to talk to other people as professionals, to have that professional discussion. I think we get caught up sometimes where we don't have that time to just, you know, talk as adults. (see Appendix I for SA interview line 681)

Educators believe the modules develop a deep understand of math concepts. The CCSSM require a greater conceptual understanding and are more rigorous than previous standards (Dickey, 2013). Likewise, the property that the standards and modules help students to develop a deeper understanding of math concepts was revealed during data analysis. Educators feel not only do the standards and modules introduce students to strategies on what to do mathematically, but also on why mathematical concepts work the

way they do. This is a change in practice from remembering strategies and rules to understanding mathematical concepts and applying them to new situations. This indicated that participants understand the related challenges of student learning obstacles and changes in practice concerning the requirements to help students develop a conceptual understanding of math. Results suggested they have bought-in to a new teaching philosophy and are changing their instructional practices to help students overcome obstacles and learn the conceptual underpinnings of mathematics. When discussing the modules and the use of fraction strips as a manipulative to teach fractions during an individual interview 5A commented:

> I think it's really successful, they have a lot of hands on, like when we were doing fractions, we get fraction strips and make out own, you know, to get a better understanding. So I think they have, I think they're pretty good overall. (see Appendix I for 5A interview line 183)

In a journal entry MA noted, "Before students would always forget the rules of dividing fractions, but as complex fractions students do not forget…also it pairs nicely with unit rates too" (see Appendix I for MA journal lines 511 and 512). 4A wrote, "My students really know the material once it is finished" (see Appendix I for 4A journal line 234). Likewise, during an interview CCA described the old memorization style of learning mathematics when they were in school and compared it to the deep understanding that is required of students under the new initiative, as CCA explained in an individual interview:

> When I think about my own education, um, that's where I really see it, the strategies and the ways that I figured things out, it's all because some teacher taught me some strategy, and I was fortunate enough to be able to remember the strategy and apply the strategy, but I really, mathematically, have no idea what I'm doing. So my understanding is that the new standards help teach kids, well, not only what they're doing, but why, like that deeper understanding of math. (see Appendix I for CCA Interview line 485)

Educators believe the standards prepare students and raise the level of student achievement. Another reoccurring theme that emerged as a condition of *educator buy-in* was the participants feel the new standards raise the bar for student achievement. Participants now believe students can achieve at a higher level than they have under previous standards. If the participants feel that the standards help student reach a higher level of achievement, they might remain committed to implementing them. *Educator buy-in* to increased student achievement due to the CCSSM supports the idea that educators will put forth the effort to find solutions (*educator needs*) to address the challenges they face implementing the new initiative because they believe it has a positive impact on student achievement. During an individual interview, 4A declared, "Well I'm surprised, it's like they can achieve a lot more" (see Appendix I for 4A interview line 572). Likewise, in a journal entry MA noted, "I have renewed my faith in the fact that if I raise the bar for my students that they will meet me" (see Appendix I for MA journal line 615). During the focus group, 4A stated:

> It's a little bit more straightforward, the other thing is I just find math to be amazing, it amazes me what these kids can do, absolutely amazes me and it's like I, that's, I really like the math modules, I really do because they're the stuff they do is…I'm yea, I'm amazed I told ya before I'm amazed at what they can learn…I guess it's the modules, what they, the modules have them doing, honestly teaching [X] grade for as long as I did, all that [X] grade stuff is now being taught in [this] grade and they're getting it. (see Appendix I for focus group lines 280, 289 and 618)

4A went on to further describe student achievement in their journal with:

> My opinion of the math standards, I used to teach [X] grade and now I teach [this] grade, the material I used to teach in [X] grade is now what is expected in [this] grade. I really like the standards that are expected in [this] grade…It is amazing what the students can do. (see Appendix I for 4A journal lines 501 and 502)

During a discussion about the standards Ma stated, "I can kinda see how it gets them ready for [X class]" (see Appendix I for MA interview line 208).

Educators believe the modules make it easier to implement the standards and ensure coverage. The final reoccurring pattern under the category of *educator buy-in* emerged; educators believe the modules make it easier to implement and ensure that they are covering all of the standards. This pattern shows that the participants have bought-in to the modules as a valuable resource and they are willing to work through the challenges that arise. Although these educators are not using the modules in their entirety, they serve as a guideline to include all of the content required by the CCSSM. When I probed for

clarification about the modules making it easier for educators to implement the standards, MA responded with, “True, I think that’s true” (see Appendix I for MA interview line 202). In a journal entry 1A wrote, “I like the fact that I feel as though I am covering all the standards when I use the math modules” (see Appendix I for 1A journal line 239). During an individual interview 5A declared, “How to teach it, I mean, anybody could follow the modules” (see Appendix I for 5A interview line 175). During the focus group 1A further stated, “Modules, because the modules are broken up into the standards, but it’s all listed” (see Appendix I for focus group interview line 251). SA went on and described the modules as a guide to cover of the standards:

> At least you have an example, you have an example of what they’re trying to say, like you can look at the module and go “OK, here’s the standard” and you’re flipping through the modules going “Ahaaa! That’s what I’m supposed to be working on with these students!” Or they have to get that far, or to that level. Like, that part I think the modules are good for. (see Appendix I for focus group interview lines 272 and 274)

During the focus group 4A also explained that the modules can help educators who need guidance and the modules are a framework to implement the standards:

> But see I’m telling you here’s what I'm gonna keep saying over and over again, the reason that the math modules work is because there is a lot of people who, you know need to have the scripted, “there you go” and it’s like, they don’t know how to do, they don’t know how to get where they need to be. (see Appendix I for focus group interview line 559)

However, one participant stated that although the modules are an effective guide to cover the content required by the standards, they can be too scripted, stifling educators' creativity and personal style of teaching. 5A explained during their individual interview:

> OK, what I don't like about it is that it…well it says "student; teacher; student; teacher" it tells you everything that you should say . . . because it says "teacher says . . . now students…" I mean, it's just you don't need that, you just don't need that…Well I look it over and I see that they explain how to teach it, but I don't need them, I don't need them to um, what's the word I'm looking for, I don't need them to dictate how to say things. "Now students it's time to…" or, and then it says "students will say…" and "teachers will say this" you don't need to do that. (see Appendix I for 5A interview lines 176, 177, 179 and 180)

It was also expressed that there is a need for guidance from sources other than the modules. MA noted in their journal, "There should be methods that address how to accomplish the standards. Luckily I am able to attend TQLP workshops which assist in accomplishing this task" (see Appendix I for MA journal line 508).

One participant does not want to be told how teach; 4A stated during the focus group interview, "I mean, I don't want to be told how to teach, but tell me what you want me to teach, that's fine" (see Appendix I for focus group interview line 542). During an individual interview 4A further stated, "I think that, I think that it, yea, the content is good, but it's not OK to tell teachers how to teach, but if they need help with things, like, if you, if you are forcing them to do modules, which we were forced" (see Appendix I for 4A interview line 445).

Student learning obstacles. Although the participants' believe that the standards and modules promote student achievement, data analysis indicated that module and standard challenges are preventing successful implementation of the standards. In addition to these challenges, the participants are also faced with several student learning obstacles that impede their mastery of the standards. Under the related challenges category of *student learning obstacles*, five properties emerged during data analysis: (a) lack of student independence, (b) lack of student motivation, (c) lack of student math vocabulary knowledge, (d) lack of student retention of knowledge, and (e) lack of student preparedness. The new initiative requires students to be motivated and independent. If the new initiative requires students to be motivated and independent, then students who struggle with these skills may not be able to succeed in a student-directed classroom environment. This type of student-directed environment emerged as a theme from the data analysis in the related category of *changes in practice*, which developed into the property of educators use more student-directed learning strategies and less teacher-directed instruction. The standards have increased rigor, a property under the core category of *math standards and module challenges*, therefore the students must be motivated to complete more work at a higher level. The emergent theory supports the need for relevant professional development that addresses student learning obstacles.

Student independence. Three participants expressed concern over the lack of student independence. They discussed the students not knowing where or how to begin assignments, what math materials they will need to complete an assignment, and what assignments need to be completed when they are listed on the board without direction

from the educators. One participant suggested some students have trouble deciding on the simplest things, such as if they will need a pencil to complete an assignment. 4A expressed a lack of student independence as challenging, "Yes, because I believe it is because I believe that there is a lack of independence from these kids" (see Appendix I for 4A interview line 319). This lack of student independence was further supported during an observation of this educator's math lesson. I noted, "This is a 100% student-directed class, students lack independence; students struggle with independence in a student directed classroom" (see Appendix I for 4A observation line 927). Likewise, 5A explained during an individual interview, "So to put a piece of paper in front of them and say 'Do this', they're not really that good at doing that. There's, yea, there's no independence" (see Appendix I for 5A interview line 329). MA explained:

> I noticed that the skills, the self-independent skills, I'm not seeing any jump or anything, it's bad, like really bad…like those kids, they used to come in here like, oh…and the expectation is it gets done by the end of the period, and if not, you know, we'll talk about it, but they got to work, they talk, they got working on stuff. Oh yea and now it's like, "Pick up your pencil…put a letter on the paper . . . " they're not independent,…it's not content, it's not motivation…but independence…like what we do, we do, my expectation is you can read the board if you need some tools up there that you can get the tools without saying, you know, "Do I need a pencil too?" You know, that you can do that, you know, the kids are not doing that at all. That's even notes, the same thing happens, I'll put something up there and I'll be like "You guys already know this? No!" I'm like,

> "How come you're not writing it down? You might need this, I know it, I already know this stuff, I'm not doing it for me!" (see Appendix I for MA interview lines 356-367)

MA went on and explained the lack of independence would be a good focus for the district to improve upon:

> Yea, yea, I'd love for independence to be our thing (school focus). But you know, wouldn't you rather get a whole group that's independent? Like, there's still a couple kids that will go "What's for homework?" And I'm like, "Really?" And when they ask me in September I'm a little more forgiving about it, but when they ask me in May, I'm like "Are you kidding me? Every day! 150 days it's been up on there, you really kidding?" So yea, the independence piece is really, really difficult, you know, for me…So like, they don't even know, they don't even know that, like, and that's like a routine in here, like "go get it"…And part of that you, you know, isn't looking around, like, "what do we do?" Like when we're at a conference and we don't know what to do, "what is it? What are you doing?" And that's part of being independent! I think if you're independent, the curiosity piece comes along with that, because if you're doing the right stuff on your own, you might say, "Hey, but I wonder what happens when…" Right? That's where those questions come in…But if you're sitting there waiting for me to tell you every little thing…I bet you independence is a big part of that. (see Appendix I for MA interview lines 376-385)

This educator feels so strongly about addressing the lack of student independence they think it should be a schoolwide focus, "Yea school focus, I mean if we have no other school focus . . . like to me, I'd rather have it be independence. How do we build independence in these kids? Because you know what, we do too much for kids" (see Appendix I for MA interview line 670).

Although the lack of student independence is a concern for these educators, while I was observing in 1A's classroom it was clear that all of the students but one were working independently. I noted:

> I wonder when they become dependent on teacher…Alternate sources students are very familiar with these and independently use math games, another thing I noticed in a kindergarten class a few years ago. Students can use math games with each other without teacher direction. (see Appendix I for 1A observation lines 393, 400 and 401)

Student independence does not seem to be a problem in this classrooms and CCA suggested that one possible reason could be that the students are very young and these are some of their first experiences being exposed to directing their own learning. CCA stated:

> So we need to figure out, is it the modules, what is 1A doing, and is this the first time the kids in [X] grade have been exposed to this type of 'here, you chose' which is a big mathematical practice that can be applied in [X] grade clearly, right that you give, you give the tools, options, but the kids select the tool that works for them. But what are the other primary teachers doing in math? Do they have the modules? (see Appendix I for CCA interview line 225)

Student motivation. Two educators discussed a lack of student motivation. Their perception is that the modules require a lot of student work; therefore students do not have enough motivation to accomplish the lessons. 4A stated:

> It's difficult to motivate some of the . . . yea well, before this whole new curriculum thing it was easier, it was easier to motivate. Yea they learn a lot but there's a lot of work . . . I think it's a, not just a math problem it's a problem period . . . yea, yes it is there's a lack of motivation for sure. (see Appendix I for 4A Interview lines 312-316)

One participant also stated that offering students external rewards, such as grades, as opposed to internal rewards, could be a possible cause for students' lack of motivation. 5A commented, "Well they are externally motivated, they're not internally motivated. So that's what we're working on" (see Appendix I for 5A interview lines 339).

Student math vocabulary knowledge. The participants discussed how students do not know the mathematical vocabulary required to successfully complete the module lessons. They find the vocabulary that students should know they do not. When involved in mathematical problem solving and students come across words they do not know, they are not asking for clarification or help with definitions, and they do not have the vocabulary knowledge to decipher what it is they are being asked to do. One participant stated that students need to be using the vocabulary more often so they can internalize it. During an individual interview 4A explained how the students struggle with math vocabulary:

> In the modules, the reading is what I find gets my kids most of the time. The reading is difficult, and um, so they have no idea what to do. And they'll get caught up on a word instead of what they're supposed to do, so that's it…I am surprised, they can do a lot more, however it's those things that get in the way, it's the reading. . . . In the past, kids could read and they knew what they were reading. Now they can read but they have no idea what they're reading and they don't ask questions, so they'll read a vocabulary word and have no idea what it means. And you have to make sure that you're diligent, and constantly saying "Do we know what this means?" or you have a word wall or whatever because, they can read it but they don't necessarily know what it is . . . math words, ELA words, a lot of words . . . all words, yea, yup it doesn't matter what. (see Appendix I for 4A interview lines 319; 323-326)

4A further noted in their journal:

> Unfortunately, the majority of students I teach read far below grade level, therefore not only do they have a difficult time reading but the math modules are difficult for them to read also. It often isn't the math itself that presents a problem; it is the reading that goes along with it. (see Appendix I for 4A journal line 407)

5A discussed vocabulary knowledge as a significant challenge during the focus group, "There are a lot of new terms that they had never heard, I noticed the kids…decomposition, uh decomposition" (see Appendix I for focus group interview lines 410 and 411). 4A responded with, "They should know decomposition" (see Appendix I for focus group interview line 412). 5A continued with:

> They didn't, they didn't know decomposition. Yea, yea, so when I asked them about breaking fractions they didn't know that they broke them into units, so I asked them that today as well…or the way they had them break it down in the module, the [previous] grade module, is to start with 5/6 and then you decompose it by breaking it down into 1.6 plus 1/6 plus 1/6 and so they just didn't know that term. So then we talked about how food decomposes and breaks down. (see Appendix I for focus group interview lines 413-416)

During an individual interview 5A went on and explained the students' lack of vocabulary knowledge:

> So here's what happened today, it said solve. So I said to them "So do you know what the word solve means?" And they had no idea, so I said to them "Have you ever heard the word evaluate?" "No!" (students' response) . . . and at the bottom it said solve and they're like, "What does this mean? We don't know what this means, what do you want me to do?" So we had to stop and they had to learn what solve meant. So now solve and evaluate go up on the word wall and we'll use it all the time . . . they recognized that there was an equal sign so they knew they needed to give an answer, but they didn't put answer, solve, and evaluate together. They weren't able to do it. (see Appendix I for 5A interview lines 346; 347; and 353)

During the focus group MA described math vocabulary as a challenge for the students, almost like another language, similar to a native English speaker learning Spanish and the correlation between student success with math vocabulary and Spanish:

> Well they have to use it that's why, and again it's like Spanish, once you learn a word, if you're not a Spanish speaking, it doesn't always come out unless you're using it, you know…Yea [it goes away], DW and I always find a correlation between math grades and Spanish grades…She'll say "How's this student for you?" and I go "You're gonna have trouble." Cause it's a memory, there's certain things you have to know and it builds, just like Spanish, builds, it's a language and if you don't know the vocabulary or aren't the greatest putting sentences together, that we have for years been talking about how students that have trouble in um, math will typically, she'll see them having trouble in Spanish. (see Appendix I for focus group interview lines 432, 434 and 435)

During an individual interview MA further compared the challenge of math vocabulary to another language:

> Yea, because, you know the problem a lot of times with math is, I've had this discussion with DW about the similarities between math and Spanish, and sometimes they can't answer a question because they don't know the vocabulary. They don't, it's a different language, you know I said, like, even inverse "Anybody know what inverse is?" And my [X] grade class goes "Nope." "Well it really just means opposite, but I want you to know when you hear the word inverse, in your head I want you to say opposite, opposite, opposite." Because in Spanish, when you're an English speaker, you're saying "What word, what word is it again?" That means you're thinking, ya know, and you can't remember it so like, they don't know those things. (see Appendix I for MA interview line 374)

Student retention of knowledge. Students are also struggling to retain knowledge. Participants are concerned that students are not retaining information over the summer break. The participants were not able to explain why students are struggling to retain information they are positive the students have been taught. Moving on to concepts the students are not prepared for creates a gap in knowledge that makes it difficult to learn new concepts. It is especially challenging to cover all the content that is required in the current time constraints when they also have to go back and repeat previous instruction. During the focus group MA stated:

> The biggest thing I'm having to fill time is I have my [X] graders come in and they lost so much over the summer, I mean more so than I've ever really seen, I'm in shock. I've actually have, like, a student who you say "what is 2 x4?" And it just wouldn't come out…and I'm like "Oh my god." (see Appendix I for focus group interview lines 418 and 421)

The group noted that MA also has the benefit of teaching the students for several consecutive years, as 4A mentioned "And you get to see that first hand because you did it, it's not like, it's not, you know exactly (what was taught)" (see Appendix I for focus group interview line 422). MA responded with, "Oh yea, I had her once" (see Appendix I for focus group interview line 423). Followed by SA, "Yea so it's not like you can say the teacher before you didn't teach it" (see Appendix I for focus group interview line 424). MA went and further explained:

> No, and granted, I let the kids use grids not the calculators, you know, so I'm like, "Get the grid," there was like five kids that I actually said, "Keep your grid," you

> know, like, I collected them at the end of the period, and I'm like, "You keep yours, you keep yours, keep it in your book, I know you're gonna need it every day." Ya know, um, I can't believe what they lost over the summer, I, I mean it's amazing, and I think they have it, and I don't think they, but by the end of the year last year, they were much more fluent than coming back this year, they are really, whew." (see Appendix I for focus group interview line 425)

During an individual interview 5A also described how students are not retaining knowledge over the summer break:

> That's actually what happens once we start it, "Do you remember learning this?" and then they're like "Oh yea, we remembering learning that!" They're, you know, they're not remembering over the summer and I don't know why they're not remembering over the summer. I was talking to MA . . . and I know what she taught because I was in her room . . . I know what she taught and I know that, you know, math facts were taught and I know they were up on their multiplication. And when she got them back the following year, they, a couple of them knew nothing. And I know they knew it, I was in their room. I don't know why, I don't know why they're losing it and not retaining it. (see Appendix I for 5A interview lines 331-333)

5A further explained later in the interview:

> They can't do it . . . so retention, well, they're not retaining a lot, and independence. You know, I think that they're learning; OK, so this is what a lot of the kids are doing, they're so concerned with their grades, that they're learning to

> get the good grade, they're not learning to retain it. (see Appendix I for 5A interview lines 336 and 338)

Student preparedness. Students have been beginning the school year unprepared for the grade level work that is required. The participants expressed frustration because they have to begin with mathematical concepts that are part of the previous grade level's curriculum. 5A explained:

> OK, so like, I found today, we started multiplying and they were not able to do that. They could not multiply two digit numbers. So now I have to go back and teach that. They weren't able to, they couldn't multiply, they couldn't divide . . . I know it was taught, yet they can't do it. How can we move forward if they can't multiply? So I have to go back, again. And I was just thinking yesterday, I need to get to [X] grade stuff, but how can I move forward when I have to keep going back? Why can't they do it? Well like, you guys didn't really get to it in [X] grade and now I'm having to go back to [X] grade to teach [X]. And I know you do some of it I've been in your room. (see Appendix I for 5A interview lines 328 and 331-334)

Likewise, MA also noted in their journal:

> I am frustrated that students do not come to [X] grade with the skills necessary to begin teaching the content required…I often need to back track and teach something they have not previously learned, but was in the previous grade's curriculum. (see Appendix I for MA journal lines 71 and 72)

Changes in practice. In order for districts to successfully implement the CCSSM, it is necessary for educators to consider the changes in curricula and assessments from the past state standards under NCLB **(**Porter et al., 2011). Data analysis revealed that under the new CCSSM participants are changing their teaching practices, often in a positive direction but any change is still a challenge. The following properties emerged during data analysis: (a) educators use more student-directed learning strategies and less teacher-directed instruction, (b) educators spend more time on math instruction, (c) educators spend more time scaffolding learning, (d) educators spend more time facilitating student independence, and (e) educators spend more time facilitating student collaboration.

The participants may be spending more time on math because of the increased rigor of the new standards and this does not allow educators the flexibility they once had in how they can spend their instruction time. There is a disparity between how participants used to teach and the new philosophy to be implemented. They are using more student-directed instruction and less teacher-directed instruction and lecture, relating directly to the related challenges of student independence and motivation. Participants expressed their support for student-directed learning strategies. They found that they have to re-train students to explain and justify their answers and help them to become more independent in monitoring their own learning. This is difficult because the students are all at different knowledge levels, leaving the classroom environment one in which the students work independently and the participants needing to facilitate student-directed learning. Student-directed learning leads to scaffolding student learning and

independence. A lack of student retention of knowledge and preparedness may also lead to educators spending more time scaffolding learning.

Educators spend more time on math instruction. The increased rigor of the new standards has prompted the participants to spend more time on math instruction. The challenging format of the modules, which have been described as too large, repetitive, and cumbersome, have also contributed to increased time spent on math instruction. Lastly, an increase in student-directed learning that takes considerably more time than traditional lecture and teacher-directed learning has also been a contributing factor. Two participants explained how they spend more time on math. During the focus group 4A explained:

> I just don't think they were as rigorous as they are, you know, seriously, they weren't. And people could, people could, you know it was like, it was a lot better I think because it was kinda nice to, ya know, if you were doing something in science you could go on all day in science, now it feels like math is three quarters of my day and it's like you know there was like, it was ok to experiment and to experiment, and it's like everything is all separate now. (see Appendix I for focus group interview lines 561)

Likewise, CCA stated:

> Oh certainly, naturally, it's time consuming. Right, because you don't want to move on when fifty percent of your class, let's say fifty percent of your class let's say gets it, well fifty percent of your class doesn't. You can't move on, I mean, it's more of that personalized learning that has to go on, so how do we do that in

> the time constraints, in the personnel constraints that we have. (see Appendix I for CCA interview line 613)

Educators use more student-directed learning strategies and less teacher-directed instruction. The participants described how they have been using more student-driven strategies and less teacher-directed instruction. Participants have been using student inquiry to drive the content of their instruction. They have been spending more time reinforcing students learning on their own. Students are being asked to mathematically explain and justify their answers to questions, which require students to be independent and in charge of their own learning. MA explains how important student questioning is in their classroom:

> I remember um, when PA observed me . . . she said, uh, "students are involved in their own learning" or something . . . .That was his question, not mine. . . . That was his, he was wondering ya know. And that's kinda like what it is to be in charge of your own learning, ask of, think of your own questions, and how to. (see Appendix I for interview lines 589 and 590)

During an individual interview SA described the new teaching strategy of student-directed learning:

> Where it's supposed to be student driven, and students taking the lead on things and students being aware of the standards in that way. . . . Student directed and everything like that, teaching has, it definitely has changed, I mean, just the style of teaching, like, I think there is always a conflict within the teacher that you're used to doing lecture, and I think there's a place for lecture where there's like,

> note taking and teacher directed, but I think there also has to be a balance where you do have the student figuring it out. (see Appendix I for SA interview lines 599 and 601)

During the focus group, SA also expressed:

> I think the style of teaching is different, like I feel old, but when I first started teaching (standards), it was very um, like, group work and students, or the whole thing coming down with social studies the whole inquiry based learning. Now it's more where the students are doing the work and you reinforce what they're learning and you support it, but it's not as much where you're spitting at them. (see Appendix I focus group interview line 623)

After SA's statement above, the group chattered intensely about this idea and I probed for clarification by asking "Ok . . . not as much lecturing?" SA replied, "Yea, that definitely has changed" (see Appendix I for focus group interview line 626).

CCA summarized by stating:

> Yes, well, I think it does make it more challenging because it's not, again I always relate it back to my own frame of reference, which is my math teacher stood up in front of the room and taught me the process and I replicated the process, and then we moved on. It seems like now the standards are demanding that the kids be able to, just as you are learning in your classroom, you have to be able to explain your answer and you have to justify your answer, and you actually have to train kids naturally that, you know, they're justifying it in their own head, and they go "oh wait" and they actually stop themselves when it doesn't make sense or it's not

working. Which is messy, and it's not, every kid is probably at a different place. (see Appendix I for CCA interview line 612)

Educators spend more time scaffolding learning. Every student being at a different level with their conceptual knowledge makes implementation of the CCSSM especially difficult because now educators have to scaffold independent learning to bring students up to the required level. This has changed the dynamics of the classroom environment to one in which the educator is moving around the room assisting students independently, rather than standing in front of the room explaining concepts. During observations of math module lessons in all of the classrooms I noted teachers moving around assisting independent students.

During the 1A observation as the educator continually moved around the room helping students, I noted, "Three students go to the teacher to have their work checked." The educator is observed reminding a student, "Helping is not doing it for another (while) two students that finish come to the teachers' desk and pick up a 'good job' stamp and stamp their papers. The educator announces when they are done they can play math games." When the educator finishes correcting the three papers the educator goes to another student to give independent instruction and I noted, "Teacher sits with student, teacher gets up." The educator gets up and another student turns a paper in, as I noted, "2nd to the last student turns paper in to teacher. Teacher gives student corrections to make (and) teacher continues to help student that's been off task." I further noted, "Teacher walks a student through how to solve a problem with blocks and other students are coloring fall leaves." As the educator continues in this manner I noted, "Two

remaining students are working with teacher assistance" (see Appendix I for 1A observation lines 855- 863).

Likewise, I observed MA scaffolding learning. The teacher chose to cleverly make a mistake on a step during a problem solving demonstration and I noted, "Teacher inquired with a student about what happened to get an error" (see Appendix I for MA observation line 1002). 5A was also observed utilizing strategies to scaffold learning. I noted, "Teacher walks around giving positive feedback and teacher asks if someone has a different way (of doing the math)" (see Appendix I for 5A observation line 954 and 955). During another participant's observation I noted as the educator walked around supporting student-directed learning:

> Teacher is probing to try and get student to discover multiples, teacher asks student what they are counting by, teacher shows student where there is a hint in the problem, teacher rotates back around to student helping previously to check for student understanding, teacher asks student to try making a chart, teacher walks away, and teacher asks the group "How do you do this one?" (see Appendix I for 4A observation line 904-913)

Educators spend more time facilitating student independence. The participants identified a lack of student independence as a student learning problem. They expressed the need for students to develop independence so they can be successful with the math practices part of the standards and the new philosophy of student-directed learning. Educators have developed several routine strategies to help students develop independence. During an individual interview MA explained how they use a word wall

and student agendas on the board, as well as folders for materials in the back of the room to help students become independent. MA stated:

> And you saw, we used that word wall twice, or three times? . . . Like those folders in the back there, anything I hand out to them there's extra copies in the folder . . . You come in on your time, you just go and grab it, you come in, you go look for it, it's in there . . . Well they get their own stuff, ya know, if you lose something . . . so like, for this group that you saw, yesterday's agenda up there said "get your graph ready" which means, go write a piece of graph paper, get a ruler, and start getting it ready and be ready. (see Appendix I for MA interview lines 819, 823 and 825)

5A also utilizes a word wall to create an independent environment, "We have a math word wall, anytime they learn a new word, they put it in their notes. We have a word wall and we're always referring to the word wall" (see Appendix I for 5A interview line 801).

During an observation of a math lesson I noted the educator was directing a student to help develop independence and encouraging group work; the students were getting their own materials, "'You have blocks, etc. if you need help ask at your table, then if you really need help who do you ask?' (student responds) 'Ms. B' Teacher (says) 'Yes but ask someone at your table first'…I noted, students begin work…4 students get blocks…1 student playing with blocks" (see Appendix I for 1A observation line 835-840; 854).

Likewise, when I was observing in 4A's class I noted the students working on independent projects while the others finished their math assignments, "Student has

finished and is starting to work on an independent project…appears to be an ongoing project for this student; students work at their own pace; students work on independent projects" (see Appendix I for 4A observation lines 902 and 903). I further noted, "This teacher is working very, very hard to create independence; students struggle with independence in a student directed classroom" (see Appendix I for 4A observation line 932).

During another participant's observation I noted:

> Teacher times students as they do a 'mad minute' fact sheet; teacher utilizes timer; teacher calls stop and hands up after 1 minute…teacher calls out answers…students correct their own and write the number of correct on top; teacher calls out answers and students correct their own; teacher gives the students one minute to finish up with the ones they got incorrect; teacher lets students know how much time is left. (see Appendix I for 5A observation lines 949-953)

During another observation I noted:

> Reminds students they should get a congruent shape, if not something could be wrong; teacher guides students on how to check their work…teacher says she'll do the same and hopefully they'll get all the same answer…teacher talks through the answer and asks them to check theirs to (X's); teacher guides students on how to check their work; teacher says something must be wrong…teacher inquires with student about what happened to get an error; probing questions for understanding. (see Appendix I for MA observation lines 994-1002)

Later MA continues this "fix the error" technique later in the observation:

> Teacher asks for students' ideas on what went wrong, students answer; probing questions for understanding; unique teaching strategy having students discover an incorrect step in problem solving…students are very comfortable with this "fix the mistake" approach; student-directed, teacher-facilitated discovery; student is called on to share…student begins to share and forgets what it is called; teacher facilitated student presentation; teacher says "It's up there" and points to the word wall…student says congruent and finishes; student directed, teacher facilitated discovery; this is the teacher that mentioned word wall being an effective strategy for teaching math vocabulary during the focus group; Word wall for math vocabulary. (see Appendix I for MA observation lines 1004-1011)

Educators spend more time facilitating student collaboration. Student collaboration is an important aspect of a student-directed, teacher-facilitated learning environment. Contrary to the traditional time spent on lecture, educators and students are working on implementing student collaboration. The participants noted that this is a new philosophy that requires more class time. During an observation of 1A's math lesson I noted, "Student reads aloud to others at table…students discuss; students work together; another student says to another 'Let me read to you'; students work collaboratively while teacher walks around and scaffolds learning where necessary" (see Appendix I for 1A observation lines 842-844). Later in the observation I further noted:

> Three students read aloud together…two students discuss how to solve a problem…students reading aloud to another takes her pencil and writes on her

> paper, she is attentive to what he is doing…student listening to others work across the table; students work together; this student came back and got his paper he already turned in and changed his answer…helping another student helped him to monitor his own learning; this is supposed to be how collaboration works; through helping another, student monitors own learning; students from three tables have merged into two discussing the work and talking through their thinking. (see Appendix I for 1A Observation lines 847-853)

During an observation of 5A's math lesson I noted how students collaborate to complete math problems on the board, "Students now call on classmates to write a sentence and continues with two more students that share; students collaborate, students share work" (see Appendix I for 5A Observation line 958). Likewise, during MA's observation I noted how the educator asks students to turn and collaborate with each other during a whole class lesson, "Asks students to talk about it amongst themselves for a minute, talk to their partner; teacher encourages group discussion" (see Appendix I for MA observation line 1003). Further into the observation, I noted how the educator asked the students to discuss an error, "Asks students to talk about it amongst themselves for a minute; talk to their partner" (see Appendix I for MA observation line 1002 and 1003). Later in the observation, I noted how the educator calls on students to share with the group why they agree or disagree with a students' method of problem solving, "Teacher calls on students to share aloud to the group…teacher asks if anyone disagrees…teacher says 'ok not many'…teacher calls on student that disagrees…teacher says 'why, who's right?'; teacher encourages group discussion; students explain and come to a consensus;

students collaborate" (see Appendix I for MA observation line 1013-1017). This educator went on to have the students complete an assignment with the student sitting next to them. I noted, "Teacher assigns a 'do now' asks them to complete it with their neighbors; teacher facilitates student collaboration; students are very comfortable working in pairs; students collaborate" (see Appendix I for MA observation lines 1019-1020).

Educator needs. Data analysis revealed several needs the participants have concerning the implementation processes of the CCSSM. They feel their needs should be addressed with collaborative, self-designed professional development based on those needs. Researchers discovered that alignment between curriculum materials and standards at the state level was not sufficient for the successful implementation of the new initiative. Alignment promoted by state-led strategies did not consider district and educator needs (Penuel et al., 2009). Data analysis revealed the following educators needs: (a) educators need time to familiarize themselves with the modules and standards, (b) educators need time to collaborate on the standards and modules, (c) educators need time to collaborate on vertical alignment, (d) educators need to have more accountability for covering the standards, (e) educators need to have student checklists and report cards aligned to the standards, and (f) educators need to have relevant professional development that addresses their needs. The lack of educator knowledge may be directly related to the educators' need to have time to familiarize themselves with the modules and standards. Further, the participants need time to collaborate on modules and relevant professional development may be related to the core challenges of the modules being too large and repetitive, the modules are missing content, and educators needing to seek out

alternate sources. When educators have time to collaborate on these challenges, they are often successful at working together to find solutions, which is reflective of the educators belief that collaboration fosters positive growth and change under the educator buy-in category.

Educators need time to familiarize themselves with the modules and standards. Implementation of the CCSSM requires a significant change in teaching practices and educators will need to develop a deep understanding of the standards and what they need to teach (Liebtag, 2013). In a case study of 51 schools researchers found that educators reported they were not given the required time it takes to plan, gather materials, and organize (Penuel et al., 2009). Data analysis revealed educators are feeling pressured that they do not have the large amount of time it takes to familiarize themselves with the standards and modules. Educators were spending time outside the classroom working with the modules and they were learning alongside the students in the classroom as they were teaching the students. Likewise, during the focus group 1A stated, "Not enough time . . . not enough time to work with them" (see Appendix I for focus group interview lines 529 and 531). CCA further explained during an individual interview:

> Like, it's a new language, it's a new processes, it's again, I can't really speak to the before, but the emphasis on practices, so it's almost like the teacher has to, the learning that they do is, is happening right alongside with the students. And unfortunately there aren't enough hours in the day for them to do that learning sometime separate from their students. (see Appendix I for CCA interview line 492)

During an interview 5A described how they feel pressured under time constraints and need to work with the modules at home:

> I imagine there is, but I have to have time to look at it cause I haven't really gotten there, I can't . . . I do, I'm taking it home, I'm taking things home, I know I'm not supposed to, but that's what I'm doing Some of us have to take things home! (see Appendix I for 5A interview line 650 and 651)

MA discussed the work and time it took to plan a lesson:

> I've got extra time this year, so I'm doing smart board lessons, that I would always be racing around to get to, I'm able to, for me, I go to the modules, I'm looking at [X] grade right now, and I have to screen captured into smart lesson, you know, there's a lot of work involved . . . yea, so… but this is a long lesson on the smart board for me to pull it together, to pull a module out and to do that takes an obscene amount of time . . . plan time is nice. Of course no one every busy that you know, they don't. (see Appendix I for MA interview line 660-662)

Educators need time to collaborate on the standards and modules. The participants discussed how much they value learning from other educators, including both learning by collaboration and observations of teaching practices. During the individual interview with 5A, the participant expressed concern with being handed the modules without proper support, needing to learn the content simultaneously while also teaching the students, and not having time to collaborate with other educators to become familiar with the material. 5A stated:

> Time, I need time, we need time. I need time to, and here's another thing is, they give you a box of modules and say "Here you go" . . . .I'm learning along with my kids because I'm having to take it all upon myself, see what they want, see how they want it taught, and then I'm bringing in a bunch of my own. Ok, so I think time is huge, anytime we get together and we're able to talk, I always take something away from it and we never have time to do that. It usually happens at lunch or places that you wouldn't expect it to happen, so imagine if we actually had time set aside so I could talk to you, and you could, you know, or if I were able to come into your classroom…and I said to him, "I need to observe other teachers" . . . and you pull a little bit from everybody. . . . You do! You pull the good stuff and you know what you don't want to do and you know what you do want to do, it's really important. . . . But it's something we really need to do. I learn so much when I observe from someone else. (see Appendix I for 5A interview line 652, 653, 654, 657, and 658)

CCA also explained how educators can support one another in areas where one may have more expertise or experience than another:

> So that's where the conversations between grade levels, it's where, maybe even our high school and middle school math can help provide some deeper understanding for our elementary teachers who maybe, one topic in math is like, "I got this, I'm really comfortable with it…" but if you're not coming with a math background, you might feel lost. (see Appendix I for CCA interview line 492)

SA explained how valuable support from other educators is, “Half days, we’ll get some time in his department to meet sometimes . . . they did a nice job, which is collaborating with each other which is huge.” (see Appendix I for SA interview line 678 and 679)

Educators need time to collaborate on vertical alignment. Implementation of the CCSSM is difficult when there is a lack of alignment between the standards with curriculum, instruction, and assessments (Penuel et al, 2009). The literature highlights the need for ongoing support and professional development as important considerations for the alignment of the new standards with classroom practices and assessments. Alignment is crucial for successful implementation of the CCSSM (Fulmer, 2011; Kurz et al., 2010; Martone & Sireci, 2009; Penuel et al., 2009). Educators feel the need to collaborate with others on vertical alignment of the curriculum. Although the math modules are aligned to the standards and they feel they help them ensure content coverage, the large size of the lessons and time constraints are impeding the implementation. The participants feel that currently educators are struggling and not all the content is being covered at the respective grade levels. They feel that it would be helpful to collaborate with the grade levels below and above their own to communicate what standards have been covered and what may need more attention in order to begin the next year’s content. During an individual interview 4A explained, “Well people, I don’t think everybody’s keeping up with what they need to do so therefore every year it falls back further and further, cause it’s an awful lot, and there’s not a lot of training for it (see Appendix I for 4A interview line 8). During an individual interview I inquired about their thoughts on what is needed for the implementation of the standard and MA responded with:

> Ok, so first of all, alignment, how are we supposed to know if we don't have time to meet with other people? Right? It would help. So if we are able to collaborate and meet with other people, like if I were able to collaborate with [grade level removed] grade and [grade level removes] grade, and even [grade level removed], we would know if we were aligned or not. But we don't have time for that … I think everybody feels the same way, we just need time to be able to talk about it, and say "Have you taught this? Are we aligned?" (see Appendix I for MA interview line 648 and 649)

When I probed about any problems implementing the new standards, 4A explained how vertical alignment is a significant challenge and time to collaborate would be helpful:

> Alignment, exactly. We need to align and we need to figure out exactly what everyone is doing, not picking and choosing what you want to do, but where will you be, it would save so much time if it was like "OK, this is where they ended, this is where they need to start" boom and we do it. So much more would be accomplished. So vertical alignment…and again, we all have to get together to talk about it, um, who is teaching what and making sure these things are taught, so that all gets in the way." (see Appendix I for 4A interview, lines 15 and 16)

When discussing vertical alignment of vocabulary during an individual interview, SA stated, "They're trying to bring it (math vocabulary) on down the line too (like science vocabulary)…and they kinda did that with math as well, like, I know the math department kinda did that same thing, like, it's a common vocabulary" (see Appendix I

for SA interview lines 56 and 62). MA also explained vertical alignment of math vocabulary as:

> That we had, and kindergarten they started calling a diamond a rhombus, and I would come and it was quite a few years they'd get here and I would always have kids say "It's a diamond, it's a diamond" and I would say "Well there's really no diamond" I go, "It's a rhombus, ok." That all the sides are the same, so they were just calling it a diamond, so then one year they came up and were like, "Oh, it's a rhombus!" (see Appendix I for focus group interview lines 368, 369 and 372)

Vertical alignment as a need was also stated by 4A, "I, my needs are, if people would, need to, however you call that, you know, you need to get together kindergarten through fifth grade" (see Appendix I for 4A Interview line 644).

Educators need to have more accountability for covering the standards. Successful implementation requires time be spent monitoring classroom instruction (Terry, 2010). Educators need to be held accountable for the standards at their grade level. The data analysis revealed there is a lack of accountability and that no one is checking to see if the standards are being covered at each grade level. Educators are responsible for making sure all of their content is covered without any guidance or oversight. Without educators being held accountable for covering all of the required content, students were proceeding to the next grade unprepared to begin learning the next level of standards. In order to achieve vertical alignment, educators believe that they all need to be held accountable for covering their standards. They feel that a valuable way to help with accountability is to collaborate and check on each other to ensure the standards

are being covered. SA explained the need for accountability in covering the standards and ways it can affect students learning during an individual interview:

> If we know that is it, do we change as teachers how to teach it, like, how do we, cause there's only so many things we can do, like, even though I have these two classes it's really up to me, like there's not a lot, you don't feel like anyone's checking you know, I know were supposed to be observed and everything but no one is checking to see like "Hey SA, what are you teaching in there?" They're just like, "Well we trust you, you're gonna do what you're supposed to do" and I'm like, "But…" and I'm fine with that, I'm a professional, I'll take care of that but I think it's pretty sad that we wait until students do bad on a test and we go "Wait a minute, why aren't you teaching?" Well, why weren't you checking, like, "Hey, are you working on the standards?" (see Appendix I for SA individual interview lines 609 and 610)

4A explained during the focus group:

> You know, you've got to have time to make sure that everybody is meeting the standards, that, that they're being at least exposed to the standards. I'm not talking about the kids meeting them, I'm talking about the teachers meeting them by presenting them and, and attempting them. Now, in our meetings I've heard "Oh, we decided that this one's too hard so we're not gonna do this, and we're gonna throw this one away, and we're not doing that, and we're only doing these." Yea, and it's like, come on, you can't just pick and choose! That's what happens in our meetings…you pick and choose elementary standards, because they determine,

> certain people determine how hard it is." (see Appendix I for focus group interview lines 553, 555 and 558)

1A agreed and responded with:

> But like, our administration needs to also say that like, "These are the standards for Kindergarten, you need to teach them, you can't pick and choose because you feel this is too many. Sorry, this is what needs to be encompassed." (see Appendix I for focus group interview lines 560)

This was also supported when the participants were having an in-depth discussion about accountability for the standards at each grade level, and 1A explained, "But I don't think, I don't think everybody uses them, uses them totally, that's the next thing" (see Appendix I for focus group interview line 83). MA commented, "I can't choose, 'Oh I'm absolutely not going to cover this at all'" (see Appendix I for focus group interview line 88). 1A also added, "We all need to check each other" (see Appendix I for focus group interview line 749). During an individual interview SA further explained that administrators' roles have changed and they do not have the rime to ensure all the standards are covered:

> I think they're overloaded (administrators) . . . I think honestly, like, I think the role of administrators has changed so much . . . and that originally was their role, the role was mainly curriculum and just some behavior and just general overall and now they're dealing with, I just feel like they're swamped with paperwork and all kinds of stuff that they're taking care of . . . and whose looking at it, and whose really like, it's not that the teachers need to police on it, but you could

> think that you're doing the correct thing but someone could come in and go like, "whoa, you're way of base" . . . I mean, and that's the nice thing about meeting as a department, you kinda go "OK, here's where I'm at, am I on target?" so you kinda use your colleagues like that. (see Appendix I for SA interview lines 682-686)

Educators need to have student checklists and report cards aligned to the standards. The participants feel that it would be helpful to have a checklist of the standards and to have all the standards on the report cards as a clear method to communicate the extent to which they have been covered. During the focus group interview, the educators discussed the possibility of having a checklist of the standards and putting all the standards on the report cards. When I probed about having a student checklist, 5A responded with, "Right, exactly" (see Appendix I for focus group interview, line 746). When I inquired about having the standards on the report card to check content coverage, 5A responded, "You have to, like you're being held accountable" (see Appendix I for focus group interview line 751 and 752). SA further stated, "Right, because we all thought that was a great idea cause it's like, they can just say 'Yes, covered it, they did well'" (see Appendix I for focus group interview line 753). MA stated, "We even talked about at one point having this thing, and having the standards out and checking it yourself, like having your own cheat sheet" (see Appendix I for focus group interview line 754). 4A then added, "And that would be very good, that would be extremely helpful" (see Appendix I for focus group interview line 757).

Educators need to have relevant professional development that addresses their needs. Successful professional development for the implementation of the CCSSM is one in which educators are supplied with continuous support and their needs are monitored (Bostic & Matney, 2013; Cobb & Jackson, 2011; Richardson & Eddy, 2011). The need for relevant professional development that addresses educators' needs was discussed at length by all of the participants. Educators can successfully identify their own professional development needs (Bostic & Matney, 2013). Many expressed frustrations with the current professional development offered, describing it as unnecessary, unhelpful, and not an efficient use of time. The participants feel as though professional development often mimics the discovery-style teaching of the common core that promotes student independence and a deeper understanding of concepts. However, they feel they are professionals and do not need to be taught in the same manner as students. Self-directed professional development that is focused on educator's professional identities has been shown to be successful (Montgomery, 2012; Tournaki et al., 2011). The educators would like to see professional development be more straightforward, better planned, and relevant to the modules and standards, resulting in a more efficient and effective tool for educators to better implement the CCSSM. During their individual interview 4A stated:

> I don't mind looking at it but I don't, I'm getting to the point where I'm getting sick of conferences and these people talking at me it's like you know what, I need to know what they need to know, what the issues are. I don't want to be in a group where we look for it, and we do all that stuff, cause there's not enough time. Just

> say what's needed and let us figure out how we take care of it. (see Appendix I for 4A interview line 646)

CA also stated during their individual interview:

> So that sounds like a professional development need that needs to be addressed, needs to be addressed, it's a need . . . because if they're finding more value in their SLO assessment and really pulling that apart, and becoming aware of the state data, and thinking how that plays in, we have to start where teachers' believe is the most valuable . . . we need to start where people think . . . we have to ask them. (see Appendix I for CCA interview lines 699-703)

The participants had a lively and passionate discussion during the focus group about the current professional development being offered. 4A began by explaining:

> And I think that we have to start using these PD times, we gotta get to the point, it's like you know what, I'm so tired of sitting in these meetings and not getting anything out of them and it's too long of a time between one meeting and the other meeting, it's just like let's just get to the point, get the, whatever leg work you've got to, just do it and say "here it is", I don't want to do the discovery and guess whose name is or anything else, discover it for me, tell me what it is, and let me go. (see Appendix I for focus group interview line 716)

SA added, "So weren't you taught in your PD like the common core, that we're supposed to be teaching and 'We're out with the money' (referring to a student-discovery lesson)" (see Appendix I for focus group interview line 719). MA responded with, "We do not have to mimic the way a student is learning, the way our PD is" (see Appendix I for focus

group interview line 721). Both 4A and SA strongly agreed with this statement. SA continued by adding, “But I think that’s what they’re doing, they’re mimicking the common core” (see Appendix I for focus group interview line 725). MA followed with, “I know what pair-share looks like, sounds like, I can see it, you don’t have to sit me in a room and say ‘alright, MA you and 4A’” (see Appendix I for focus group interview line 727). The participants continued to agree and show frustration at the current system.

Emergent Theory

As illustrated by the analysis of data collected from the participants, it was clear they have bought-in to the new initiative. They believe the CCSSM and modules are more rigorous and challenging, and they help students develop a deeper understanding of mathematical concepts, as well as raise achievement levels. However, they are faced with challenges concerning the structure and content of the standards and modules. They spend a great deal of time reworking and cutting back on the module lessons, and focusing on altering their teaching practices. They are also faced with student learning obstacles that impede the implementation process. The educators feel that these challenges could be successfully addressed through resources and support, such as time to collaborate with colleagues and self-directed professional development based on their specific needs. Self-directed collaborative professional development time, focused on educators reworking the module lessons to fit into a reasonable time frame and planning lessons to facilitate the math practices sections, is a valid strategy to aid these educators in addressing the challenges they face to improve implementation of the new initiative.

This type of professional development is relevant to the needs the educators expressed during the interviews and is supported by observations and educator journals. The educators expressed a need to rework the modules based on the properties that the modules are too large, cumbersome, and repetitive. Designing professional development based on reworking the module lessons will also build educator knowledge of the standards and modules, as well as aid the educators in identifying missing content. Further, reworking the modules collaboratively can ensure more grade-level coverage facilitating vertical alignment. Designing lessons that address the overshadowing of the math practices section of the standards and modules can address the rigor of the new standards, student independence, and student preparedness. The project design in section 3 of this paper is a self-directed, collaborative professional development plan that is focused on reworking the modules and lessons that facilitate the math practices.

Quality and Accuracy

The criteria used to judge the quality and accuracy of this grounded theory study were fit, work, relevance, and modifiability (Giske & Artinian, 2007; Holton, 2008). Fit refers to how well the concepts and categories relate to what was actually being said or happening. Work is whether or not the study explained or interpreted behaviors through variations and has the ability to use findings to predict future behaviors. Relevance refers to the conclusions and core concern being rendered relevant to the participants since the problems and processes emerged from analysis of data collected from the participants. Modifiability means that through the emergence of data, new ideas were identified and the theory was modified. These criteria were refined through memo writing,

simultaneously collecting data, constantly comparing data, and theoretical sampling (Elliott & Lazenbatt, 2005).

Fit. In determining how well the concepts of this study related to what was actually happening and being said, I employed the strategies of triangulation, immediate response to the data, constant comparative analysis between data sets, controlling for an open and neutral environment free from my opinions, and conducting member checks of the summary of researcher memos. Triangulation is the corroboration of evidence through the use of multiple sources of data, people, and methods of data collection (Creswell, 2012; Meriam, 2009). I achieved triangulation of data through the collection of data from four different sources from six participants. I conducted a focus group interview, five individual interviews, three classroom observations; I also collected three educators' journals. In order to protect the integrity of the data recording and analysis processes, I transcribed the audio recordings the same day they were collected. This allowed me to have a fresh memory of the social interactions, both verbal and physical, of the participants so I could better interpret what was actually happening and/or being said. I open coded the transcripts the following morning while the interviews were still fresh in my mind. During data collection I conducted open coding, constantly compared data, and triangulated new ideas by comparing them against emerging categories, which allowed me to pose questions related to the categories and return to the data to look for the evidence, incidents, and events that validated the study (Creswell, 2012). Each comparison helped me stay focused during my subsequent data collections allowing me to build an accurate understanding of the participants' experiences. Finding corroborating

evidence from multiple sources and using specific examples from each strengthened the credibility of the study and the theory that developed.

Acknowledging participants and researchers both bring preconceived biases, predispositions, attitudes, and physical characteristics to a social interaction that can affect and bring about preconceived understandings; I remained committed to creating an open and neutral environment free of my opinions and preconceived notions. Through the act of continuously writing memos, I was able to further continue checking for bias in my reflections and question if my interpretations accurately portrayed the context and the interactions of the participants. I conducted member checks by emailing a summary of my memos to the participants. I instructed them to keep in mind that I wanted to make sure I was portraying their views and experiences as opposed to my own, and the descriptions were realistic and accurate. I requested that they specifically pay attention to and search for any misinterpretations and to inform me of any discrepancies, including information that should be added or dropped (see Appendix H for a summary of researcher memos). Through adherence to these strategies, I was able to determine if my explanations made sense and if I was accurately reporting the events and the sequence of the processes of implementing the CCSSM.

Work. With this study I intended to gain an understanding of the participants' experiences with the implementation of the CCSSM at this site. I have provided sufficient data for another investigator to determine if the findings from my research are transferable to their particular situation (Merriam, 2009) (see Appendix I for data collected)**.** The site of this study was a rural Upstate New York State district. The varying

educational levels and contexts the participants were involved in at implementing the CCSSM and New York State modules along with the detailed analysis provided in the study can enhance transferability of the findings (Creswell, 2012).

Relevance. It was clear from the focus group interview and across all subsequent data analysis that the challenges these educators face as they are trying to implement the CCSSM and the New York State math modules is their major concern. Math standards and module challenges became a very dense category that was described by all the educators during the interviews and in their journals, leading it to eventually becoming the core category (see Appendix I for categories and sub-categories). Not only are the challenges they face relevant to them because the data came specifically from the participants themselves, but the use of open-ended questions allowed the participants to guide the content of the interview and freely express their concerns, which also ensured the main concern is relevant to them.

Modifiability. The focus group interview codes fit into eight categories: *program alignment, math modules, student learning problems, math standards, teacher changes in beliefs/practices, tests, ELA,* and *general standards*. I dropped the data on *ELA* and *general standards* because of its' irrelevance to the study's focus on math and the CCSSM. I omitted one participant because I felt they had a lack of experience with the CCSSM. As more data were collected, I employed constant comparison analysis. I chose to combine the *math modules and standards* categories since the modules are an aligned curriculum to the standards. I added four new categories as they emerged for a total of nine categories: *alternate sources, educator needs, teaching/student learning strategies,*

and *teacher-directed instruction.* As more data were collected, analyzed, and compared; I redistributed the *program alignment, alternate sources,* and *teacher-directed instruction* categories into other categories, rendering these other categories more relevant. I divided the *tests* category between *teacher needs* and *math and standards modules*. I split the changes in *teacher beliefs/practice* into *educator buy-in* and *changes in practice*, along with data from several other categories. I renamed *math standards and modules* to *math standards and module challenges*. Modifying as I compared the emerging data with previously analyzed data, left me with the densest and most relevant core category of *math standards and module challenges* and four related core categories: *educator buy-in, student learning obstacles, changes in practice,* and *educator needs*.

Summary of Outcomes

There has been a concern for the quality of education for the past 3 decades (Ferris et al., 2008; Reese, 2013). Researchers have attributed the failure of the 2001 NCLB legislation to states lowering their standards to meet Adequate Yearly Progress (AYP) and narrowing their curriculum to teach to assessments (Groen, 2012; Mulvenon & Robinson, 2014; Stephenson, 2006, Desimone, 2013). The perceived problems concerning the quality of education led to a call for educators to better prepare students to compete in today's economy (Bridgeland et al., 2011; Camevale & Rose, 2011). In response, in 2010 the Common Core State Standards were released (Council of Chief State School Officers, 2014).

Some researchers have suggested that the CCSSM direct the content to be taught but not how to teach the content (Beckmann, 2011; Porter et al., 2011). This has left

districts with a new curriculum to be implemented in educational settings where traditional classroom instruction is the common practice and they need to align content, instruction, and classroom assessments with the new standards and state assessments (Harris, 2012a). Researchers also have suggested that the implementation of the new standards will be a difficult task for districts (Bostic & Matney, 2013; Cobb & Jackson, 2011; Porter et al., 2011). This problem was highlighted by the decline in student scores on the New York State assessments since 2009 (EngageNY, 2013). The district chosen for this study mirrors the decline in student assessment scores across the state (EngageNY, 2013). The district leaders chose to implement the New York State math modules, a curriculum aligned to the standards and the state assessment that was designed by the state. The local problem warranted that I explore the educators' experiences implementing the CCSSM and the New York State math modules. More specifically, to explore what practices drive successful implementation from participants prospective and what needs the educators' have concerning the implementation of the new standards. It is possible that results from this study can enable this district and teachers to make informed professional development and curricular decisions.

Through data analysis I found that the educators bought-in to the new standards, the math modules, and a new teaching philosophy. They believe the standards are more rigorous and ensure coverage of the content. They think the standards prepare the students at each grade level. Throughout the study the educators expressed their belief that the standards and modules help students develop a deeper understanding of mathematical concepts and reasoning. They feel that the modules make it easier to

implement the standards. Although the educators have bought-in to the standards and modules, they feel they are challenging and present some obstacles. However, they believe as time goes on it will get easier not only as they gain knowledge and experience, but also as the students gain the knowledge and the experiences necessary to master the CCSSM. They also expressed that positive growth and change implementing the standards will happen with educator collaboration. As Montgomery (2012) stated, the unsuccessful implementation of the standards is not an anti-authoritative stance taken by teachers, rather teachers need time to familiarize themselves with the standards. Data analysis uncovered core concerns and challenges faced by the educators.

Analysis of data gathered from focus and individual interviews, classroom observations, educator journals and researcher field notes clearly represents the core concerns and challenges related to the standards and the New York State modules. Implementation is at an early stage and the educators have not had sufficient time to familiarize themselves with the standards and modules, resulting in a lack of knowledge. They believe that the new standards are more rigorous. The math practices are the most difficult part of the standards; they help students develop the skills and knowledge to master the more rigorous content and develop a deep understanding of the mathematical concepts. The educators feel the math practices are overshadowed and need to be emphasized. The standards are the content to be taught at each grade level and the modules help the educators know how to teach the standards. All participants feel the modules are too large, cumbersome, and repetitive, yet some lessons are missing content. Therefore, educators need to use alternate sources to supplement the modules. Some feel

the percent of coverage on certain concepts are not aligned between the module curriculum and the state assessments. Further, data analysis uncovered related concerns and challenges faced by the educators while implementing the CCSSM, including changes in practice and student learning obstacles.

The participants expressed concern that their current teaching practices need to be better aligned to new practices that are required to successfully implement the CCSSM. Some researchers have concluded there is little alignment between the new standards and the previous standards that have been in place (Cobb & Jackson, 2011; Dingman et al., 2013; Porter et al., 2011; Schmidt & Houang, 2012). The standards and modules are a change in practice and that change is difficult. Currently, participants are implementing more student-directed teacher facilitated strategies and less teacher-directed instruction and lecture. Participants are spending more time scaffolding learning and facilitating independence. They are implementing more student collaboration activities. Participants are utilizing trial and error methods to determine what works and what does not. They are mixing some proven older lessons with alternate sources and module lessons. They further expressed concern that the content educators are able to cover in the current time restraints results is not sufficient to keep the curriculum aligned from one grade level to the next, resulting in gaps in student knowledge that require additional educator scaffolding.

When participants followed the module lessons, they found them to be repetitive, cumbersome, and too time consuming to cover all the material. Not covering all the material at each grade level results in not all the standards being covered by the

designated grade levels and students are moving on to the next grade level unprepared. Participants are beginning the year behind and feeling a great deal of pressure trying to fill the students' gaps in knowledge and adjust their curriculum before they can move forward with an already time-consuming curriculum. In addition to many students beginning a new grade level unprepared, the educators discussed several other student learning obstacles they are experiencing. Throughout the study, the participants discussed their concern for the students' lack of vocabulary knowledge, leaving them unprepared to master the rigorous vocabulary that is embedded in the standards, modules, and assessments. They also discussed students' lack of independence, motivation, and the ability to retain knowledge as obstacles that are hindering the students' success mastering the CCSSM. Some participants attribute the lack of student motivation to the large amount of content students need to master, while it is also thought that student independence can be improved with the implementation of the math practices. Students' ability to retain knowledge seems to perplex the educators. The challenges of math standards and modules, changes in practices, and student learning obstacles prompted the participants' discussions about the needs they have in order to successfully implement the standards.

Some researchers have suggested that alignment alone is not enough to support successful implementation of the new standards, rather districts also need to consider the specific needs of the educators and schools (Kurz et al., 2010). If districts are to sustain new initiatives they need to give serious consideration to professional development needs (Wang et al., 2010). The participants in this study expressed a need to have collaborative

professional development that is self-directed, where teachers can identify their needs and are given the support necessary to address them. Educators are successful at targeting appropriate content for professional development needs and administrators must consider educators' perceived needs when developing professional development plans (Bostic & Matney, 2013). The relationship between self-directed collaborative professional development discussed by the educators in the current study and the successful implementation of the new standards is supported by ample literature (Fulmer, 2011; Kurz et al., 2010; Martone & Sireci, 2009; Penuel et al., 2009).

The participants in this study stated that they feel they are not being given the time they need to change teaching and learning practices at the classroom level. These educators feel they need time to familiarize themselves with the standards, math practices, and modules. Likewise, Penuel et al. (2009) found educators felt they were not given the required time it took to plan, gather materials, and organize the new curriculum. The educators in this study discussed the need for checklists and report cards aligned to the standards to help with accountability at each grade level. They described a need to collaborate with colleagues to rework and cut down the modules. The educators need to spend time addressing classroom alignment and vertical alignment issues by figuring out what vocabulary to focus on, which module lessons they can cut back on, which lessons they need to use in their entirety, which lessons they should replace with alternate lessons, and which lessons they can combine. They stated collaborative time is also needed to focus on student independence.

Leadership that does not support educators at the classroom level has little effect on the implementation of new policy (Finnigan, 2012). Some researchers further suggested that professional development that is highly focused on planning, classroom environment, and instruction can significantly impact successful implementation of the standards (Tournaki et al., 2011). Researchers suggested that educators require professional development and support to align their curriculum to the new standards (Reyes, 2013). The importance of this district addressing the educators' perceived needs and developing educator-directed, collaborative professional development of high quality is underscored by educational change theory.

Educational change theory provides the explanation that for decades reform efforts in the United States have failed since the focus has been on content (standards), materials (textbooks), and assessments (Reyes, 2014) and not the everyday curricular concerns and activities of teaching and learning (Priestly, 2011; Reyes, 2014). Hiebert (2013) argued change does not happen through reading and writing of documents, but rather through the reflective positioning of those involved with new educational policy that occurs when they have the opportunities to examine content, materials, contexts, and beliefs while they are engaging with the policy to enact changes. The educators in this study expressed concerns that they have been given the initiative, but they also need to have the opportunity for professional development that addresses teaching, learning, and curricular concerns. Fullan (2014) stated that in order for educational change to occur there must be a focus on educators and the contexts in which they are working, in addition to disseminating information on standards, materials, and assessments.

Conclusion

Researchers have suggested districts are facing challenges concerning the implementation of the standards because they have a new curriculum that requires new teaching practices to be implemented in classrooms where traditional teaching practices are still in effect. The problems were highlighted by the decline in student assessment scores. The of this purpose of this study was twofold: (a) to understand what was needed at a New York school district to successfully implement the CCSSM based on the educators' experiences; and (b) to generate a grounded theory that can aid in building a framework to help guide implementation practices. Through data analysis, a grounded theory explaining the educators' experiences implementing the new standards emerged. The emergent theory indicates that although educators have bought-in to the CCSSM, implementation has been challenging. They are faced with module and standard challenges, as well as student learning obstacles and changes in practice. Addressing specific educator needs can help to foster the successful implementation of the standards (Figure 5). Educator buy-in defines the mindset of key stakeholders (educators) in the school district, while providing a context in which to examine the core and related challenges, as well as the *educator needs*. Educators have bought-in to a new teaching philosophy, believe there will be positive change over time, and believe that collaboration fosters positive growth and change. They also value the standards and modules, believe the modules develop a deep understanding of math concepts, believe the standards prepare the students and can raise the level of student achievement, and believe the modules make it easier to implement the standards and ensure coverage.

The new CCSSM and modules present substantial challenges that hinder successful implementation processes. These are the core challenges that educators and students are regularly faced with; however they are joined by several related but important challenges including various *student learning obstacles* and *changes in practice*. Core *standards and module challenges* include implementation of the CCSSM is at an early stage, lack of educator knowledge of the standards, increased rigor of the standards and modules, lack of alignment to the assessments, and a lack of student checklists. They also include the modules are too large and repetitive, the modules are missing content, educators must seek out alternate sources and past practices, the math practices are the most difficult section of the standards, and the math practices are overshadowed but need to be emphasized.

Although the related challenges were not emphasized to the extent of the core challenges, they were discussed often and considered very important to the successful implementation of the CCSSM. *Student learning obstacles* include student independence, motivation, math vocabulary knowledge, retention of knowledge, and preparedness. *Changes in practice* include educators spend more time on math instruction and use more student-directed learning strategies and less teacher-directed instruction. They also spend more time scaffolding learning, facilitating student independence, and facilitating student collaboration.

The core challenges and related challenges presented above have clarified a selection of *educator needs* that are important and relevant to the educators in this district. *Educator needs* include the time necessary to familiarize themselves with the

modules and standards, collaborate on modules, and collaborate on vertical alignment. They also need to have more accountability for covering the standards, student checklists and report cards aligned to the standards, and relevant professional development that addresses their needs. The following section discusses implementation of the professional development project that I designed to address the core challenges based on the educators needs.

Section 3: The Project

The 2013 New York state standardized tests were the first designed to assess the new standards. The decline in the student scores from 2012 to 2014 at this district underscored the need to shift to a new and different curriculum aligned to these assessments (Figures 3 & 4). The school chosen for this study has implemented the New York State Mathematics modules curriculum that is aligned with the Common Core State Standards for Mathematics (CCSSM). With more rigorous assessments driven by higher standards, the state designed the modules to assist teachers and districts in implementing the new standards. The purpose of this study was twofold: (a) to understand what was needed at a New York school district to successfully implement the CCSSM based on the educators' experiences; and (b) to generate a grounded theory that can aid in building a framework to help guide implementation practices.

The emergent theory indicates that although educators have bought into the CCSSM, implementation has been challenging. They are faced with module and standard challenges, as well as student learning obstacles and changes in practice. Addressing specific educator needs can help to foster the successful implementation of the standards. The size and repetition in the modules necessitated professional work time for the teachers to collaboratively rework them. In addition, emphasizing teacher work with the mathematics practices could minimize some of the student learning issues that arose. The professional development plan I designed for this project addresses the challenges and educator needs identified by the participants: to rework the modules and examine the math practices section (see Appendix A for professional development plan). The first

goal of this professional development is to improve student learning and mastery of the standards by reworking module lessons and developing a plan for implementing the curriculum lesson(s). The second goal is to improve student independence, specifically their use of the math practice skills by developing educators' knowledge and understanding of the math practices, as well as a plan(s) to implement them.

Professional development fosters adult growth and allows educator agency whereby educators direct their own learning based on their needs (Cummings, 2011; Slavit & Roth, 2013). Further, effective professional development is focused on content and student achievement (Bleach, 2014; Gomez et al., 2015; Tournaki et al., 2011). The design of this plan allows educators to set their own goals based on their needs and choose the professional development content based on their curriculum and student needs. Effective professional development gives educators the opportunity to work collaboratively with their grade and content level colleagues where they actively interact with one another and the curriculum, while in their district setting, focused on their current curriculum and students (Casey 201; Leane, 2014). The educator teams in this plan will identify problems with the implementation of the math modules and math practices section of the standards and then develop goals based on those problems. They will design, implement, and revise (as needed) a plan to address those problems and goals. This professional development plan includes an evaluation component that assesses both educator buy-in to, and the perceived effectiveness of the professional development sessions. These types of adaptive models for professional development are growing in popularity (Leane, 2014). An adaptive model is designed to include teacher

self-directed learning (Raider-Roth et al., 2014; Slavit & Roth, 2013). Educators engage in a collaborative effort identifying their own learning needs to solve classroom-based problems (Slavit & Roth, 2013). A rationale of the project's genre based on themes uncovered from the data analysis and an explanation of how the study problem is addressed through the project are detailed below. A review of the literature I used to inform the design of the selected genre and guide the development of the project is also presented following the rationale.

Rationale

Findings from a grounded theory study can affect and improve practice (Merriam, 2009). The results of this grounded theory study uncovered the core concerns of these educators as they are facing challenges implementing the CCSSM and the math modules (Glaser, 2008). Professional development that allows educators to have workdays where they can collaborate to address these challenges is a valuable outcome of this grounded theory study. Considering implementing the math modules and math practices was found to be a major challenge and main concern for these educators, it is logical to address these challenges with professional development. Researchers have suggested that, if the new standards are to be implemented at the classroom level, it is imperative that teachers' concerns be addressed (Casey, 2013; Gabriel, 2011; Liebtag, 2013). Furthermore, the need identified by the participants for self-directed, collaborative professional development based on the challenges they are experiencing in the classroom is supported by research (Akiba & Wilkinson, 2015; Bruce & Flynn, 2013; Cummings, 2011; Gunersel & Etienne, 2014; Raider-Roth et al., 2014; Tournaki et al., 2011). This

professional development plan is teacher-directed and addresses the participants' most salient concerns.

Review of Literature

To address the participants' main concerns about the implementation of the modules and math practices, I conducted an extensive literature review on effective professional development. Using the education databases ProQuest, Sage, and ERIC, I located recent peer-reviewed journal articles published from 2011 to 2016 concerning effective professional development. I began the search with the following search terms: *professional development, effective professional development,* and *collaborative professional development*. This led me to search for lesson studies and professional learning communities. The literature revealed that traditional, off-site workshops are ineffective; models that utilize collaborative, practice-based, teacher-directed professional development are more effective, leading me to search adaptive professional development models.

Traditional Versus Progressive Professional Development Models

There is ample research that has supported the stance that traditional practices of professional development are ineffective (Casey, 2013; Gabriel, 2011; Gomez et al., 2015; Kimmel, 2012; Lewis, Perry, Friedkin, & Roth, 2012). Traditional practices are disconnected from current classroom practices; it is more effective to offer professional development that is focused on teachers learning about their students, their curriculum, and their unique challenges and obstacles (Casey, 2013; Gabriel, 2011). There has been a recent call from researchers and educators to implement ongoing, collaborative

professional development for teachers that is reflective (Bleach, 2014) as opposed to the traditional, off-site passive workshop (Gomez et al., 2015). Classroom-based professional development is situated in the workplace of the educators (Casey 2013; Gomez et al., 2015); it is both school-based (Cummings 2011) and job-embedded (Porter, Fusarelli, & Fusarelli, 2015; Stewart, 2014). Grimsaeth and Hallas (2015) suggested school change happens with educators at the classroom levels as they collaborate, discuss, and brainstorm about issues that are currently arising in the classroom. Researchers have further suggested that educators should be defined as change agents (Grimsaeth & Hallas 2015; Pierson & Borthwick, 2010). Effective models are self-directed and support adult growth (Raider-Roth et al., 2014; Slavit & Roth, 2013), where teachers are engaged in a collaborative effort identifying their own learning needs to solve classroom-based problems (Slavit & Roth, 2013).

Based on their work with teachers and administrators during a 3-year project that targeted professional development for mathematics and science teachers, Slavit, Nelson, and Kennedy (2010) identified five important elements that enhance collaborative work around content-specific objectives. First, the authors stressed the importance of teachers defining their focus and methods while a facilitator supports them in their work. Second, principals need to be involved and address teacher needs. Third, single-discipline inquiry teams that are content specific are more successful than cross-disciplinary teams. Fourth, it is important for the teams to incorporate research and discussions about student data. Fifth, teacher leaders should become team facilitators.

Slavit et al. (2010) further stressed the importance that teacher buy-in plays in the success of professional development. The collaborative inquiry based on teachers' concerns and questions provided them with the motivation to invest their time and energy. The teachers were motivated to learn about the aspects of teaching and learning in their respective disciplines and to participate in discussions around teaching and learning issues discovered in student data. The teachers described the collaborative, self-directed professional development project as a powerful learning experience.

Slavit and Roth (2013) discussed the results of two related case studies that examined the roles and conditions that were helpful in initiating, directing, and supporting teachers' professional development. The first case included data collected over 1 year from participants that were members of a professional development team. The second case included data collected over 5 years from a multicase research study that focused on collaborative teacher inquiry. In the first case, teachers supported the district's adoption of a new program. However, both the researchers and teachers did not find the program elements evident in classroom practices. The goal of the professional development teams was to improve students' learning by developing their own knowledge and skills for utilizing the newly adopted curriculum materials. The professional development utilized a blended approach of lesson study and video club lesson study. The teacher group developed goals for student learning, designed a plan to achieve those goals, conducted the plan and gathered evidence, debriefed and discussed the plan, and finally revised the plan (Slavit & Roth, 2013). Each cycle required 15 hours of meeting time; videos were examined and discussed. The professional development

involved leadership that engaged in discussions that acknowledged everyone's individual expertise and listened to each person's needs and ideas, rather than assuming the role of an expert directing or presenting to the rest of the group.

The second case involved a professional development team of 10-12 teachers (Slavit & Roth, 2013). After a collaborative analysis of student assessment scores, the group wanted to increase student engagement and problem solving skills. The professional development team utilized self-directed activities that focused on students' mathematical reasoning.

The authors identified the conditions that allowed teachers to initiate, direct, and support their own professional development. Attitudes, attention, and awareness played important roles in teacher learning (Slavit & Roth, 2013). They suggested that teachers identifying their own learning needs are an integral component of professional development designs. Teachers also need to play a brokering role in relating external supports to their immediate contexts. The authors stressed the importance of directing a professional development plan that both attends to teacher learning needs, and is based on teachers' practices. Findings also indicated that the professional development work teachers engaged in resulted in a change in practice that was better aligned to the instructional programs (Slavit & Roth, 2013). Self-directed learning allowed for teacher exploration of current practices. Teacher buy-in was strong because the impetus for the professional development was constructively negotiated by the teacher community and was supported by positive attitudes about the work they were engaged in (Slavit & Roth, 2013). These types of practice-based models that are ongoing, self-directed,

collaborative, focused on teacher and student learning, and job embedded are gaining popularity (Leane, 2014). Lesson studies and professional learning communities are two practice-based models discussed in the paragraphs below.

Lesson Studies

Lesson studies are teacher-directed professional development that supports teachers in developing their own practices and teaching skills (Akiba & Wilkinson, 2015). Working collaboratively with colleagues, teachers engage in a cyclic pattern where they identify problems in the classroom, set goals for students, plan a lesson, and implement the lesson while colleagues observe and take notes. Next, they conduct a post reflection and debriefing conversation collaboratively; the teachers refine and revise the lesson. Finally, the revised lesson is implemented in another classroom. This is a continuous process where the professional development is teacher-directed, collaborative, and begins again by identifying a problem and engaging in this cyclic pattern (Bocla, 2015).

Lewis et al. (2012) recommend the use of lesson study to spread knowledge about the implementation of CCSS. Leadership should not expect teachers to learn without actual practice and feedback from colleagues. The authors reviewed evidence from United States lesson study research. They concluded common instructional materials and assessments are not sufficient and there is a need to include practiced-based, collaborative learning where shared knowledge is built and a commitment to improvement is developed (Lewis et al., 2012). Lesson studies focus on teaching rather than teachers and can improve both student and teacher learning. Lesson study is an

inquiry cycle carried out by a team of teachers; a lesson is built around a current classroom issue and designed to investigate and improve teaching. Teachers figure out what aspects of a lesson enhance rather than imped a lesson's success. Lesson studies require three supports: high-quality instructional materials that support quality learning, practice-based professional development designs for collaboration, and opportunities to explore, try out, and refine new approaches and lessons.

Based on their findings, Lewis et al. (2012) suggested traditional off-site professional development designs have limited applications, as opposed to practice-based, on-site designs. Lesson studies provide teachers the opportunity to observe and discuss each other's lessons, develop shared references, offer each other ideas, develop questions that challenge current beliefs, set professional development goals, and build shared knowledge about the teaching and learning of specific content. Lesson studies improve implementation and student achievement. Teacher motivation comes from the satisfaction of seeing students learn and the support gained as part of a professional community devoted to improvement. Leadership can utilize the lesson study as professional development that elicits persistent high quality work through teacher agency. Teacher agency affords teachers the authority to choose topics and methods to improve teaching and learning.

Saito and Sato (2012) conducted a case study to examine the implementation of lesson study for learning communities (LSLC). The authors examined how a school turned around from one of the worst performing to one of the best through the use of LSLC. The authors described a 3-year journey where a Japanese high school principal led

school improvement by establishing a vision of reform, organizing LSLC involving the whole school, and utilized the LSLC to overcome problems that arose from implementing school reform (Saito & Sato, 2012). The principal gave top priority to teaching and learning in the classroom. Support was provided to the teachers as they collaborated to review their practices through observation and reflection. This structure of and support for the LSLC aided in changing the climate to one of trust between colleagues.

Professional Learning Communities

In the United States there has been a trend toward defining effective professional development (Koellner & Jacobs 2015). Researchers highlighted the importance of offering professional development focused on student learning and educators participating collaboratively in professional learning communities (PLCs). Leane (2014) found when a school adopts a PLC philosophy, educators agree on student needs and essential student skills; they intervene until they are confident there is student growth and thus, school growth. A school organization that is a PLC consists of educators working together in teams that are focused on learning, collaborative culture, and positive results. Highly adaptive models of professional development such as PLCs, lesson studies, and problem solving cycles are models that are responsive to student learning goals, instructional materials, and the local context as opposed predetermined professional development with fixed content, goals, activities and materials (Koellner & Jacobs 2015). These models consist of teacher-led teams organized by grade level and content that work together collaboratively (Ferren, Dolinsky, & McCambly, 2015; Gunersel & Etienne, 2014; Ronfeldt et al., 2015; Ruchti et al., 2013; Vecellio, 2013; Wohlstetter et al., 2015);

they are job embedded, reflective, and ongoing. The PLC operates as a collaborative culture with educators working together to achieve goals and build shared knowledge.

Casey (2013) explored the demands on teachers to engage in the professional development practices in the context of standard-based reform that is targeted at school improvement, policy implementation, and effective management. The author drew on a seven-year practitioner research study to highlight the disparity between the intentions of current professional development and the actual learning of teachers. When teachers were asked to describe how professional development has or has not affected student achievement, informal learning in PLCs with colleagues was viewed as having a greater value than the traditional, off-site professional development. The teachers valued the opportunities to work with colleagues in PLCs to share practices and expertise. They engaged in research that was classroom-based and focused on their own students, their own learning, and their own problems. Likewise, the author further reported how they used their own self-created community with theoretical literature, critical allies inside and outside the school, and their personal biography and reflection diaries to advance their own professional learning. This practice defined the teachers as practitioner researchers who are critical thinkers, rather than passive followers (Casey, 2013).

In conclusion, Casey (2013) argued for teachers to participate in inquiry and research that results in better quality learning for teachers. School conditions need to incorporate differentiated professional development and leadership that supports teachers and makes them feel successful. Teachers need the opportunity to work on-site with other local educators in PLCs and the quality of professional development should be evaluated

on student learning not on attendance of off-site workshops that present broad general topics. Teachers and their students should be the focus of any and all professional development learning.

Porter et al. (2015) conducted a comparison case study to explore two elementary school level experiences with the Common Core State Standards. The authors examined how contextual factors impact the way in which the standards are implemented. They contended that the success of implementation is dependent upon the individuals that ultimately enact them: the teachers. If teachers are to enact the standards, they need to believe in them and possess the will and capacity to do so. The level of implementation depends on the contexts that surround teacher learning and classroom use.

Data were collected from surveys and interviews from faculty, principals, and two Race to the Top coordinators. Porter et al. (2015) found that teachers began implementation of the standards feeling apprehensive and without the explicit professional development necessary to develop their capacity to properly implement them. The authors uncovered the following common themes: (a) interpreting and framing the change, (b) professional collaboration, (c) impact on professional and personal lives of teachers, and (d) pacing, communication, and training. Teachers and administrators both identified the job-embedded PLCs as the most helpful to implementation. The PLC groups were successful at providing the educators an understanding, through discussion, about any areas they didn't understand. Furthermore, the PLCs provided the teachers with opportunities to collaborate and develop tailored instruction for the demographics of the unique students they were teaching. The teams were formed based on common grade

level so teachers could work with colleagues implementing the same content to design common curriculum and assessments. This provided the educators with the effective communication and support necessary for successful implementation of the standards. Participants also expressed the importance of the quality and availability of training and materials. They expressed many challenges from too many resources and being overwhelmed, to not enough resources and constantly searching for them. The participants further expressed that it would be helpful to have more training that matched their needs. The authors concluded by reviewing two major themes: (a) the negative impact on the personal and professional lives of teachers and (b) the importance of the context in which implementation is taking place and the necessary support for facilitating effective implementation (Porter et al., 2015). Teachers were required to sift through materials and realign the curriculum too hastily, leading to uncertainty, vagueness, and poor communication. It was stressful for teachers to be forced to implement the new initiative in such a compressed timeline. The authors suggested it is the role of school leadership to communicate consistent expectations and information, as well as to support teachers at the classroom level with implementation of the standards.

My decision to design an adaptive professional development plan for 3 professional development workdays provides the educators at this district the opportunity to solve some of the challenges they are faced with during the implementation of the CCSSM and the New York State math modules. The professional development design gives them the capacity they necessary to address their immediate needs that are relevant and directly applicable to their current classroom situations. It allows them to collaborate

and learn from one another as they build an understanding of the modules and standards and address their needs and challenges. By reworking the module lessons, working with the math practices, and developing plans for implementation, educators are able to improve student learning and mastery of the standards, as well as students' independent use of the math practice skills.

Proposed Professional Development Plan

The proposed professional development plan spans 3 full days and addresses the core concern that emerged during my study: math module challenges (see Appendix A for professional development plan). Researchers have suggested successful professional development is collaborative and inquiry based, where joint responsibility for professional learning is shared between administrators and teachers (Gunersel & Etienne, 2014; Raider-Roth et al., 2014). Bostic and Matney (2013) suggested that teachers' are successful at targeting their own needs. Therefore, I designed a plan that is teacher-directed and collaborative based on the teachers' perceived needs.

The findings of this study indicated that educators need to be afforded a professional forum in which they can rework the math module lessons and emphasize the implementation of the math practices. The professional development includes 12 mathematics teachers Grades PreK through 8. There are two goals of the professional development sessions: (a) to improve student learning and mastery of the standards by reworking some module lessons and developing a plan for implementing the curriculum lesson(s) and (b) to improve students' independent use of the math practice skills by

developing teachers' knowledge and understanding of the math practices, as well as develop a plan(s) to implement math practices.

The initial session includes a discussion and a PowerPoint presentation about the research findings, a rationale for the professional development, a plan for how to proceed with the professional development, and a description of how to write specific, measureable, attainable, realistic, and timely (SMART) goals (Konrad et al., 2014; O'Neill, 2000). The participants brainstorm topics to work on; they reflect on their needs and join a team that best suits those needs. The teams write SMART goals for the day and collaborate to accomplish those goals. The participants continue their team work for the remaining two sessions. At the end of each session the participants write SMART goals, plan for the next session, and participate in a short evaluation. The facilitators support the participants with materials, and technology.

Potential Resources and Existing Supports

The principal and I have discussed the basic structure, time, and resources required to conduct this three-day professional development program. The principal is supportive and has expressed excitement for not only the implementation of this particular professional development, but at the possibility of utilizing this type of plan in the future if it proves to be successful. This district has found that their budget for professional development no longer supports the high cost of sending educators off-site for traditional-style workshops. They are sending consistently fewer teachers, leaving the professional development committee questioning if these traditional practices are effective. The proposed professional development plan is cost-effective and does not

require the use of funds previously set aside by the district leaders for professional development. Further, if this plan is successful, the funds allotted for professional development each year could be redirected to support the implementation of the CCSSM, including the on-site professional development of educators for substantially less than the cost of sending them to traditional, off-site workshops.

This professional development is facilitated by the curriculum coordinator, the curriculum math specialist, and myself. It will be held in the conference area of the high school library. This space is well equipped to support both the facilitators in conducting the sessions and the educators' needs. The 12 participants are seated at four large tables, which provide ample work space and allow for flexible grouping. The PowerPoint presentation is displayed on the SmartBoard located in the front of the room.

During these professional development sessions, the educators are either working with the math modules or the standards. Some of them may choose to search for new materials or rework those already existing. Copies of the CCSSM and the distribution percent of each standard to be covered at each grade level will be distributed to each participant. All teachers have access to copies of the New York State modules for their grade level. Any further materials related to the standards and modules that may be needed are available online (http://www.engageny.org). Likewise, any online materials or research sought by the participants are available on the school's research sites, such as Education Resources Information Center. The site contains six computers with wireless internet connection and a printer. The educators are supplied with three-ring binders and plastic sleeves to organize their materials.

Potential Barriers and Solutions

Time and human resources are common barriers to professional development programs. If the schedule cannot accommodate three full sessions, it is possible to divide them into other available time slots. With the dynamic nature of a school environment, it may not be possible for all the participants to attend every session; therefore, the sessions are scheduled when it is most convenient for the participants to attend. It is also possible the conference room in the high school library may not be available, in which case the sessions can be moved to a classroom convenient for the participants. The classrooms at this district are equipped with computers, wireless internet connections, printers, and SmartBoards.

Proposal for Implementation and Timetable

The professional development sessions are held on 3designated professional development workdays in June, 2016, as educators are organizing and preparing for the upcoming school year. To ensure the professional development is continuous, facilitators' follow-up with the educators and ongoing sessions are scheduled, as needed, on future designated professional development days throughout the next school year. The goals of the professional development sessions are: (a) to improve student learning and mastery of the standards by reworking module lessons and developing a plan for implementing the curriculum lesson(s) and (b) to improve students' independent use of the math practice skills by developing teachers' knowledge and understanding of the math practices, as well as a plan(s) to implement math practices.

The educators begin by identifying the teams they wish to work with to best accomplish their goals. The first session ends with the participants designing specific, measureable, attainable, realistic, and timely (SMART) goals and a plan for the following workday. The participants are asked to complete a seven question survey concerning educator buy-in to this professional development. They are asked for suggestions and the survey is analyzed later that same day so the results can be used to make any adjustments to the following session. The presentation remains open to educators directing the professional development based on their needs.

The second session is facilitated based on the educators' needs, lesson adjustments, and specific, measureable, attainable, realistic, and timely (SMART) goals designed in the first session. The participants work in their respective teams towards accomplishing their goals. At the end of the second session the participants design SMART goals and a plan for the third session. They are also asked to fill out a five-question survey designed to evaluate their progress, whether or not their needs are being met, and if they have any concerns. Similar to the first session, the survey is analyzed the same day and results are used to adjust the next session's plans. The third session continues in the same manner and is followed by a focus group interview designed to evaluate educators' perceptions on the effectiveness of the professional development concerning instruction and student achievement.

Roles and Responsibilities

It is the role of district administrators to support the facilitators with access to materials and time. The professional development sessions are facilitated by the

curriculum coordinator, the curriculum math specialist, and me. The facilitators need access to a space where they can conduct the sessions and have access to technology such as computers, printers, paper, binders, and wireless internet connection. The facilitators need time to plan and collaborate, as well as designated professional development days to conduct the sessions.

It is the facilitators' role to support the educators by explaining procedures, rationales, and purposes for the sessions. They guide the participants to necessary resources and materials, as well as search out and retrieve any additional materials that may be helpful. They will also evaluate and monitor the sessions. Lastly, facilitators keep track of and log professional development hours for the educators.

The participants identify their needs, then form groups based on those needs, as well as design specific, measureable, attainable, realistic, and timely (SMART) goals and professional development plans for consecutive days. They identify how to address their needs and the necessary materials and resources. They work towards the two goals of the professional development: to improve student learning and mastery of the standards by reworking module lessons and developing a plan for implementing the curriculum lesson(s) and to improve students' independent use of the math practice skills by developing teachers' knowledge and understanding of the math practices, as well as a plan(s) to implement math practices.

Project Evaluation

Although the participants have bought-in to the new standards and modules, they are facing challenges and have needs that need to be addressed. This professional

development is designed to give the educators a structured program where they can work collaboratively on the modules, the math practices, or other issues they are having implementing the modules and standards (see Appendix A for professional development plan). There are two questions that guide this evaluation:

- Do the educators perceive that reworking modules and developing a successful plan for implementing the curriculum lesson(s) are effective at improving student learning and mastery of the standards?
- Do the educators perceive that the professional development program is effective at improving students' independent use of the math practice skills by developing teachers' knowledge and understanding of the math practices, as well as a successful plan(s) to implement math practices?
- Do the educators perceive there to be a need to continue with workshops of this kind throughout the year.

This professional development program evaluation is a mixed-methods formative design intended to evaluate if the program successfully met its goals. After each of the first two sessions the educators are asked to fill out a survey. The questions on these two surveys are designed to evaluate the educators' perceived effectiveness of the program at meeting their needs and improving student achievement. Responses are examined for frequency and reported quantitatively. At the end of the third session, educators are asked to participate in a focus group interview conducted by the facilitators. This interview focuses on the perceived strengths and weaknesses of the program and its effects on student achievement. The data from the focus group are analyzed qualitatively and

reported as a narrative. The mixed-methods approach allows the results from the surveys (whether or not the educators have bought-in to the professional development, if their needs are being meet, and if their concerns are being addressed) to be supported or refuted with the narrative data from the focus group interview on perceived effectiveness. This formative assessment is used to inform the sessions, evaluate the success of the professional development, and inform the design of future professional development. Conducting this evaluation provides the necessary information to determine if teachers have been acting as change agents in this program: whether or not they have they bought-in to the professional development so that productive collaborative work can happen at the classroom level where implementation either succeeds or fails. This information can be used to inform successful professional development programs in the future.

The stakeholders that are directly affected by the success of this professional development are the educators responsible for implementing the standards, including: administrators, curriculum coordinators, curriculum math specialists, and teachers. If the professional development is successful, the educators will have made progress towards successfully implementing the CCSSM and the math modules. It is hoped that the students will experience higher levels of mastery with successful implementation practices. I will compare the students' 2017 state assessment scores with those from 2013-2016 to determine if they have improved. These two groups are the stakeholders who directly and immediately benefit from the success of this professional development. The continuous evaluation of future professional development allows educators to experiment and adjust implementation plans. Therefore, ultimately the effects will be

experienced district wide by a larger number of educators and students, as well as the community and society as a whole as students enter college and the workforce.

Project Implications

Programs such as the proposed professional development can have a positive impact by preparing students to be college and career ready with 21st century skills. The CCSSM describe what students should know and be able to do, whereas the math practices develop the critical thinking skills that require students to understand math conceptually and apply those skills to real life contexts. If educators are able to address those challenges that imped implementation of the standards in the classroom, they become more successful with implementation and students become more successful at developing these skills. Ultimately, these students become members of society and successfully navigate careers with the ability to problem solve and make critical decisions affecting both society and the economy.

Conclusion

The professional development project presented in this section was informed by the research findings presented in Section 2 and the literature review presented in this section. Although the participants have bought-in to the CCSSM and the New York State modules, they face challenges and have needs that need to be addressed. This professional development focuses on two of those challenges: the modules are too large and repetitive and the math practices are overshadowed. Some researchers have suggested that traditional, off-site professional development practices are ineffective and disconnected from current everyday classroom practices. They have suggested educators

be afforded the opportunities to identify their needs concerning teaching and learning and to self-direct professional development in order to address those needs. Furthermore, they have suggested that the professional development offers educators opportunities to work collaboratively developing solutions to these problems. These adaptive models of professional development are on-site and practice-based, providing educators the opportunity to work on their current unique problems with teaching and learning. Therefore, I designed this professional development plan to include collaborative and systematic work to address two needs identified by the participants: to rework the modules and emphasize the math practices.

The next section of this paper discusses this adaptive professional development's strengths and limitations. Recommendations for alternative approaches and implications for future research are considered. A refection on the work along with growth as a scholar, researcher, and practitioner is presented.

Section 4: Reflections and Conclusions

The professional development plan I designed is cost effective with ample resources and supports, yet very few potential barriers. The plan is adaptable to alternative approaches; it is flexible and can be adjusted to address the educators' specific needs. Three full sessions provide the educators sufficient time to address some challenges they have identified implementing the Common Core State Standards for Mathematics (CCSSM). The students would ultimately benefit from better implementation practices. The district leaders and educators can use this plan as a successful model to develop future professional development in all areas. Eventually, the entire district can benefit from this professional development plan, with all students becoming better prepared for college and careers.

Project Strengths and Limitations

There are many advantages to this professional development plan as opposed to the traditional single-day, off-site workshops that have been offered in the past (Casey, 2013; Gabriel, 2011; Gomez et al., 2015; Stewart, 2014). Everyday issues that arise during the implementation of new initiatives are better addressed at the instructional level where educators and students are interacting with the content. The sessions are collaborative and focused on the content and pedagogy that both the educators and students are engaged with. The educators concentrate on their specific needs and the challenges that emerged as core concerns presented in the findings of this ground theory study; they collaborate with colleagues to design instructional plans for implementation and student skill development. The professional development sessions take place at the

district over a 3-day period. The educators will work collaboratively, directing the content of the sessions based on their needs. The timeline provides an opportunity to try out their plans and then bring them back to the next session to adjust them if necessary. This adaptive professional development model is purposefully self-directed based on the educators needs, promoting buy-in and willingness to actively participate. This type of professional development has the potential to be ongoing and implemented within designated professional development days.

Similar to the findings of this study, other researchers have suggested educators are concerned that many professional development sessions are not useful. It is possible that educators will find this professional development does not meet their needs. The formative evaluation was designed to aid the facilitators in detecting as early as possible if the professional development needs to be adjusted to better address the educators' needs. Another possible limitation of this project is the administrators' willingness to schedule the proposed 3 days of sessions. Districts are faced with a lack of time to disseminate information to educators and keep up with committee meetings and mandates. Given that time is a limited resource, facilitators may need to advocate for sufficient time to implement the plans and the 3 days professional may need to be divided up into smaller sessions to fit within the district's professional development schedule.

Recommendations for Alternative Approaches

The participants expressed concerns about a number of issues they are experiencing that impede their ability to successfully implement the new standards. This professional development addresses their core concern of math module and standard

challenges; it affords these educators the time to rework the modules' lessons and work with the math practices sections of the standards. However, there are at least four alternative approaches to addressing the educators' concerns as they are implementing the new standards.

The educators expressed a need to familiarize themselves with the standards. Although the proposed professional development plan addresses this by having the educators work directly with the content and implementation, another option is to implement a structured, informative professional development where a facilitator directs the participants through unpacking and discussing the standards. The participants also expressed concern for the students' lack of vocabulary knowledge, independence, motivation, and retention of knowledge as obstacles impeding student mastery of the more rigorous content. An alternate professional development model is to facilitate the formation of educator teams that research best practices for developing the necessary skills for students to master the content. Another alternate professional development idea is for participants to analyze state test data to address the educators' belief that there needs to better alignment between assessments and standards. Still another possible professional development that could address vertical alignment could be one in which the educators collaboratively map the standards and instruction at each grade level. The proposed professional development along with any of these alternative approaches can help the educators address the challenges of vertical alignment.

Scholarship

I have developed my scholarship by inquiring and reflecting on the shortcomings of past initiatives, the problems that local districts are having implementing the CCSSM, and researchers that have recently suggested collaboration amongst educators increases their ability to positively affect change. Conducting grounded theory research has been enlightening for me; the qualitative data analysis is especially valuable. Instead of just reporting statistical data as with quantitative research, we can also report an account of what is happening. The interviews and observations I conducted gave voice and life to what is happening in the classrooms as students and educators are interacting with both curriculum and each other. Educator journals allowed for their personal perspectives about the CCSSM to be communicated. When given a number, it is not always as clear as to why that number exists, as with an interview transcript or records of personal thoughts and experiences. However, when researchers emphasize validity and credibility qualitative and quantitative studies are equally valuable. Statistics from a quantitative study can support or be supported by theory obtained from a grounded theory study. Together, results published from qualitative and quantitative research can share valid claims and inform the direction for implementing the CCSSM, thus fostering a positive social change.

As my scholarship developed, I became aware of the detailed work required to conduct a qualitative study and have learned that qualitative data analysis has a great deal to offer. Through the processes of analyzing data, I learned how methodical conducting a grounded theory study is. The processes of coding and categorizing proved to be rigorous

and systematic. The constant comparative analysis of various data sources collected from several participants was more challenging and time consuming than I predicted before conducting the study. Although the initial processes of data analysis proved to be methodical and systematic, the generation of connections and theoretical development were much more abstract and required significant time and effort to constantly rework the analysis to determine if a viable theory would develop. The ambiguous nature of a grounded theory study, without even a guarantee that a theory will emerge from the data analysis, also proved to be challenging. However, I learned this attribute of grounded theory is actually one of its strengths, limiting the effects of preconceptions and biases of the researcher while also allowing the data to guide the direction of the study and its results.

As I proceeded through the data collection process, my comfort level and skills changed. I was surprised at how much attention must be given to researcher bias. The participants trusted me and became very comfortable, even asking when I could come visit them and their classrooms. They were very passionate and wanted to share their opinions and experiences. While conducting the interviews, they tried to elicit my opinion during certain discussions, and at times, as a new researcher, I fell susceptible to it. I coded those instances as researcher bias and did not include those data in my research. When my opinion is revealed, it is possible for the participants to alter their statements to align with my views, as opposed to stating how they really feel. I became more aware of my biases and the frequency at which they can occur. By coding everything I said during the interviews and discarding statements that may have

compromised the research, I controlled for my biases, helping me to become more aware and thus limit their occurrence in the future. It became easier for me to determine when I was probing or checking for understanding, as opposed to sharing my experiences or inserting an opinion; I perfected this skill as the interviews continued. As I prepared for the observations, the participants kept inviting me to come in to their classrooms. They were excited and wanted to show me their best, even though I made it very clear that I was not there to observe them but rather teaching and learning practices occurring in the classroom. Therefore, it was possible that I was not always getting a sense of typical everyday classroom activities. I became more comfortable and felt increasingly more confident with each reflection on researcher bias within each data collection and analysis. It was possible that my relationship with the participants may have had a positive effect. The participants seem to have trusted me; they viewed me as someone that could really relate to their particular situation, in their unique setting. Therefore, they were very open and shared so much with me that my interviews were conversational in nature. I learned how to balance saying enough to keep the conversation flowing, without saying so much that the integrity of my research could be compromised.

Project Development and Evaluation

The intellectual work I engaged in helped me understand the power of educational change theory and how it applies to professional development for educators. I designed the proposed professional development plan based on the research of Hargraves and Fullan (2012): circulating a working combination of individual qualities, group qualities, and knowledge attained by educators over time in order to foster positive educational

change. Collaborative teams of educators are more powerful than individuals in making decisions. The collaborative professional development proposed is focused on the complex interactions of the day-to-day teaching and curricular concerns in relating to implementing the CCSSM (Priestly, 2011; Reyes, 2014). Therefore, educators can be involved in the reflective engagement necessary to respond to what works and what does not concerning the new policy (Fiume; 2005; Kelly & Cherkowski, 2015; Lamanauskas, 2010; Tenuto, 2014). This allows the educators to critique and address the challenges they have concerning the implementation of the CCSSM and the math modules (Priestly, 2011). Many researchers have agreed that these types of adaptive models of professional development, which are on-site, self-directed, and based on the educators' needs, are the most effective (Cummings, 2011; Knowles, 1970; McGrath, 2005; Slavit & Roth, 2013).

I included a mixed methods evaluation component to evaluate educator buy-in and determine if teachers' needs are being met. This component allows me to formatively assess whether the professional development sessions are successful at meeting the goals of the plan. This is a valuable component that should be included in all professional development plans in order to be useful for educators and contribute to school improvement.

Conducting this research gave me the knowledge necessary to develop my skills as a project developer. Future designs for professional development must include a facilitator to support educators with time, structure, and materials as they collaborate and purposefully direct their learning in order to address their content, pedagogy, and student achievement concerns. The project I have designed includes educator collaboration as

they interact in the context of the local district with the new content, materials, and belief systems (Hiebert, 2013). As a practitioner, I have already scheduled time to collaborate with colleagues in the future to explore the implementation processes of the CCSSM. As the social studies curriculum specialist at my district, I have been able to implement these adaptive models of professional development for social studies educators with positive results. Throughout this process, I have become more influenced by change and it has built my confidence to influence change in others.

Leadership and Change

The CCSSM state the content students should know and what they should be able to do at each grade level (Dickey, 2013). They require a greater conceptual understanding and application of skills, along with the development of procedural skills and fluency, than the previous standards. Some researchers have anticipated the new standards will require changes in practice (Cobb & Jackson, 2011; Porter et al., 2011; Schmidt & Houang, 2012) and ongoing professional development that helps teachers build an understanding of the new standards and what changes are necessary for successful implementation (Diamond, 2012; Finnigan, 2012; Terry, 2010). Successfully changing the instructional and learning environments for the students is contingent upon teachers innovatively responding to initiatives, rendering teachers in the classrooms as direct catalysts for implementing the CCSSM (Bodman et al., 2012). Some researchers are calling for teachers to be defined as change agents for school improvement (Grimsaeth & Hallas, 2015). Through supporting and motivating teachers, leadership can bring about school change (Finnigan, 2012). Leadership that has the capacity to support and motivate

teachers through offering effective professional development, with the goal of successfully implementing the CCSSM to improve student achievement, can have a positive effect on instructional practices and student success (Terry, 2010). The proposed professional development has been thoroughly researched for effective practices; it has the potential to support and motivate teachers to make positive instructional changes and informed decisions based on problems unique to their classrooms and implementation processes. Therefore, supporting teachers with this type of professional development can have a positive effect on student achievement.

Reflection on the Importance of the Work

The decline students' state assessment scores at this district underscore the need for educators to take action and implement strategies that aid students in mastering the new standards. The district leaders have disseminated student assessment scores and the new standards, leaving educators with the problem of raising student performance, yet without a direct course of action. The professional development plan I designed for this project provides the necessary time for educators to explore and address the unique challenges they face. They can take action and employ collaborative problem solving to explore what changes are required that will aid in the successful implementation of the standards and raise student achievement.

Meeting the educators' needs at this district with self-directed, collaborative professional development based on the challenges they are experiencing in the classroom is supported by ample research (Akiba & Wilkinson, 2015; Bruce & Flynn, 2013; Cummings, 2011; Gunersel & Etienne, 2014; Raider-Roth et al., 2014; Tournaki et al.,

2011). The educator teams in this plan will identify challenges regarding the implementation of the math modules and math practices part of the standards and develop goals based on those problems; they will then design, implement, and revise (as needed) plans to address those challenges. They will work collaboratively with grade and content level colleagues, interacting with one another and the curriculum in their current context to solve the challenges they are having implementing the CCSSM and the New York State math modules (Casey 201; Leane, 2014).

All participants identified the modules as being too large, cumbersome, and repetitive as a challenge; this professional development plan provides the time, support, and structure required to successfully rework the module lessons. Some participants also identified a need to concentrate on the math practices sections of the standards. This plan gives the educators an opportunity to focus on lessons designed to develop the skills students need to independently master the math practices.

I have learned that the purposeful nature of professional development, to target the unique challenges and concerns of these educators, has the potential to help them employ strategies that aid in successful implementation of the standards and raise student achievement. I would like to see this type of professional development become more prevalent at this district. While engaging in lesson studies, professional learning communities, and problem-solving educator teams, educators are in a position to discover and report what works and what does not and then take action to implement strategies that help with the successful implementation of the new standards. As I continue my work on our educator evaluation committee and as a curriculum specialist, I will be

looking for ways to incorporate collaborative educator inquiry, problem solving, research, and reflection into the work that educators do.

Implications, Applications, and Direction for Future Research

Literature underscores the challenges faced by district leaders and teachers as they determine how to successfully align curriculum to new standards, search for aligned materials, and change their instructional practices. These needs can be successfully addressed through teacher-directed, collaborative professional development based on the challenges they are facing in the classroom as they implement the new standards (Akiba & Wilkinson, 2015; Bruce & Flynn, 2013; Cummings, 2011; Gunersel & Etienne, 2014; Raider-Roth et al., 2014; Tournaki et al., 2011). The proposed professional development provides educators with valid strategies to address their challenges and needs, which can improve the implementation of the standards. The educators gain specific knowledge necessary to employ successful instructional practices, which can potentially raise students' state assessment scores. With successful implementation of the CCSSM there is also the potential for students to not only score higher on assessments, but to develop a deeper understanding of mathematical concepts and thus, leaving the students better prepared to enter college, the workforce, and society as a whole. Further, there is potential for the district leaders to design more effective professional development in the future that considers educators needs, collaborative work, lesson studies, professional learning communities and other adaptive models.

Future research that explores the experiences of educators as they take on these challenges implementing the CCSSM will provide the knowledge necessary to make

informed implementation decisions that are evidence-based and contribute to the development of successful models. Likewise, future research that explores the success of adaptive professional development can provide a framework for educational institutions to develop more successful professional development plans. Researchers have found that reform efforts in the past have failed because policy failed to address the human and social interactions of teaching, thus this research contributes to the growing body of research on educational change theory.

Conclusion

The CCSSM consist of a new set of standards that are more rigorous than those previous enacted by states with No Child Left Behind (NCLB). Reform efforts in the past have relied upon the capabilities and experiences of individual educators to act upon the mandates. The concentration on content to be taught, materials, and state assessments without considering the capacity of all educators and their professional development needs, has failed to penetrate the classroom and enact change. Past reform efforts have failed to recognize the complexity of school systems. Educational change theory suggests that in order to promote change, district leaders must address and critique the issues that arise while educators are engaged with policy. Sociocultural activities such as the complex interactions that take place between educators, students, and curriculum in the day-to-day teaching and curricular concerns, cannot be actualized by writing and reading documents that prescribe change. Successful implementation of policy requires a focus on the interaction amongst the educators and students in the context of everyday teaching and learning. Adaptive professional development models where groups, teams, and

communities of educators circulate and share capabilities and experiences have proven to be more effective than traditional models where individuals solve problems that arise on their own. Professional development models that utilize collaborative teams of educators employ effective strategies for addressing problems and concerns that arise during the implementation of standards, including: lesson studies, professional learning communities, action research, problem solving and other forms of adaptive models.

Since the introduction of the CCSSM in 2010, districts and educators have been working to align curriculum to the new standards, searching for aligned materials, and changing their instructional practices. These tasks are time consuming and require a considerable change in instructional, leadership, and professional development practices. It is important for district leaders to critique issues that arise from the implementation processes and address them with relevant professional development that focuses on the unique needs of educators in the contexts of their classrooms. Leaders that share this vision for the professional development work of educators has proven to be effective at changing the beliefs, culture, and the status quo. Leaders that frequently communicate the value of collaborative process where educators analyze student data, identify concerns and challenges, and then employs an adaptive model of professional development to address those concerns and challenges promotes school improvement.

The educators at this district are not taking an anti-authoritative stance against the CCSSM; rather they have bought-in to the CCSSM. However, they are experiencing module and standards challenges, as well as student learning obstacles and changes in practices. The educators identified specific implementation needs that if addressed would

foster change in instructional practices, aiding in the implementation of the CCSSM. The adaptive professional development plan presented here can offer districts a framework for developing collaborative capacity among educators to solve problems with the implementation processes. In light of the failure of past initiatives to successfully enact change and educational change theory, districts need to use their time effectively and replace traditional professional development with adaptive models.

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Appendix A: Professional Development Plan

Title: Addressing the Challenges of the Math Modules and Math Practices

Length: 3 Days

Participants: 12 Mathematics Teachers Grades PreK-8

Goals: 1) to improve student learning and mastery of the standards by reworking module lessons and developing a plan for implementing the curriculum lesson(s).

2) to improve students' independent use of the mathematical practices by developing teachers' knowledge and understanding of the math practices, as well as a plan(s) to implement math practices.

Materials:

- 1 copy of focus group interview
- 7 sets of fraction die
- 15 set of 10 different colors and shades of construction paper
- 15 copies of: PPT; agendas; quiet reflection worksheet; educator buy-in survey; survey on progress, needs, and concerns; math practices checklist; fraction kit directions and lessons; and math practice worksheet
- 30 copies of: next workday plan
- 45 copies of: SMART goal template and lesson plan template (plus an estimated number each day so teachers have plenty as needed)

Day One

8:30-9:30. Distribute day 1 agendas. Whole group PPT presentation with a description of research findings, the rationale for 3 days of professional

development concerning the challenges educators in this district are facing with the implementation processes of the New York State math modules, the overview of how the professional development will proceed, and the goals of the professional development. Discuss cutting back on the repetitiveness of the math modules and examining the math practices. Explain that the math module workdays will be a facilitated work time where the participants will choose module lessons they want to rework to fit into class periods so they are more doable for them and their students. Explain that for the math practices workdays participants will make and use fraction kits and math checkoff lists to design lessons and questions that will help students develop the math practice skills. They will then work on designing subsequent lessons specific to their content with manipulatives of their choice. Participants may choose to participate in either the cutting back on the module lessons or designing new lessons that address the math practices sessions, or both throughout the 3 days. Present and distribute copies of lesson plan worksheets for cutting back on the modules, and math practice worksheets.

9:30-10:30 Facilitate a discussion about the presentation, any other insights into the findings, teachers' needs concerning addressing the problems proposed, and the direction that would be most helpful and should be taken. Brainstorm and list on SmartBoard the topics most important to the teachers to work on over the 3 days. In preparation for forming teams, I

would then distribute a worksheet for a quite independent reflection of how they would like to proceed and in which teams they would like to work in. Have educators put their names under the topic they would like to work on. This will be the potential group configurations based on teachers' needs and interests. Discuss and finalize groups. Explain that the teachers may choose to redirect their focus based on their specific needs.

10:30-11:00. Distribute SMART goals worksheets and review and explain how to write team goals that are focused on student achievement (PPT slides). Have teams fill in their SMART goals.

11:00-12:00. Instruct the teams to discuss how they will begin and what materials they will need to gather. Teams formulate a list of materials they may need a facilitator located for them. Send teachers to gather necessary materials such as math modules, common core state math standards, instructional materials, checklists etc. Facilitator will also gather any materials that the participants request help in locating.

12:00-12:30. Lunch

12:30-1:00. Regroup for a discussion and a question and answer session.

1:00-2:00. Proceed with facilitated team work based on where the participants chose to start; reworking and cutting down module lessons or examining the math practices.

2:00-3:00. Review the lesson plans produced for the teachers to implement in the classroom before the next work day. Discuss and come to a consensus on how they will proceed on the next work day. Have the participants fill out the independent survey assessing faculty buy-in.

Day Two and Three

Day two and three will be workdays for the teachers to adjust any lessons they have tried in the classroom, continue reworking the module lessons, and/or designing lessons for the math practices. Each day is planned as follows:

8:30-9:30. Facilitate a whole group discussion and distribute agendas. Each session will begin with a discussion of the previous session and any adjustments they need or needed to make based on the implementation of their product from the first work day. Teams will discuss the direction for the present session and complete SMART goals.

9:30 -11:30. Proceed with facilitated team work designing lessons that are reworked from the modules and/or based on math practices.

11:30-12:00 Lunch

12:00-1:00. Question and answer session will be conducted if warranted. Proceed with facilitated work teams.

1:00-2:00. Teams share and discuss the lessons designed and if day 2, plan day 3.

2:00-3:00 . On day 2 each participant will fill out the teacher needs, progress, and concerns survey. On day three the focus group interview will be conducted.

This structure would allow for the facilitator to continually formatively assess whether or not everyone's needs are being met and allow the plan to remain flexible and be modified

as necessary. The two surveys at the end of session one and two and the focus group interview at the end of session three, a total of 17 questions, will used to evaluate the professional development and to inform follow-up work days.

Agenda: Addressing the Challenges of the Math Modules

Session 1; Day 1

June 2016

8:30-3:00

8:30 PPT Research Findings Concerning the Implementation of the CCSSM and Procedures for Professional Development (Handout PPT Presentation)

- Discussion Concerning Results
- Discussion Concerning Working on Cutting Back the Modules
- Discussion Concerning working with the Math Practices (Fraction Kit and Math Practices Handouts)

  Participants may choose to work with a facilitator in a hands-on workshop making fraction kits and using them to solve math problems that develop the math practice skills, as well as designing their own lessons that utilize their choices of manipulatives.

- Discussion Concerning Lesson Planning Worksheets (Handout Lesson Planning Sheets)

9:30 Teacher-Led Open Discussion and Decision Making

- Discuss Any Other Insights Into the Data
- Brainstorm a List of Topics the Educators Would Like to Work on Over the 3 Days
- Quiet Reflection Worksheet
- Post Names Under Topics
- Discuss and Finalize Teams Based on Specific Educator Needs

10:15 Break

10:30 Design SMART Goals Based on Student Learning

- ❖ Whole Group Instruction on How to Develop SMART Goals (Handout and PPT Slides)
- ❖ Teams Develop SMART Goals

11:00 Materials List

- ❖ Teams Decide What Materials They will Need and Go and Get them
- ❖ Teams Inform Facilitator of Materials They Need Supplied For Them

12:00 Lunch

12:30 Question and Answer Session

1:00 Proceed With Facilitated Team Work

1:45 What's Your Plan for Tomorrow? (Handout)

2:00 Share Lessons Designed for Classroom Implementation

2:30 Teacher Buy-In Survey (Handout)

Agenda: Addressing the Challenges of the Math Modules

Session 2; Day 2

June 2016

8:30-3:00

8:30 Open Discussion

- How did implementation go?
- What would you like to see happen today?
- Do you need to adjust your plan to better serve you and your students?

9:30 Teams Develop SMART Goals and Proceed with Team Work

- SMART Goal Worksheets (Handout)
- Lesson Planning Worksheet (Handout)

10:15 Break

10:30 Proceed with Team Work

- Lesson Planning

12:00 Lunch

12:30 Question and Answer Session

1:00 Proceed With Facilitated Team Work

- What's Your Plan for Tomorrow? (Handout)

2:00 Review and Share Lesson Plans for Implementation

2:30 Teacher Progress, Needs, and Concerns Survey (Handout)

Addressing the Challenges of the Math Modules

Session 3; Day 3

June 2016

8:30-3:00

8:30 Open Discussion

- How did implementation go?
- What would you like to see happen today?
- Do you need to adjust your plan to better serve you and your students?

9:30 Teams Develop SMART Goals and Proceed with Team Work

- SMART Goal Worksheets
- Lesson Planning Worksheets

10:15 Break

10:30 Proceed with Team Work

- Lesson Planning

12:00 Lunch

12:30 Question and Answer Session

1:00 Proceed With Facilitated Team Work

- Finishing Up Lesson Plans

1:30 Review and Share Lesson Plans for Implementation

2:00 Focus Group Interview

Addressing the Challenges of the Math Practices

Session 1; Day 1

June 2016

8:30-3:00

11:00 Materials List

- Teams gather materials needed for fraction kits
- Facilitator walks the teams through making fraction kits.
- Teams play fraction games.

12:00 Lunch

12:30 Proceed With Facilitated Team Work (Handout Student Worksheet)

- Teams use fraction kits to solve problems on student worksheet
- Teams use math practices to check off math practices covered in the lesson (Handout Math Practices Checklist)
- Discussion on how to design lessons and questions; decide on appropriate student manipulatives for math practices.
- Design lessons for math practices (Lesson Plan Handout)

1:45 What's Your Plan for Tomorrow? (Handout)

2:00 Share Lesson Plans for Implementation

2:30 Teacher Buy-In Survey (Handout)

Sessions 2 and 3 will follow session 1 format designing lessons that address math practices.

Addressing the Challenges of the Math Practices

Session 2 & 3; Day 2 &3

June 2016

8:30-3:00

8:30 Open Discussion

- How did implementation go?
- What would you like to see happen today?
- Do you need to adjust your plan to better serve you and your students?

9:30 Teams Develop SMART Goals and Proceed with Team Work

- SMART Goal Worksheets
- Lesson Planning (Handout)

10:15 Break

10:30 Proceed with Facilitated Team Work

- Lesson Planning

12:00 Lunch

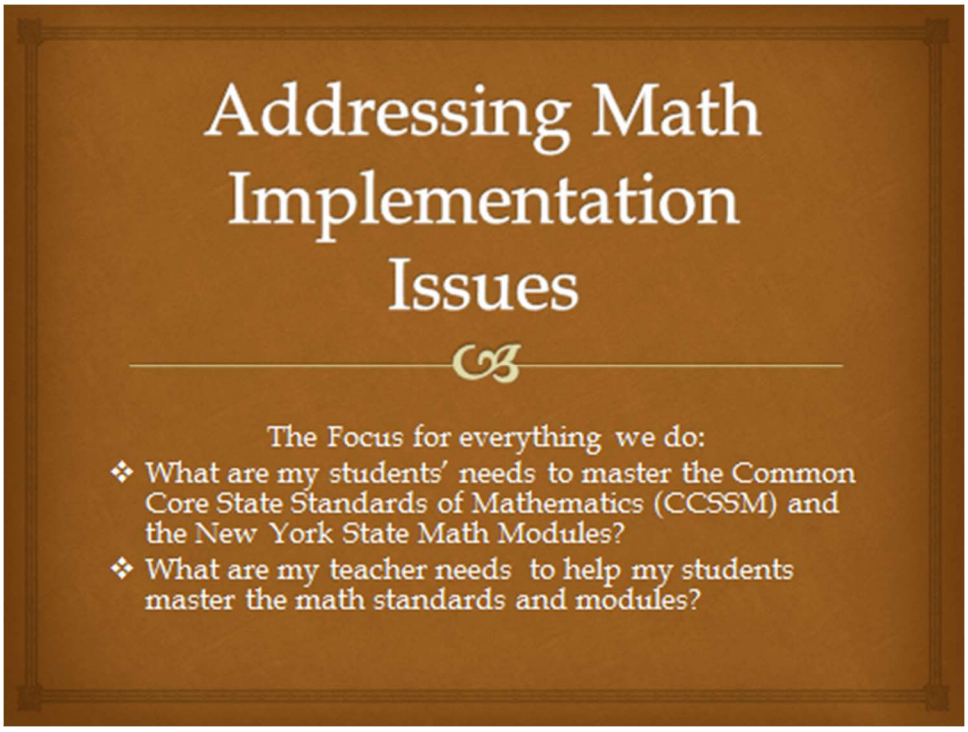
12:30 Question and Answer Session

1:00 Proceed With Facilitated Team Work

- What's Your Plan for Tomorrow? (Worksheet)

2:00 Day 2 Review and Share Plans for Implementation; Day 3 Focus Group Interview

2:30 Day 2 Teacher Progress, Needs, and Concerns Survey (Handout)



Change Happens at the Classroom Levels

- Teachers should be defined as change agents (Grimsaeth & Hallas, 2015).
- Teachers and their students should be the focus of any and all learning (Casey, 2013).
- Professional development should be a collaborative effort between teachers identifying their own learning needs to solve classroom-based problems (Slavit & Roth, 2013.)
- School change happens with educators at the classroom levels as they collaborate, discuss, and brainstorm about issues that are really happening in the classroom. (Grimsaeth & Hallas, 2015).
- The first goal for this professional development is to improve student learning and mastery of the standards by reworking module lessons and developing a plan for implementing the curriculum lesson(s). The second goal is to improve students' independent use of the math practice skills by developing educators' knowledge and understanding of the math practices, as well as a plan(s) to implement math practices.

What This Professional Development Is Not

- Traditional professional development practices that are disconnected from what is going on in the classroom (Casey, 2013; Gabriel, 2011; Gomez, Gomez, Rodeia, Horton, Cunningham, & Ambrocio, 2015; Kimmel, 2012; Lewis, Perry, Friedkin, & Roth, 2012) .
- Out of classroom off the school site professional development can only take teachers so far.
- One where you are given instructional materials and ways to assess students (Lewis, Perry, Friedkin, and Roth, 2012)

What This Professional Development Is

- Built around an actual classroom issue and designed to investigate and improve teaching (Lewis, Perry, Friedkin, and Roth, 2012).
- Continuous collaborative ongoing reflective work for teachers in this setting (Bleach, 2014; Slavit & Roth, 2013) as opposed to the out of classroom traditional passive workshop (Gomez et al., 2015).
- A time for you to direct your own learning based on your needs (Raider-Roth, Kohan, & Turpin, 2014; Slavit & Roth, 2013).
- An environment where you are supported to agree on student needs and essential student skills and intervene until you are confident there is student growth.
- You will identify problems with the implementation of the math modules and math practices part of the standards, develop goals based on the problems, design a plan, implement the plan, and revise the plan as needed.

What We Know About Teacher and Student Needs

- All participants mentioned the modules are too large and repetitive and they need time to look at modules and rework them to fit into class periods.
- Some participants further mentioned that the math practices sections of the modules are overshadowed and need to be emphasized. The professional development plan designed for this project addresses the participants' needs to rework the modules and examining the math practices sections.
- You are also free to define another problem related to implementation of the CCSSM you may feel is more urgent to address.
- You will be supported with whatever you need over the next three workdays to help you achieve your goals.

Ask Yourself:

- Quiet Reflection
- What are my students' needs to master the Common Core State Standards of Mathematics (CCSSM) and the New York State Math Modules?
- What are my teacher needs to help my students master the math standards and modules?
- Teams will be determined by the group based on your own professional needs.

Learning Teams

- Please share your needs with the group.
- Be thinking about who you want to work with and on what.
- Please join a team that best suits your needs.

SMART Goals

- SMART goals help improve achievement and success. A SMART goal clarifies exactly what is expected and the measures used to determine if the goal is achieved and successfully completed.
- **A SMART goal is**:
- **Specific (and strategic)**: Linked to position, departmental goals/mission, and/or overall Service Center goals and strategic plans. Answers the questions—Who? and What?
- **Measurable:** The success toward meeting the goal can be measured. Answers the question—How?
- **Attainable:** Goals are realistic and can be achieved in a specific amount of time and are reasonable.
- **Relevant (results oriented):** The goals are aligned with current tasks and projects and focus in one defined area; include the expected result.
- **Time framed:** Goals have a clearly defined time-frame including a target or deadline date.

- *Examples:*

- Not a SMART goal:
- I will become a better teacher.
- *Does not identify a measurement or time frame, nor identify why the improvement is needed or how it will be used.*

- SMART goal:
- I will improve my instruction by learning through the reading of books and attending workshops about the instructional strategies of active engagement and using writing for student reflection on their learning and then implementing those strategies on a daily basis by February 28, 2014 as demonstrated by my lesson planning and through student-generated products.

SMART Goal Planning Form

Specific – Who? What?
Measurement/ Assessment
Attainable/Achieve – Reasonable?
Relevant - Expected Results
Timed – When?

SMART Goal

- I/We will improve the implementation of math lesson 8 in module 5 by reworking the module lesson to fit in one period of instruction. I will implement the revised lesson and students will complete the student pages by the next workday.

Wrap-Up

- This professional development has an evaluation component that assesses educator buy-in and perceived effectiveness of the professional development and student achievement.
- At the end of the first two workdays you will be asked to answer a short survey.
- At the end of workday three you will be asked to participate in a focus group interview.

Lesson Plan Template
Module **Lesson**
Lesson Objective (Standard)
Summary of Tasks

Materials

Lesson Plan Template
Math Practice Lesson
Lesson Objective (Standard)
Summary of Tasks

Materials

Quiet Reflection Sheet

What is not working with the math modules, the math practices, or standards (chose only one)?

Why?

What is working?

Why?

What would you like to do about the specific problem you chose?

SMART Goal Planning Form

Specific – WHO? WHAT?

Measurement/Assessment – HOW?

Attainable/Achieve – REASONABLE?

Relevant – EXPECTED RESULT?

By

Timed – WHEN?

Next Workday Plan

Team Members:

Topic and Plan for Next Workday:

Materials I Will Need to Bring With Me:

Math Practices Checklist

- ☐ I will work on problems and not give up
- ☐ I will think using words and numbers
- ☐ I will be able to explain my thinking to others and listen when they explain to me will build with objects, draw with pictures and write with number sentences
- ☐ I will use _____as a tool to help me solve problems
- ☐ I will do my work carefully and ask if my answer makes sense
- ☐ I will look for patterns in my work

Fraction Kits and Games

Standard- Number and Operations- Fractions (NF)

(4.NF.3) Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.

Make Fraction Kit #1

Use 5 different colors of 12x18 pieces construction paper. Cut each piece into 4 strips 3x18. Each child will need 5 strips, one of each color.

Have the students take one color. Discuss the fact that the strip represents 1 whole, that piece will be referred to as 1 whole throughout the game, and they will be cutting the rest of the wholes into fractional parts. (Some instructions have the students label this as a whole and then continue to label the rest of the fractional pieces as 1/2, 1/4, 1/8, and 1/16. I choose not to have students label the fractional parts so they play the game they and can recognize and refer to the pieces by sight and size relationships as opposed to the written label). Have the students fold one of the other strips1 in half and cut on the half line, set aside. Have students fold another strip in half and then half again, cut on quarter lines and set aside. All the while discuss how these are fractional parts that make the whole. Have students fold another strip in half, in half again, and in half again to make eights, cut and set aside. Complete with the last strip one more time folding into sixteenths and cut.

Make Fraction Kit #2

Repeat steps above with thirds, sixths, and twelfths.

Fraction Cover UP (Lesson 1)

Materials

One Die labeled 1/2, 1/4, 1/8, 2/8, 1/16, 2/16 (or) one die labeled 1/3, 1/6, 1/12, 2/6, 2/12, 2/3

Fraction Kit1 (or) Fraction Kit 2 with corresponding die

1. Start with the whole strip in front of you.

2. Take turns rolling the die.
3. Take the fraction you roll and place it on your whole.
4. The first player to cover their whole exactly wins.

Fraction Exchange Subtraction (Lesson 2)

Materials

One Die labeled 1/2, 1/4, 1/8, 2/8, 1/16, 2/16 (or) one die labeled 1/3, 1/6, 1/12, 2/6, 2/12, 2/3

Fraction Kit1 (or) Fraction Kit 2 with corresponding die.

1. Start with the whole covered with the two halves (or three thirds depending on the Kit)
2. Take turns rolling the die.
3. Whatever you roll you take off (subtract) that fraction. You may have to exchange first. For example, if you roll 1/8 on your first roll, you must exchange 1/2 for 4/8 before you can subtract 1/8.
4. The winner is the first player to uncover his or her whole exactly.

Alternatives

Both kits can be mixed for either of the above games.

Both kits can be mixed together and students can play cover up different amounts with two wholes or one and a half wholes etc.

Both kits can be mixed together to see who could make the largest number after 5 turns.

Math Practices Worksheet

1. Susan is packing a box filled with plastic cars for her father. The box holds ¾ pound of merchandise. Each plastic car weighs 1/16 pound.

A. Use your fraction strips to help you draw an area model of the cars that can fit in the box.

B. Use a number sentence to tell how many sixteenths of a pound are equivalent to 3/4 pound.

C. Explain in words how you found your answer.

D. How many cars will fit in the box?

E. What is another name for 1/16 of a pound? Explain.

Work with a partner and use both you fraction strips to solve the following pizza problem.

2. Mrs. Hinkley had 1 2/8 pizzas left after a party. After giving some to Gary, she had 3/8 pizza left. What fraction of pizza did she give Gary?

A. Use your fraction strips to help you draw an area model to help you solve the problem.

B. Use a number sentence to solve the problem.

C. Explain in words how you solved the problem.

Evaluation Plan Outline

I. Purpose and Guiding Questions

A. Is the professional development program effective at meeting its first goal of improving student learning and mastery of the standards by reworking module lessons and developing a successful plan for implementing the curriculum lesson(s). Is the professional development program effective at improving students' independent use of the math practice skills by developing teachers' knowledge and understanding of the math practices, as well as a successful plan(s) to implement math.

B. What are the strengths and weaknesses of the professional development program?

C. Have students demonstrated improved achievement?

II. Research Design

A. Program Evaluation –Did the professional development program meet its goal?

B. Mixed-Methods

1. Quantitative summative data gathered from all participants on surveys that ask the participants about their perceived effectiveness at meeting their needs and improving student achievement. Students' NYS

assessment scores from 2017 will be evaluated for improved student achievement.

2. Qualitative formative data from a focus group interview will be gathered to measure program strengths and weaknesses and on perceived impact on student achievement.

III. Data Collection Strategies

A. Question of effectiveness – teacher surveys for measuring effectiveness collected at the end of the professional development session one and two from all participants.

B. Question of strengths and weaknesses-collected from a focus group interview with the teachers at the end of session three.

C. Question of improved student achievement-collected from NYS assessment scores on 2016 assessment compared to 2017.

IV. Data Analysis Technique

A. Quantitative data from surveys. Data will be looked at for repetitive comment and themes. The frequency of mentioned concepts will be reported.

B. Qualitative data will be examined for patterns and themes and reported in an in-depth narrative form.

C. Action Research Component-focus group interviews will provide the forum for reflecting on strengths and weaknesses.

1. Collaborative reflection, analyzing, and discussions about program strengths and weaknesses, success of meeting teacher needs, and success of student achievement.

2. Collaborative brainstorming and research to inquiry about possible solutions

3. Decide what to change and implement on follow up professional development

Evaluation: Independent Faculty Survey Addressing Faculty Buy-In

1. What are your thoughts and insights about the data presented today?

2. Do you think the data is valid? Why or why not?

3. How do you feel about the professional development plan presented today and what do you hope to gain from it?

4. What impact on instruction and learning do you think the professional development will have?

5. Are you comfortable with the process presented? Why or why not?

6. Do you foresee any needs you may have that would be helpful in achieving the professional development tasks?

7. Do you have any suggestions or thoughts you wish to share?

Evaluation: Survey on Progress, Needs, and Concerns

1. How do you feel and your team is progressing toward your goals?

2. Discuss any needs you or your group may have.

3. Do you have any concerns?

4. What impact on your instruction and learning do you feel the professional development is having?

5. What have you gained from the professional development?

6. Do you perceive there to be a need to continue workshops of this kind throughout the year?

Evaluation: Focus Group Interview Questions

1. How has the professional development affected your instructional practices?

2. How effective was the professional development on improving student performance?

3. How would you describe the value of the professional development activities?

4. Are there any professional development activities that worked particularly well for you? Not so well?

5. Has the professional development had any impact on attitudes and climate of the school community?

6. Do you perceive there to be a need to continue workshops of this kind throughout the year?

Appendix B: Letter of Cooperation

X X School
X X Street
P.O. Box X
X, New York
(845)XXX-XXXX

Date

Dear Susan Hinkley,

Based on my review of your research proposal, I give permission for you to conduct the study entitled Implementation of the Common Core State Standards for Mathematics: within the [X] Central School District. Individuals' participation will be voluntary and the participants' own discretion.

We understand that our organization's responsibilities include: providing onsite space for data collection. We reserve the right to withdraw from the study at any time if our circumstances change.

I confirm that I am authorized to approve research in this setting and that this plan complies with the organization's policies.

I understand that the data collected will remain entirely confidential and may not be provided to anyone outside of the student's supervising faculty/staff without permission from the Walden University IRB.

Sincerely,

Authorization Official_____

Contact Information_____

Appendix C: Participant Invitation Letter

Date: 8/21/15

Dear Educator,

You are invited to take part in a 4 week research study of an investigation into the processes of implementing the Common Core State Standards (CCSS). I am inviting educators at [X] Central School who implement CCSS to participate in the study.

I, Susan Hinkley, will be conducting this study as an educator and researcher who is currently a doctoral student at Walden University. You may already know me as a faculty member, but this study is separate from my role as a 4th grade teacher at [X] Central School. This is not part of regular school activities and if you decide not to participate or wish to discontinue your participation, your decision will be respected and you will not be treated any differently by anyone at [X] Central School.

Should you decide to participate you will be asked to be involved in the data collection procedures including a focus group, an individual interview, an educator observation, member checks and a journal. Focus groups will consist of multiple participants and be conversational, interactive, and guided by research questions. They will be 1 hour long and conducted after school based on participant availability. Individual interviews will focus on your experiences and perceptions of the implementation of the CCSS. They will be conversational and promote dialog. They will be 50 minutes long and conducted during a free period or after school based on your availability. Educator observations will be 43 minutes long during a class period of your selection that includes relevant CCSS instruction. You will be asked to complete member checks by reviewing my fieldnotes for accuracy of my interpretations. A member check is required for all my fieldnotes, including those on focus groups, individual interviews, and educator observations. You will be asked to keep an ongoing journal for the length of the study recording any of your questions, challenges, experiences, and/or thoughts about the implementation of the CCSS. There is no minimum entry requirement and you are welcome to add to it at your convenience.

Please do not hesitate to contact me if you have any questions or would like to further discuss this project. I can be reached at susanhinkley@hotmail.com or (607) 644-5031.

Sincerely,

Susan Hinkley

Appendix D: Confidentiality Agreement

Name of Signer: Susan Hinkley

During the course of my activity in collecting data for this research: Implementation of the Common Core State Standards for Mathematics. I will have access to information, which is confidential and should not be disclosed. I acknowledge that the information must remain confidential, and that improper disclosure of confidential information can be damaging to the participant.

By signing this Confidentiality Agreement I acknowledge and agree that:

1. I will not disclose or discuss any confidential information with others, including friends or family.
2. I will not in any way divulge copy, release, sell, loan, alter or destroy any confidential information except as properly authorized.
3. I will not discuss confidential information where others can overhear the conversation. I understand that it is not acceptable to discuss confidential information even if the participant's name is not used.
4. I will not make any unauthorized transmissions, inquiries, modification or purging of confidential information.
5. I agree that my obligations under this agreement will continue after termination of the job that I will perform.
6. I understand that violation of this agreement will have legal implications.
7. I will only access or use systems or devices I'm officially authorized to access and I will not demonstrate the operation or function of systems or devices to unauthorized individuals.

Signing this document, I acknowledge that I have read the agreement and I agree to comply with all the terms and conditions stated above.

Signature: **Date:**_____

Appendix E: Semi-Structured Focus Group Interview Questions

The purpose of this focus group interview is to elicit a conversation about the implementation of the CCSSM. The standards are defined as high-quality academic standards designed to graduate all students prepared for college and careers. The questions I have prepared for this interview are semi-structured and are designed to facilitate a conversation about the processes and situations you share as a group when dealing with the standards. I will be asking you to discuss your beliefs, attitudes, values, and experiences with the standards.

1. Please start by telling me about your experiences with the CCSSM this year.
2. What purpose do you feel the standards serve? To what extent do they serve that purpose?
3. Have you undergone any changes is your beliefs, understanding, and/or attitudes about the teaching and learning of mathematics? If so, what are they and to what extent?
4. Do you feel the standards are detrimental or beneficial for students? Why and to what extent?
5. To what degree if any have you changed your curriculum? Your planning? Your instructional practices?
6. Tell me about the materials you use to teach the standards?
7. What instructional approaches do you take? (i.e. lecture, student directed, cooperative learning groups, differentiated instruction, hands-on, etc.) Which ones do you think are best for teaching the CCSSM and why?

8. What is easy for you when implementing the standards? Why? What challenges do you face?

9. Tell me about the supports you have?

10. Tell me about any supports you need?

11. Would you describe what you think the ideal implementation processes would be?

12. Is there anything else you would like to add or say concerning the CCSSM?

13. Do you have any questions for me?

Appendix F: Open-Ended Observation Protocol

Setting_____

Role of Observer_____

Time/Date _____ Length_____

TIME	DESCRIPTIVE NOTES	REFLECTIVE NOTES

Appendix G: Semi-Structured Individual Interview Questions

The purpose of this interview is to elicit a conversation about the implementation of the CCSSM. The standards are defined as high-quality academic standards designed to graduate all students prepared for college and careers. The questions I have prepared for this interview are semi-structured and are designed to facilitate a conversation about your experiences implementing the CCSSM.

Position or Grade Level Taught_____

Experience_____

1. X, Y, Z came up during the focus group interviews. Describe your response to the CCSSM.
2. X, Y, Z was raised in the focus group interview. What do you think the goals of the CCSSM are? To what extent do they meet those goals?
3. To what extent do you feel the standards align to your previous curriculum and instructional practices?
4. X, Y, Z, came up during the focus group interview. Tell me about teaching and learning under the standards and what changes have you experienced?
5. Tell me about the effects the standards have had on student learning.
5. How effective do you feel the New York State math modules are in terms of student success? In terms of covering the standards? Tell me about any supplemental materials you use?

6. How extensive are the changes you've made in your classroom? How extensive are the changes you still need to make?
7. What strategies have you found successful in terms of instructional practices? not successful?
8. Tell me about your needs in regards to implementing the new standards.
9. Describe some good math lessons you have had in terms of your instruction and the students' participation and learning under the CCSSM. Describe some that did not go so well.
10. Is there anything else you would like to add or say concerning the CCSSM?
11. Do you have any questions for me?

Appendix H: Summary of Researcher Memos

Alignment

Vertical Alignment- Throughout the focus group interview the teachers discussed at length what they perceived as a problem with vertical alignment among grade levels in response to successfully implementing the math standards. One teacher described how after she was all prepared to begin the year with teaching decimals to her students, she was unable because the students did not receive enough instruction to gain a deep understanding of fractions. She went on to illustrate for the group how the students did not have an understanding of decomposition. It was not until speaking with the teacher below her that it was decided the instruction should start with the last module in the previous grade because those teachers did not have time to cover the whole module the year before. The group went on to discuss how there is so much information in the modules to cover that students have no time for extra activities during the instructional day and students are falling behind with mastery of the standards. Teachers are starting the year out behind where they should be with instructional content (the standards). One teacher pointed out that she feels that not all the modules build on one another, for example students do not need to know place value to understand fractions. Teachers discussed how they adjust the content based on student needs. The math modules make it easy for teachers to assess where students are and they pick and choose module lessons based on the students' current knowledge of subject matter. The math modules make it easy for them to adjust content. One teacher suggested teachers can elicit student buy-in to math if they start with something students enjoy doing.

I was able to interview four of the five teachers one on one. Out of the four interviewed, all teachers supported the idea that vertical alignment between grade levels needs to happen so they can successfully implement the new CCSSM. During an individual interview one teacher said she didn't think everyone was keeping up with what they need to cover. She suggested they need to figure out what everyone is doing and it would save a lot of time if they knew where the grade level before them left off with the content so they could just pick it up from there. She expressed frustration at not being able to stay caught up every year. The coverage of the content seems to fall further and further behind. One teacher didn't want to say people weren't teaching content, but said it would be nice if they knew who was teaching what so each grade level could pick up where the last one left off. She is currently using the last module from the grade level below her and feels the students are very successful but would like to see that happen in the grade level below so she can move forward with her grade level standards when she begins the school year. Another teacher described how her students used to call a rhombus a diamond and now they are coming into her class calling it by its correct name, a rhombus. She attributed this change to the 2005 Regents where it was required to call the shape by its proper name from kindergarten up through the grades. She further referred to the conversation during the focus group meeting when the participants discussed a standards checklist that could be filled out at the end of each grade and the checklist could move

forward to the next grade with the students. The teacher would then know what standards were covered, and which ones were not, to begin the year. This would help in the elementary classes where they do not have their math students for more than one consecutive year. It is easier in the middle and high school where they have the students for consecutive years and know where they leave off from year to year.

One teacher made reference in her journal to the fact that teachers are beginning the year behind where they should be with standards because they are not vertically aligned by grade level.

Math Modules- During the focus group interview the participants engaged in a conversation that the math modules are too large, have too much information, and are too cumbersome. The teachers felt that if they follow the modules to the "letter of the law" they will drown. Teachers are not using the modules cover to cover, rather they mix modules together, skip through some pieces, and move on once they feel the students have gained the necessary understanding of the concepts (I also observed this in classrooms). The teachers see some modules as linear and some are not linear. It is for these reasons they feel that they can pick and choose sequences of concepts. Teachers feel the math modules take a lot of instructional time, they cannot cover them all, and students have no extra time for extra activities during the instructional day. While the teachers have found this to be a negative about the modules, they also expressed many positive aspects of the modules. The modules help the teachers with the "how to teach" and they make it easier to make sure they are teaching the standards and teaching the concepts to the depth that is required. Teachers felt that the modules take students to a higher level of understanding and give them the necessary math vocabulary. Therefore for these reasons, they like the modules.

I interviewed five participants. While one participant talked more about what the needs of the teachers may be and one teacher commented that she thinks teachers feel comfortable with the math modules because math is a clear cut subject, the other three had some similarities in what they said about the math modules. Three teachers thought the modules cover the content standards and prepare students for the next grade level. One teacher said she can see how the modules prepare her students for the next sequenced class. Another teacher stated she hears teachers talking about how the modules and how they are successful at raising student achievement. The third teacher stated she likes the way the modules teach the students a lot of different content. Another common element between the interviews with these participants concerning the modules is that they see the need to pick and choose which parts of the modules they need to use, cut them back, and find alternate sources to fill in the gaps in student knowledge gaps. (Alternate sources, is a category I developed after I began coding individual interviews). One teacher said she did not use the module to teach (a specific standard) because the module did not teach the skill the way the students needed to know it for the (a specific mandated exam). She figured it was better covered the way she taught it in the past so she only added one piece from the module that she liked. Another teacher does not see all the modules as linear so she is teaching more than one simultaneously. She also stated the modules were too large for students to get through and their motivation is a problem due to the large lessons and

she expressed the module lessons need to be cut down. The third teacher stated that while she thinks the modules repeat content over and over, she also feels they are missing pieces so she pulls in from other sources. She went on to say how she doesn't like how scripted the modules are as she doesn't need them to tell her every little thing to do.

Two teachers wrote in their journals that the modules are too large to get through. One of those teachers said they get easier as time goes on. Two teaches stated that they think they are good to help ensure the coverage of standards and they like the modules but they are too repetitive. On teacher further commented that she feels the modules are well organized and easy to understand.

Student Learning Problems During the focus group the participants discussed how students are not retaining math facts. One teacher stated that she had the students for consecutive years and knew they had learned their facts when they left for the summer yet when the students returned in the fall they had not retained them. (During an individual interview another teacher also discussed retention of math facts as a student learning problem) She described how she uses a grid as a strategy for her students. The participants discussed math vocabulary as a student learning problem. It was thought that the vocabulary was taught but not sticking and that students are having trouble understanding the math vocabulary. One teacher sees a correlation between math and Spanish. The students struggling with vocabulary in Spanish class and math class are the same students struggling with achievement. It was suggested that vocabulary builds and students have to use it to be successful. Teachers are using math word walls to help students with math vocabulary. (I observed students and a teacher using a word wall during math instruction). It was discussed that the students are having trouble with the math practices and being able to choose their own math tools. The final discussion the participants had in the focus group discussed how students are struggling with fractions.

During the individual interviews one participant suggested that using the modules may not be enough and "how" teachers need to teach for the math practices may be getting in the way of student learning. One of the teachers also related the math practices to student independence. She gave the following example: part of the math practices is to be able to decide what tool to use and if a student is not independent they cannot decide what tool to use. She further stated that students not only are not independent enough for math practices, but all around independence is a problem. She described how students are not able to independently read the board and gather the materials they need to begin working. The students have no idea where to start or even to how to move their seat to get in a group. She needs to remind her students to take notes. She mentioned how they do not pick up on the classroom routines of reading the board for homework and if they are missing a paper they can just pick up a new one in the back of the room. She feels like she has to remind students of every little thing. She suggested that it may not be the content that is getting in the way of students ability to master the standards and that motivation is big, but independence is even bigger. Another teacher suggested external motivation may be getting in the way of students practicing math independently. Another teacher suggested that since the adoption of the standards it has been harder to motivate her students. She stated that motivation is a student learning problem in all areas and at

least one quarter of her students are not motivated. She further stated that standards are difficult for students because they lack independence. The exception I find interesting is when I was observing one class of independent students. One participant suggested this difference could be due to the students being so young and not having the experiences of the older students. It was also mentioned that math vocabulary and reading comprehension are student learning issues when it comes to mastering the standards. She suggested the use of word walls as a strategy to help students develop math vocabulary. The other two teachers also cited math vocabulary as getting in the way of student learning. One teacher wrote in her journal that student reading difficulties get in the way of students' mastery of the standards. In an individual interview one teacher discussed students being able to retain math facts as a student learning problem. This was corroborated in the observations of these teachers' classrooms. I observed the teachers putting a lot of time and effort into engaging the students and getting them to work independently. I also observed students and a teacher using the math word wall.

Math Standards- During the focus group interview teachers felt that the math standards are clear cut, they are kind of relatively small, they give you a themed map, they are easy to verbalize what students have to do at each grade level, and they are straight forward. They felt the standards are vertically aligned and consistent across grade level where you are ensured everyone is teaching the same thing. When the focus group was prompted to talk about standards, they had a lengthy discussion about standards in general. During this discussion they mentioned that the purpose of the standards is to give teachers the content to teach in terms that are easy for teachers to understand. Some standards are more specific than others. They felt that the standards are beneficial for student learning and they would serve their purpose if everyone taught them. However, they felt that the rolling out of the standards was terrible and they have not had enough time to go through and figure them out. They also discussed that the current standards take longer to teach because they are more rigorous. Teachers think there needs to be more accountability and that a teacher shouldn't be allowed to pick and choose standards. Teachers think that it would be very helpful if the report cards had all the standards on them and if they had a standards checkoff list for each teacher to fill out and send on to the next grade level so they know where to start with instructional content. When asked to discuss some of their needs that would help them successfully implement the standards they discussed a more productive professional development time. The teachers discussed how state assessment data plays into their instruction and possibly instructional changes, but they feel PD time is wasted having teachers search for and "discover" their data. Teachers would like someone to analyze the data, find the student learning problems, and give them the summarized data so they can start from there. They feel if they want to examine how teaching practices need to change they could spend PD time analyzing the state's bank of test questions in reference to how teaching needs have changed.

During the individual interviews one teacher mentioned that she thought the standards cover content well. One teacher wasn't sure if the standards do what they are intended to do. One participant sees the value of the standards and feels students and educators really have to understand math concepts and why they use them. She thinks they are

challenging. It was also expressed that it is the math practices part of the standards that gives students and educators trouble. The participant suggested math practices help teachers to understand that the students need multiple representations of problems and the depth of mathematical understanding comes from the math practices part of the standards. One teacher discussed how the standards give everyone common math vocabulary. Another teacher knew her standards well and was able to discuss when the students were taught certain concepts at specific grade levels. Classroom observations during the teaching of the math standards were conducted. Teachers used a variety of teaching and learning strategies to teach the challenging content.

One teacher wrote in her journal although the roll out of the standards was poor, she likes the rigor and the content. Another teacher wrote that she likes the high expectations the standards have for students. All three teachers that chose to turn in journal entries wrote the standards are a guide that helps them to know what math content they need to teach. Two teachers wrote how they liked that the standards bring students to a higher level of understanding in math. One teacher wrote she thinks there are a lot of standards therefore; she doesn't always get through them. One teacher wrote she feels the math practices are the most important part of the standards and doesn't understand why they are listed in the back as "extra", giving the impression they are less important and teachers can cover them if they have the time to get to them.

Teacher Change in Beliefs/Practices During the focus group interview teachers discussed the changes in their beliefs and practices since the adoption of the CCSSM and the use of the math modules. They stated that there has been a definite change in that teachers feel there should be less lecture, they now believe students can achieve at a higher level, there has been a change in what they think math instruction should be, and the new initiative has given them a more positive feeling about teaching math. One teacher discussed how she used to teach a higher grade level and her current students in the lower grade level are completing math that was previously taught at the higher level. (This comment was also made by another teacher during an individual interview).

During the individual interviews two of the five interviewees mentioned that student-direct learning philosophy has come with the adoption of new standards. One teacher talked about the changes necessary to address the standards. The changes are hard and they have moved from teacher-directed instruction to a balance between more student-directed and teacher-directed instruction and she spends less time teaching to the test. She further stated that we can't change standards or the tests so we need to change educator practices. Teaching practices cannot be changed by just telling teachers to change, rather teachers need to observe what their peers are doing, engage in professional dialog with other teachers, and use trial and error to see what instructional practices work. This teacher also felt someone should be holding teachers more accountable to changing practices. She suggested that meeting with departments holds everyone more accountable to what they are doing. Another participant suggested teaching has changed in math from straight lecture to students taking control of their own learning through verbalizing, supporting, and writing explanations to formulate their own mathematical understandings. Another interviewee described how she learns more and more each year

she teaches the new standards. As she understands more she can change her practices. What she thinks students can achieve has changed and she now believes they can achieve at a higher level. Another teacher stated she has seen another teacher become more confident in her ability to teach math. The last teacher interviewed described how before the new standards she never would have used a word wall for math vocabulary and now she does. She further described how she has moved to a more inquiry based learning where students' questions are driving her instruction. Observations in teachers' classrooms corroborated what teachers said about the changes they have made. Every teacher appeared very skilled at these new practices and seem dedicated to making positive adjustments. Two teachers wrote in their journals how the standards have fostered a change in belief that students can actually achieve higher than they thought.

Assessments During the focus group interview teachers discussed how the standards-based assessment contains troublesome vocabulary, is more rigorous, and the teachers don't know some of the answers being sought. Teachers are concerned about test coverage of content. Some standards are heavily laden on state assessments more so than others and the teachers wonder if it would be helpful to see content converge regarding the state assessment. Teachers feel it is important to align classroom content to test coverage of content like they have in the past.

During the individual interviews teachers commented very little about the state assessments, although they recognize the need to align instruction with assessments. One teacher described how she feels test data is necessary, but a waste of time having teachers analyze it. She thinks it's better to just to give the teachers the student learning problems that arise from already analyzed data and then let the teachers spend time working on trying to solve the student learning problems. One teacher said they put more weight on the standards than the tests. Another participant mentioned the need to make sure SLOs are aligned. Lastly, one teacher expressed concern that there are other things that are not analyzed that play into student scores on standard-based assessments, such as student independence.

Alternate Sources This is a category that was developed from codes of individual interviews. When discussing the modules, participants began telling me how they have been supplementing the modules with materials from other sources. Another suggested that everyone is supplementing. One teacher described how she used an interactive internet source to teach a concept. Another described how she was using math materials that came from an old textbook one grade level above. Another teacher described how she likes to pull out the math activities from the previous program that uses math manipulatives. Out of the four observations I conducted, I observed two teachers using alternate sources. One teacher brought in extra manipulatives and one teacher cut down a module lesson.

Teacher Needs This is another category that arose from individual interview codes. All participants interviewed agreed that teachers needs need to be met. Another participant described a professional development that is determined by teachers and their needs with communication between teachers as the best model. It was further expressed that teacher

conversation about SLOs and content alignment might help teachers decide what content to start the year with. Two teachers described a need for more information sharing, collaboration and communication. One teacher suggested teachers observing each other and teaching each other's' classes as a valuable learning experience. Another interviewee would like to see a collaborative conversation about student independence. She also discussed in other districts it helps that in high school teachers only have one grade level to teach. She sympathizes with the elementary teachers that have to teach every subject. Another participant suggested departmentalizing at the elementary level. Collaboration on standards and collaboration to work on vertical alignment was mentioned by two teachers. Another would like time to work on lessons.

One teacher in her journal commented that she feels they have not had time to adjust for the learning gaps of implementing the new curriculum versus the old. She also felt it is very time consuming for her to have to figure out what to cut from the curriculum and what to keep.

Teaching/Learning Strategies This is a category that arose from observation codes. I interviewed three teachers on this category. Two teachers mentioned the use of a word wall to help students with math vocabulary. One teacher mentioned hands on manipulatives. One teacher talked about strategies she uses in her classroom including; group work, interactive internet applications, and having materials accessible to students so they can get what they need and become more independent.

I conducted four observations of math lessons. There were very few differences in the teaching and learning strategies I observed in these classrooms. All teachers used a balance of teacher-directed and student-directed instruction. All teachers used guiding and probing questions/hints to scaffold the students' learning, all teaches used demonstration, and all teachers gave students positive feedback. In all classrooms students were verbalizing procedures. All teachers used cooperative grouping/learning and all teachers walked around conducting formative assessment and provided scaffolder instruction. Two classrooms had students working totally independently and the other two were conducting whole class guided lecture based-on student responses and questions. Two teachers used timers and three teachers used SmartBoards. In one classroom the students used the SmartBoard. Two teachers went over some homework and one teacher used a word wall.

Teacher-Directed Instruction and Student Engagement

This category was also formed from observation codes. Teachers utilized various combinations of guided lecture, teacher demonstration, and scaffold instruction specific to students' needs. Teachers used probing questions and student responses to guide the instruction. This category came out of observation codes. In the classrooms students were observed monitoring their own learning, and some were engaged in project based learning. Most students were engaged and teachers worked at helping students with independence There were times when independence and motivation seemed to be an issue, and teachers agree that they are necessary for student engagement and mastery of standards.

Appendix I: Categories and Subcategories Table

1	**Categories and Subcategories**		
2	**Categories + Sub-Categories**	**Data Source + IC**	**Evidence of Code (Data)**
3			
4	**Program Alignment**		
5		**4A Interview**	
6			4a- right
7			4a- yes I do
8	**vertical alignment**	lack of training to help everyone stay caught up with content	4a- well people, I don't think everybody's keeping up with what they need to do so therefore every year it falls back further and further, cause it's an awful lot, and there's not a lot of training for it
9			r- so to what extent do you think that they do give the content to teachers to teach?
10			r- so what about the standards, since NY state accepted the standards and put them in place.
11			r-No, no changes, ok. OK
12			4a- uh, I don't…
13			4a- What do you mean is that
14			r- is that a problem?
15	**vertical alignment**	grade level vertical alignment	4a- Alignment, exactly. We need to align and we need to figure out exactly what everyone is doing, not picking and choosing what you want to do, but where will you be, it would save so much time if it was like, ok, this is where they ended, this is where they need to start, boom and we do it. so much

			more would be accomplished. So vertical alignment or whatever that is called
16	**teacher collaboration**	conversation collaboration	4a- And again, we all have to get together to and talk about, um who is teaching what and making sure these things are taught so that all gets in the way.
17			r- you're surprised?
18		**5A Interview**	
19	**vertical alignment**	teacher had to start with a fourth grade module to begin fifth grade fractions	5a- I had to (use fourth grade module)
20			5a- right
21	**students unprepared**	Students not prepared to begin grade level	r- right and that's grade level, but are there other things that they're not ready for or other things that they're really good in?
22			r- yea we should look at that. Is that the one that also MA was talking about?
23			r- so yea, the math standards as well as the math modules, are intended to go deeper, so that students don't forget, rather than that one or two day shot of a content,
24	**vertical alignment**	Grade level alignment	5a- I mean I'm not gonna say that you're not teaching it, but I don't know if third grade is teaching it so that you can pick up from 3rd grade to 4th grade

25	**vertical alignment**	T goal is to prepare the students for the next grade level	5a- I know that they came into 5th grade not knowing fractions right and so, so I'm hoping because I know that now, were hitting it hard, that by the time they get to 6th grade, it will be aligned and shell be able to pick up with complex fractions because they already know how to add and subtract
26			5a- mmhmmm it is
27			5a- mmmhmmm
28	**alignment within grade level**	T adds content to module	5a- 4th but I'm adding to that but not using the module
29	**student achievement**	Ss achievement of module content	5a- it is. It is part of the 4th grade module. And they got it, they really got it. But we did a lot of it.
30			5a- great, that's great
31	**vertical alignment**	alignment to next grade level	5a- they're doing their job. Now if we can just get that done in 4th grade, then we can move forward in 5th
32		**MA Interview**	
33	**math vocabulary alignment**	Students need to identify a rhombus not a diamond through grade levels.	ma-, and I'm like oh what happened? how did that happened! and sure enough, in kindergarten, the REGS came in 2005 it said would you please start calling it a rhombus. because now they forget what the heck a rhombus is and they call it a diamond forever
34			ma- yea that's what I mean
35			ma- yes
36	**vertical alignment**	grade level alignment	ma- so they won't see this topic again until 10th grade

37			ma- so why isn't it then that the reading teachers don't take that, take that, the reading teachers are only doing ELA, you guys are doing four course, so why isn't it that the reading teacher doesn't say, I feel like were floundering a little why can't I help. to me that would be a natural, like if you had a math coordinator down there they would be taking on the module thing or the vertical alignment thing, why, let me go find out sue why third grade doesn't get to place?
38			ma- ok yea
39	**vertical alignment**	everybody on the same page	ma- oh yea everybody
40	**standards checklist**	need a check of standards	ma- well that's the thing when we talked about it at the focus meeting if we had that standard as sheet and check it off
41		send a checklist with students to the next grade level	ma- and send the kids, like give it to the kids say take this on to 5A class with you, and shed go OH, didn't do module 8, ya know, so that, I get that benefit, I teach 6th 7th and 8th. I know what 6th had, what they didn't, I know where I ran short
42	**vertical alignment**	grade level alignment	ma- 7th same thing and 8th grade
43	**vertical alignment**	prepare students for high school	ma- And 8th grade I know where they gotta be for high school, and that's all I care about in 8th grade. at that point it's like what's the focus for high school and that's what I'm focused on.

			and my standards as well ok
44			ma- Hahahaha
45	**teacher collaboration**	collaboration	ma- No, that's good to know, because like that's what I want you to tell me. That's what I get out of this
46			ma- Yea
47			ma- Ok
48		**SA Interview**	
49	**vertical alignment**	Teacher thinks grade level vertical alignment for content is necessary	sa- if by grade level, but by grade level ya know, like 9 through should be doing this
50	**vertical alignment**	grade level alignment	r- so we need to have professional development so we can say, align our grade level so that we can say "this grade were teaching this, this grade were teaching this" because that doesn't do it.
51			sa- right, yea
52			r- see science standards are like that
53			sa- yes
54			sa- yup.
55			sa- right
56	**math vocabulary alignment**	Content vertical alignment needs to be brought down to elementary level	sa- and they're trying to bring it on down the line too but (math)
57			sa- yup.
58			sa- hahaha
59		Working on vertical alignment of math vocabulary	sa- but they're trying to like, like they wanna keep it individual teacher-(math vocabulary) (no group meeting on aligning

			vocabulary???)
60			sa- yea but
61			sa- yea
62		Common math vocabulary in HS	sa- and they kinda did that with math as well, like I know the math department kinda did that same thing like it's a common vocabulary.
63		**CCA Interview**	
64		Scaffold learning to fill in knowledge gaps	cca- ahh, supplementing, and modifying
65		Thinks there should be a check on alignment with tests	cca- the state testing?
66			cca- what are teachers using for their SLOs?
67			cca- do they feel like it would be, what they've selected to use is aligned enough?
68		**5A Observation**	
69		Reviewed module from previous year	review of grade 4 module lessons on fractions
70		**Journals**	
71		not vertically aligned	**(MA)** I am frustrated that students do not come to 6th grade with the skills necessary to begin teaching the content required
72		start the year behind	I often need to back track and teach something they have not previously learned, but was in the previous grades curriculum.
73		**FG Interview**	
74			r- any questions?
75			group says no

76			r- no? well keep going then.
77			r- Alright so number one says just to tell about your experiences with the common core standards and curriculum. Are you ready to start?
78	**Align within grade level**	Have to pick pieces of curriculum that meets the standards	Sa- you have to be kinda an experienced teacher to be able to look at the experience and look at what they're saying and see "which pieces of these do my students needs that are gonna meet the standards?" but if you're newly experienced teacher and you think it's the letter of the law you're gonna drown
79	**Align within grade level**	Can skip through modules to add in what you need to meet the standards for fractions	Ma- you know they have to add fractions, with a like denominator and an unlike denominator. like, "ok, I can do that, even if I can't, I have to skip through the modules, well you know, what you can add in to do that and well, I don't think that that
80	**Vertical Alignment**	problem that grade level curriculums are not aligned	1a- but isn't, like the only thing I do like math is that it goes through the grades so like, you know that like everybody is learning the same thing all the way through you know because I think that was a big problem
81			r- vertical alignment?
82			group- yea
83	**vertical alignment**	Thinks alignment is a problem because everyone is not using them	1a- but I don't think, I don't think everybody uses them, uses them totally, that's the next thing

84			Sa- uses them cover to cover even?
85			4a- because here's what the problem is
86	**Align within grade level**	When students get the concept move on	1a- I don't use them cover to cover because once I feel the kids understand something I'm not going to sit there and make them do it over
87			Ra- yea you don't beat it yea
88	**Align within grade level**	Have to choose parts can't cover it all	ma- so that I can do, but I can't choose oh I'm absolutely not going to cover this at all
89	**Align within grade level**	Manage time according to student needs	sa- or just glaze over it and go ok, were only gonna spend a day on this one but we'll spend a week on this one
90		T needs to adjust modules	ma- ok timing wise, I can adjust the modules
91			r- do you think they're aligned? I know we found out that she was starting in a place where we weren't going to get the kids to, so she had to go backwards, so I'm wondering if we need to do that in every grade level, align them
92	**Align within grade level**	Time limits for covering modules	4a- if we want to do, cause if they're gonna continue we have a fraction issue, I never got to fractions last year, you know I kinda followed
93			r- I got through fractions, but I didn't hit decimals very well.
94			4a- right, and
95	**student unprepared**	Ss knowledge gaps make it hard	r- she's starting out with decimals and the kids are going, "whoa, what's that?"
96			4a- right

97			5a- mmmm, yea.
98			r- so that, planning
99			5a- and I'm glad we did
100			r- planning, and PD, and alignment
101	**Teachers collaborate to vertically align**	Planning, PD and collaboration to vertically align	4a- and conversation and honestly, you gotta, you gotta make the groups smaller, you can't have the entire elementary sitting there. because what ends up happening is there's too many opinions and we don't get anywhere
102	**Align to test**	Need to align to test	ma- how do you do that, it's not being able to see the test
103	**Align to test**		4a- do you know what bothers me too is like the math test was fraction laden and it's like why do why do they go through all this stuff that they have been taught through the whole year and it's like, it was fraction upon fraction upon fraction and that was the last according to the module that's the last module that you even get to
104			r- that's what it looked like the test was loaded with fractions?
105			4a- it was
106	**Align to test**	Remembers when they aligned another curriculum to the test	ma- they each had a name, but like, you could do whatever, you could pull out whatever one you wanted cause I remember one, remember when RF was curriculum person maybe, and we sat there and said you gotta do prime time first remember, it was called prime time

107			4a- yes
108	**Align to test**	Move test content to the beginning of the year	ma- because that's big in your curriculum and you're like, but it's at the end, and were like no move it first!
109			4a- yup I do I remember that
110	**Align within grade level**	Modules are not linear	ma- yea, and that was like, our aligning the curriculum but you could do that, and so I don't think that we necessarily I don't think I don't see, like I switched it up this year, I don't see the modules as linear.
111	**Align within grade level**		sa- so you don't have to do 1, 2, 3, 4, you can do 5, 3, 1, 2
112	**Align within grade level**		ma- yea 8th for the past two years has done scientific notation first, they hate it, I'm not starting out the year with something they hate, I just decided this year, were doing, I know I just can't do it so, and they hate, I mean they literately seethe it you know like shhhhhh so I said, were starting with geometry, cause they like that
113			4a- they like geometry
114			ma- and I'll go back to that
115		Ss math buy-in when you start with something they like	sa- get you some buy-in
116			ma- yea because I'm just doing geometry
117			4a- place value, and that's first
118	**Align within grade level**	Modules not linear	ma- you know, if they don't have place value down, they can still do fractions they can still do operations with

			fractions, they can. cause some of them don't have place
119			Group chatter (inaudible)
120	**Align within grade level**	Some are linear	ma- so that's one of the things I don't see as linear the modules, maybe some of them are, some of them do build, but like, I could do the geometry, or the scientific first it doesn't matter
121	**Align within grade level**		1a- I don't think, yea, cause like third grade, definitely you can choose whatever you want to do first and the ones that I've seen in first grade I mean, honestly, it's like it's the same thing
122			ra- it's like, time, coins…
123			1a- yea
124			r- so do we need uh, the state data and we need to see the grade level data to see what the tests mostly made of? we did do that last year, we did say 60% of the test is this…
125	**Align to the test**	Percent of content coverage for the tests can be found on line to see what content is heavily laden	ma- they have that right online, you don't even have to look at the state data they have a sheet that tells you what percentage is what.
126			Group inaudible
127	**Align to test**		4a- I want you to do that
128			r- what?
129			4a- you analyze all that data cause I'm really,
130			r- TS analyzes all the data
131			r- well that's what I mean, should I get ahold of that? We need to know 69% of the test is fractions because

			that's what the test was this year. that's the case in fourth grade, we need to know this
132	**align to test**	T not sure it's worth it to concentrate on percent of content coverage	sa- is that going to be the future focus? you mean so if we focus on fractions, well then they go, forget about fractions
133			Group- inaudible
134		Could have been field test questions	ma- those field tests are imbedded in there, they could have given you, on your guys half of those questions that are fractions could have been field test questions for next year
135			Group Inaudible
136			1a- I think, I think because we discussed it one time because originally they wanted to make the report cards align with all the standards
137			sa- yea
138	**Math Modules**		
139		**4A Interview**	
140	**T values modules**	T like modules; T likes the depth of the learning	4a- I think that um the modules, which is what I use, the modules um, are I don't know, I really do like them because I feel like, you know, they teach the kids a lot of different things and they bring a lot of things in there, but I think, didn't we already discussed this. But, I'll say it again
141	**deep Ss understanding**	T likes extensive content cover with modules	4a- ok, so um, yea so I feel like it's, it's good for kids. I don't know, Its teaching them a lot of different things too

142	**cut down modules**	Math modules need to be cut down so all topics can get covered	4a- It's too much, yea they could cut it down to about half. You could still introduce the same amount of topics, but you cut it down, cut the time down cut it all down.
143			r- ok, um yea those are the things that have come up so far, is there anything else that you would like everybody to know, about these standards and modules, or anything in, um what you need to get them implemented? How many, how many modules are there in fourth grade?
144			4a- 5
145	**modules are too large**	Can't make it through all modules	4a- yup. I've never gotten through five
146			r- I was just gonna say do you think you'll get through them all this year
147		T goal is to get through all 5 modules this year	4a- I'm gonna hope
148			r- So that's what you're working on?
149	**more than one modules at once**	Last year T covered more than 1 module at a time	4a- Well last year I attempted to, I did two modules at the same time
150			r- It came up in the focus group that people mixed them around, do you see that happening?
151	**changes sequence**	T mixes modules around	4a- I see that happening with me, do people do it prior to when the kids get to me, I don't know
152			4a- That they mix things up?

153	**not all linear**	T sees a lot of the module concepts as linear	4a- See I find that a lot of things build, like, if you're following the module, a lot of things build on what they learn in the past. So I try to stick with it, but I did do two modules together last year and it worked
154		Some modules are not linear	4a- right, well because one was geometry and one was totally different
155	**more than one module at once**	T doing two modules at once	4a- right exactly, and I think possibly the fractions you'll be able to do that to, so we'll try that this year
156			r- So what will stop them from getting through it?
157	**student motivation**	Ss can't get through too much work and Ss motivation is a problem	4a- time, and motivation
158			4a- that's it
159			4a- nope
160		**5A Interview**	
161			r- OK so the modules, people have said numerous things about them, they're amazing, they take kids to a higher level, um, they're easy to teach standards, therefore they know the standards in math better,
162	**repetitive**	T thinks math modules are repetitive	5a- I would agree with that, but I also think that the modules that I've worked with so far are very repetitive. Like, they just keep repeating it over and over and over and over again.
163			r- people have said they're too cumbersome

164	**too cumbersome**	Math modules too cumbersome	5a- they are mmmhmm
165			r- you have to pick and choose, to cut back on the amount of work
166	**more than one at a time**	Some teachers are teaching more than 1 module at a time	5a- I spoke with someone else today and they said that they're using two modules at the same time, so I have to do a little research on that I have to see if I can pull some that one, some from that one…
167			5a- you mean teaching something and then the different worksheets for them to practice? Is that what you mean?
168	**time to look over**	Time to look over standards	5a- well I just briefly had a chance to like, look over it, so I'm waiting
169	**repetitive**	modules repetitive	5a- that they are, that they might, because of how much they repeat the same thing over and over and over, where when you first teach you take the one sheet and you know I'm teaching with that one sheet but then you're able to send them with the whole packet because it just keeps repeating and repeating and repeating. So maybe, I have to see
170	**missing content**	Uses alternative sources to make up for missing instruction in the modules	5a- I think it introduces us to being able to pull from other places and bring more information in and get the whole package. I don't think it provides the whole, do you know what I mean?
171			5a- yea, so it's good, but it's

			not
172	**T add content**	doesn't follow modules to a t	5a- I guess that is just a personal thing to do. Because I haven't actually followed it to the t
173	**T add content**	T fills in what she thinks students need that are missing from the modules	5a- because there's always a little piece missing. Like, doing the fractions, we had to introduce factors before we could do um, equivalent fractions. So, that's something that was missing. Like if they didn't know, or multiples. We're doing multiples, crazy multiple stuff, if they didn't know their multiples or factors, they weren't able to, I thought they would understand it better or get a fuller understanding if I were able to bring in
174			5a- yes
175	**easy to follow**	modules are easy to follow	5a- how to teach it, I mean, anybody could follow the modules
176	**modules are too scripted**	Modules are too scripted	5a- ok what I don't like about it is that it
177			5a- well it says student teacher student teacher, it tells you everything that you should say
178			5a- no
179	**modules are too scripted**	Doesn't like how the modules dictate what you should say and how the students should reply	5a- haha, no because it says teacher says, now students, I mean, it's just you don't need that, you just don't need that
180	**doesn't explain "how" to teach**	Modules explain "how" you teach T doesn't need it dictated	5a- well I look it over and I see that they explain how to teach it, but I don't need them , I don't need them to

			um, what's the word I'm looking for, I don't need them to dictate how to say things. Now students it's time to, or , and then it says students will say, and teachers will say this, you don't need to do that
181			5a- ok
182			5a- mmhmm
183	**Ss successful**	Thinks the modules are successful	5a- I think it's pretty successful it is, I think its yea, I think it's really successful, they have a lot of hands on, like when we were doing fractions, we get fraction strips and make our own, you know to get a better understanding, so I think they have, I think they're pretty good overall
184	**develop Ss deep understanding**	Modules develop an understanding with manipulatives	5a- yea, cause the kids love that
185		Modules not creative enough to keep Students engaged	r- so would you say that, the module is not creative enough to keep the kids' attention and to help them to remember things?
186			5a- I would say that
187			5a- I would, mmmhmm
188	**Ss are successful**	Teachers are talking about the good results they are seeing concerning student achievement	5a- it is a wonderful thing. And she's seeing, this particular teacher, she's seeing good results, she feels that they're good results, and the TA that's working with me this year, said that she thinks this is the brightest 4th grade class to come up, 5th grade class, in a long time. Like, she can see the

			difference, so she actually thinks going through the modules now for a couple years these kids
189	**Ss are successful**	Ss getting the hang of it	5a- it's starting to show, they're starting to pick up a little bit quicker
190			5a- 4, 5? Maybe more? (years doing the modules)
191			5a- we've been doing it four years haven't we?
192			5a- three?
193	**Getting better as time goes on**	doing modules for 4 years	5a- so I think we really started din 2011
194			5a- and that, and I just want to say one more thing, that's actually what the kids do, they do notice, they'll comment on they'll say oh yea, we did that in our modules last year, so they are remembering some things. And they love them, the kids love them
195	**Too much in lessons**	Too much in lessons	r- do you like, when you have a module lesson, I'm seeing, you know I'm hearing people say, it's an overload, it's too much,(inaudible) I actually had a note from a parent over the math being so much, and then I'm seeing a few teachers and I'm hear a few teachers saying if there's 5 pages in the lesson they're going to use 2 or 3of them only, and then they're not going to use the rest, you're doing that too?

196			5a- I am, I am because it's so repetitive, it says the same thing over and over and over, so you can you know, yea mmhmmm yup
197	**T cuts down module lessons**	T cuts down the modules and picks and choose what the kids need	5a- yea you do, mmhmmm. So that's kinda what I find myself doing right now, skipping ahead kind of a little bit and saying ok, they've got that so now, yea
198			5a- I started by using them all
199		T thinks she will also cut the 5th grade modules	5a- I imagine it will be the same
200		**MA Interview**	
201			r- the standards seem to be easier for people to implement because they have the modules?
202	**Makes standards easier to implement**	T thinks standards are easier to implement with the modules	ma- true, I think that's true
203	**missing content**	Not doing a module lesson for translations the way needed for regents	ma- but the lesson I was doing today is not a common core module lesson, like I'm not handing them out a common core thing. tomorrows will be, because in the common core they only do translations with vectors. they don't do it the way that you really have to know it for the regents
204	**missing content**	module only uses vector to teach translations	ma- In the modules. they only do it using a vector
205	**uses practice from past**	uses practice knows has been successful in the past	ma- no it's just that I thought, I looked over the module and I thought, I'm gonna do better job on this

			the way I know I've done it
206	**add content to module**	added one piece she liked from module	ma- I've added in the piece I showed you earlier with the transparency paper, that's module, it thought it was a great ideal, so I kept it
207			r- and you're talking about the module now right?
208	**prepares students**	module prepares students for calculus	ma- yea, and I can kinda see how it gets them ready for calculus like
209			r- Are there inquiry, like the new social studies standards have that inquiry method, where kids have to questions themselves and then dive into the question?
210	**not inquiry-based**	not inquiry based	ma- Not really
211		T demonstrates with interactive internet lesson	ma- first I said alright, lets figure out movement on the coordinate plane things like that use the internet things like that the application on the internet where you just punch in numbers and it will start moving the figure for them, so they can see what's happening. so I said its moving, lets watch it again I said, cause what's really moving is the points, not the line, the line segments move but if you move the two points the clearly the segment goes with it you know, and so we did that first that's
212		**SA Interview**	

213	**modules clear cut**	Teacher feel more comfortable with math modules and standards because their clear cut ELA standards are muddled	sa- I think we just felt more comfortable with them because they, the math modules and the standards are just pretty clear cut, clean, go to it while as the English things get a little bit muddled, and I have the standards ??? 38sec you can read the standards and know the standards, but then it seems there is a lot of overlap in English standards, like one or two words get changed.
214		**CCA Interview**	
215			cca- my understanding is that 3, 4, 5, 6, 7, and 8 all use the modules in some form
216	**module implementation has been skipping a grade**	Grades 3-8, with the exception of 5, have been teaching the modules in previous years	cca- ok, but last year it was not my understanding that in 5th grade the modules were being used
217	**module implementation at early stage**	Thinks there might be evidence that the modules and student achievement are getting better over time Implementation may be at a stand still because teachers are struggling with how to teach the standards	cca- so I'm just wondering, if, if we look, if we step back and look at a whole, if we think about the first time that we introduce the math modules, and we think about it, you know, at the end of this year or the beginning, or last year, or the beginning this year, I bet there has been significant improvement. and maybe were at a stand still right now because, because of, well its clear, it's the how. how we go about approaching it.
218			cca- the time?

219			cca- I really do
220	**positive change this year**	Thinks the consistency from 3-8 this year is good	cca- absolutely, and I think it's really good that there's some consistency 3-8?? 1.47 I don't know what's happening prek-2
221			cca- so that would be interesting to
222			cca- did she use the math modules in 1st grade?
223			cca- and now she's using them she says yes
224			cca- oh oh, right, got ya
225	**analyze Ss success**	Need to figure out if the first graders are more independent with the modules because it is their first time exposed to the math practices and figure out what other primary teachers are doing in math	cca- so, we need to figure out, is it the modules, what is she doing, and is this the first time the kids in first grade have been exposed to this type of "here, you choose" which is a big mathematical practice that can be applied in first grade clearly, right that you give, you give the tools, options, but the kids select the tool that works for them. But what are the other primary teachers doing in math? do they have to use the modules?
226			cca- right
227		**1A**	
228	**cut down lesson size**	T does not use the whole lesson in the module lesson	T cut down module from about 4 pages to 2
229		challenging for Ss	This seems higher level for first grade
230		**Journals**	
231	**positive change over time**	easier to teach with modules as time goes on	**(4A)** I have been using math modules, at first it was difficult but as time goes on I realize how much the students learn

232	**well organized easy to understand**	well organized easy to understand	I feel it is well organized and I find it easy to understand
233	**cut down lessons**	too large cut down	I do feel there is a lot that goes with the modules but you can pare it down if you need to.
234	**Ss deep understanding**	develop a deep understanding	My students really know the material once they are finished.
235			
236		teacher likes modules	**(1A)** 9/29 I know this is late, but: I feel the math modules are great
237	**repetitive lessons**	repetitive	(though they are a bit repetitive)
238	**ensures standard coverage**	help teachers ensure standards are covered	and some of the topics are over done to the point where the children (and myself) are bored with them!
239		teacher moves on once the students understand concept	I like the fact that I feel as though I am covering all the standards when I use the math modules
240			Right now we are completing number bonds, every child in this class understands them and knows how to use them, and based on the modules, we would be doing it for the next few years (hahahaha).
241	**too large**	too much time to teach too large	**(MA)** NYS modules v. CCSS. The modules are set up so that I will fail to accomplish all the content before the year even starts.
242	**too large**	too much time to teach too large	Module lessons are set up to take a longer period then I get to teach daily.
243	**cut down lessons**	a lot of time cutting	SO I need to spend much time figuring out what to cut v. keep.
244	**too large**	lessons too big	Why couldn't the modules

			simply have been created for 40 minute blocks of time?
245		**FG Interview**	
246	**Teacher adjusts curriculum**	T starting with last module from grade below	5a- it's like were using the module um uh were taking out one of the last modules in fourth grade and starting with that because that's what we talked about where we should start with that, adding fractions, so that's what we've been doing so far
247			5a- I have
248			Ma- yea
249			s- it sounds like you've assessed math very well is what I'm saying.
250	**Modules help with "how" to teach**	Math modules are easy to understand	1a- I think the math module is like, so clear, because you look at it and it tells you by this grade they all learn this they will learn this they learn this. but where in ELA it's not so clear. so it's like easy that it's like I could think of like the first module and it says you know, there gonna add to like, 1-10, and or gonna be able to be fluent in subtracting 1-10.
251	**Modules help to cover the standards**	Modules cover the standards	1a- modules. because the modules are broken up into the standards. but it's all listed, like
252			5a- I think if I didn't know it, I'd probably be lost. it would help.
253			r- so do you think that's why you all use the modules? is because they do help us that way? (to cover the standards)

254	**Modules help to cover the standards**	Modules help to cover the standards for some	Sa- for certain classes it sounds like, for other classes their not comfortable
255	**Too Cumbersome/Repetitive**	Can't cover all the modules	Ma- I can use some of these examples in the math modules, but I cannot use all of them, like I mean we might as well beat our heads against the wall
256		Too cumbersome	5a- it does kill it to death
257	**Too Cumbersome/Repetitive**	Lessons drag on too long	Ma- I'll give you an example where we do ratios in 6th grade when we start well the first part talks about writing the word ratio. "for every something there is something", well, how much are they really gonna get that? they kinda get it, you know. "can we identify a ratio? for every this, there is something here." you know but the module spent a whole lesson on that, I get the importance of it, but NO I can't spend a whole lesson on it.
258	**Teacher adjusts curriculum**	T mixes lessons	Ma- well you know, you can take lesson 1 and 2 and kinda mix them together a little, but then there are other lessons that I have to break into two
259			r- because it's too big? or two much?
260	**Too Cumbersome/Repetitive**	Too big	Ma- yea, so then you kinda have to say squish these two together, but these two coming up I'm gonna break apart, you know so I mean
261	**Too Cumbersome/Repetitive**		4a- well I just have to say I agree with Beth that like you know with the math modules

			like when I first started teaching and I was right very much to the letter of the law (ring ring) and now. . . . my phone is ringing. . . . I have to get this, sorry
262			
263			r- so they're just content and they don't specify how to teach anything? right?
264	**Hel[p with "how" to teach**	Modules help with the "how" to teach	Ma- well the modules kinda do
265			Group- inaudible, group talks at once
266			R- right, so the modules separate from the standards?
267			5a- yea
268			r- that's why I'm wondering if the modules make it better for us in that they make it easier and make it um,
269			5a- sounds like it does
270			Ra- here, like here R it says
271			Group- inaudible 19.27
272	**Hel[p with "how" to teach**	Modules give you examples of "how"	Sa- at least you have an example, you have an example of what they're trying to say, like you can look at the module and go "ok, here's the standards" and you're flipping through the module going "Ahhaaa! that's what I'm supposed to be working on with these students!"
273			Ma- or they have to get that far
274	**Help with "how to teach**	Modules give you the depth of student understanding	Sa- or they have to get that far. or to that level, like that part I think the modules are good for
275			r- the modules maybe do that

			for math?
276			1a- I think they do yea
277			Group- several agreed
278			4a- right, in math, haha Shakespearean
279			Group Laughter (Shakespearean)
280	**Teacher buy-in**	Teacher buy-in	4a- but in math I think that's why it's a little bit more straightforward the other thing is I just find math to be amazing, it amazes me what these kids can do, absolutely amazes me and it's like I, that's, I really like the math modules I really do because they're the stuff they do is (silence)
281			r- do you know about the other people? (educators) does everybody like them?
282	**Too Cumbersome/Repetitive**	Too cumbersome	1a- because it is a little cumbersome
283			Sa- yup
284			1a- but
285			Sa- Wow! It's insane.
286	**Too Cumbersome/Repetitive**	Modules are repetitive	1a- yea in 1st grade the books like this (shows with a finger gesture) for adding to 10 and subtracting from 10. Like how many little bonds can you build? It's like, you know once they get it they get it.
287			Ma- yup they get it
288			5a- yea
289	**Teacher buy-in**	Teacher buy-in	4a- I'm yea, I'm amazed I told ya before I'm amazed at what they can learn
290			4a- that's the common core. it's the common, or module, or I don't know.

291			r- modules are how you teach, the common core is the content?
292			sa- right
293			ra- right
294	**Too Cumbersome/Repetitive**	Difficult to get through	r- so you can or you can't get through the math ones either?
295			5a- no no no, I go pretty slow
296			4a- no you can't
297	**Too Cumbersome/Repetitive**	Difficult to get through	ma- I used to do ratios first and it took us a month and a half to get through it. I'm doing integers first I'm I'm, switching it up a little this year, like I'm moving things around, I just felt like was I really just agonizing getting through ratios
298			4a- are you doing the modules?
299			ma- I'm doing the modules, but I'm switching them around
300			4a- ok so did, did you get them all copied are they all copied and?
301			ma- I don't always do it like that, I don't give them the book
302			4a- oh ok
303	**Too Cumbersome/Repetitive**	Skips through the modules	ma- cause I do one and then skip something and then you know like that
304			4a- oh I see
305			ma- so they don't get a whole book from me. and I just download it and print what I need and send it
306	**Too Cumbersome/Repetitive**	Picks and chooses pieces	sa- because you pick pieces of it, you do the modules but choosing the pieces

307	**Too Cumbersome/Repetitive**	Cuts modules down	ma- yup, and usually I do a lot of the examples and stuff like that and then um I might give them that for the homework you know so I only need the homework grade or sometimes they have exit tickets in the math ones like I don't do all the exit tickets it would take us forever to do that but I might take one of them as a quiz, as an assessment and then I might do another one as an exit ticket or entrance ticket and another one I might do as a homework, cause the home that they gave me is too much
308			1a- right
309			ma- so I kinda play around with it
310		**Student Learning Problem**	
311		**4A Interview**	
312	**Student Motivation**	T thinks since adoption of the modules it's been harder to motivate Ss	4a- I think maybe more, but it's difficult to motivate some of them. (students)
313	**Student Motivation**	Ss motivation tied to the amount of Ss work in the modules	4a- yea, well, before this whole new curriculum thing it was easier, it was easier to motivate. Yea they learn a lot but there's a lot of work.
314			r- That the kids are not motivated?
315	**Student motivation**	motivation student learning problem in all areas	4a- Um it, the ones that, ehhh yea, but that's, I think it's a, not just a math problem it's a problem period.
316			4a- Yea, yes it is there's lack

			of motivation for sure
317	**Student Motivation**	one quarter of the students are not motivated	4a- um, I would say, at least a quarter
318			4a- Because sometimes there's behavior issues, there's uh, unidentified students that need extra help. We do not have any extra math help or anything here which would be helpful.
319	**Student Independence**	Math practices (part of the standards) are difficult for students because they lack independence	4a- Yes, because, I believe it is because I believe that there is a lack of independence from these kids first of all, and in the modules, the reading is what I find gets my kids most of the time. The reading is difficult, and um, so they have no idea what to do. And they'll get caught up on a word instead of what they're supposed to do. So, that's it
320			4a- Yea, they and
321			r- And you said the independence
322			4a- Yup
323	**Ss can't read math**	T believes reading get in the way of Ss achievement in math	4a- I am surprised, they can do a lot more, however it's those things that get in the way it's the reading, it's the, you know, issues
324	**Ss don't know vocabulary**	Math vocabulary knowledge gets in the way of students' mastery of the standards and modules	4a- Yes, it is because, uh I'm an old teacher but in the past, the kids could read and they knew what they were reading. Now they can read but they have no idea what they're reading and they don't ask questions, so they'll read a vocabulary word and have no idea what

			it means. And you have to make sure that you're diligent, and constantly saying "do we know what this means?" or you have a word wall or whatever because, they can read it but they don't necessarily know what it is
325	**Ss don't know vocabulary**	Vocabulary is a student learning problem in all content areas	4a- Math words, ELA words, a lot of words
326			4a- All words, yea, yup it doesn't matter what
327		**5A Interview**	
328	**Students unprepared**	Fifth graders couldn't multiply two digit multiplication problems when they entered fifth grade	5a- ok so like I found today, we started multiplying and they were not able to do that. They could not multiply two digit numbers. So now I have to go back and teach that. They weren't able to, they couldn't multiply, they couldn't divide. So like, I was talking to S the TA, and I'm like, I know I just had this conversation with S yesterday I know it was taught, yet they can't do it, how can we move forward if they can't multiply? So, I have to go back, again. And I was just thinking yesterday, I need to get to 5th grade stuff, but how can I move forward when if I have to keep going back?
329			5a- yea that's actually what happens once we start it do you remember learning this? And then they're like oh yea we remember learning that! So to put a piece of paper in

			front of them and say do this, they're not really that good at doing that. There's, yea, there's no independence
330			5a- I mean if I had the answer to that!
331			5a- I mean, you know, like you just said, they're, you know they're not remembering over the summer and I don't know why they're not remembering over the summer. They, I don't know, I'm not sure how to answer that.
332	**Ss retention of information**	Students are not recalling math facts over the summer	5a- well, like I was talking to MA and this wasn't, I don't know if this was during the focus group or not, and I know what she taught because I was in her room
333	**Ss retention of information**	T knows facts were taught but doesn't know why Ss loose over the summer	5a- I know what she taught and I know that, you know, math facts were taught, and I know that they were up on their multiplication. And when she got them back the following year, they, a couple of them knew nothing. And I know they knew it I was in their room. I don't know why, I don't know why they're losing it and not retaining it.
334	**Ss unprepared**	move back to content grade below	5a- why they can't do it? Well like you guys didn't really get to it in 4th grade, and now I'm having to go back to 4th grade to teach 5th. And I know you do some of it, I've been in your room,

335			5a- and I know you do a lot of it, so independently when I handed them a fraction sheet and asked them how to add fractions, they were adding the numerator and they were adding the denominator
336			5a- they can't do that
337			5a- I mean so what I'm saying is,
338	**Retention of information and independence**	T sees retention of information and independence as learning problems getting in the way of implementing the standards	5a- So, retention, well, they're not retaining a lot, and independence. You know, I think that they're learning, ok, so this is what a lot of the kids are doing, they're so concerned with their grades, that they're learning to get the good grade, they're not learning to retain it, a lot of them are doing that
339	**Ss motivation**	Externally motivated students is a learning problem	5a- they're not. Well they are externally motivated, they're not internally motivated. So that's what we're working on.
340		working on internal motivation	5a- Um, well no, you asked what I see as a problem.
341			5a- yea they're not retaining it
342	**Ss retention of information**	Ss not retaining information	5a- no they're not retaining the information
343			5a- I'm sorry too, if I wasn't clear
344			5a- laughter, cross that off
345			5a- laughter

346	**Ss don't know vocabulary**	Math vocabulary is a learning problem	5a- so here's what happened today, it said solve. So I said to them so do you know what the word solve means? And they had no idea. So I said to them, have you ever heard the word evaluate? No! So that's really important and so, were using solve and evaluate.
347	**Ss don't know vocabulary**	online source	5a- Um, I pulled a sheet offline that I wanted to use for exponents. And at the bottom it said solve. And they're like, what does this mean? We don't know what this means, what do you want me to do? So we had to stop, and they had to learn what solve meant. So now solve and evaluate go up on the word wall and we'll use it all the time.
348			5a- yes
349			5a- are they saying solve that problem?
350			5a- I don't know
351			5a- they asked today
352	**Ss don't know vocabulary**		5a- they did, they came down to the bottom of the sheet and they said, "mrs.5A, what does it mean to solve?"
353		Students didn't know what solve and evaluate meant	5a- so I said well look and see what's different with the bottom, they recognized that there was an equal sign, so they knew they needed to give an answer, but they didn't put answer, solve, and evaluate all together. They weren't able to do it

354		Students are remembering some module content from 4th to 5th grade	5a- well they're able to remember some things, like when I say do you remember Mrs. H teaching this or Mrs. T, and some of the things they do remember. I have to you know really think to be more specific, "oh yea we remember that, we were taught that!"
355		**MA Interview**	
356	**Ss independence**	students are not independent	ma- but I noticed that the skills, the self-independent skills, I'm not seeing any jump or anything, it's bad, like it's really bad.
357			ma- like those kids, they used to come in here like, oh
358	**Ss independence**	Ss cannot meet completion expectation	ma- and the expectation is it gets done by the end of the period, and if not, you know we'll talk about it, but they got to work, they talk, they got working on stuff
359			r- oh yea and now it's like, pick up your pencil, put a letter on the paper
360	**Ss independence**	Ss don't know where to start	ma- well, now it's like, they're like, oh we were supposed to like, maybe get this done in the 42 minutes we had, like that was my big plan, you know like a hundred??? in 42. they have no clue they have no clue how to start on their own, how to move a seat even to get into a group
361			ma- it that's not, that's like, they're not independent
362			ma- it's not content, it's not motivation
363	**Ss motivation**	motivation is big	ma- but motivation is big,

364	**Ss independence**	independence is bigger than motivation	ma- But independence
365			ma- that's a good school focus though, to be independent
366	**Ss independence**	students can't independently read the board and get their materials	ma- like what do we do, my expectation is you can read the board if you need some tools up there that you can get the tools without saying you know, do I need a pencil too, haha you know, that you can do that you know kids are not doing that at all
367	**Ss independence**	students need to be reminded to take notes	ma- That's even notes, the same thing happens, I'll put something up there and I'll be like, you guys already know this? no! I'm like well how come you're not writing it down! you might need this, I know it, I already know this stuff I'm not doing it for me. I'm thinking you're gonna
368	**Ss don't know vocabulary**	students are no longer calling a rhombus a diamond	ma- that we had, and kindergarten they started calling a diamond a rhombus, and I would come, and it was quite a few years they get here and I would always have kids say it's a diamond it's a diamond, and I would say well there's really no diamond
369			ma- I go it's a rhombus, ok,
370			ma- yea, right, exactly
371	**Ss don't know vocabulary**	math vocabulary	ma- but it doesn't have to have right angles, a rhombus could be a parallelogram that
372			ma- That all the sides are the same. so they were just

			calling it a diamond. so then one year they came up and were like, oh it's a rhombus,
373	**Ss don't know vocabulary**	more sophisticated vocabulary	ma- what do you mean, improving, making the vocabulary look more sophisticated?
374		students can't remember what math words mean vocabulary is a problem	ma- yea, because you know the problem a lot of times with math is, I've had this discussion with you and dawn about the similarities between math and Spanish, and sometimes they can't answer a question because they don't know the vocabulary. they don't, it's a different language. you know I said like even inverse, anybody know what inverse is, and my 6th grade class goes nope, well it really just means opposite, but I want you to know when you hear the word inverse, in your head I want you to say opposite, opposite, opposite. Because in Spanish, when you're an English speaker, your saying what word, what word is it again, that means you're thinking ya know, and you can't remember it, so like, they'd not know those things.
375			ma- Like they're ready to go kind of a thing
376	**Ss independence**	independence as a focus	ma- Yea, yea, I'd love for independence to be our thing
377			ma- No, but you know, wouldn't you rather get a whole group that's independent,

378	**Ss independence**	students don't look at the board instead ask what's for homework independence	ma- like there's still a couple kids that will go "what's for homework?" Hahaha, and I'm like, "really?" And when they ask me in September I'm a little more forgiving about it, but when they ask me in May, I'm like "are you kidding me? Every day! 150 days it's been up there, you really kidding?" Or like, you know, one kid said like, you control the agenda just as much as me. You know I sit them, our machine sits them, and when they're ready to move they've gotta tell me. So like, today my 6th grades actually said "can we move again?" I'm like, alright, we'll put it on the agenda tomorrow. Like, not many of them do that but like, they're like, "can we move again?" Cause I said to them in the beginning, you tell me when you're ready, ya know. And it's good for you to work with somebody different all the time, because figure it out, it's not gonna be the same working with this one as it is with this one. So yea, the independence piece is really really difficult you know, for me.
379	**Ss independence**	Ss don't fall into routines	ma- But ya gotta tell me that, ya know. So like, they don't even know, they don't even know that, like, and that's like a routine in here, like "go get it"

380		not all Ss	ma- But usually not all of them, so one person will usually be like (bam) haha, and start handing the rulers out. And they know I don't like everybody to go get their own because it's like a huddle ya know
381	**Ss independence**	Ss need to look around to know what to do	ma- And part of that you, you know isn't looking around, like, what do we do?
382	**Ss independence**	independence	ma- Like when were at a conference and we don't know what to do, "what is it?" "what are you doing?" And that's part of being independent! I think if you're independent, the curiosity piece comes along with that, because if you're doing stuff on your own, you might say, "hey but I wonder what happens when…" Right? That's where those questions come in.
383		waiting to be tools everything	ma- But if you're sitting there waiting for me to tell you every little thing…
384			r- It's a metacognitive skill, so maybe that should be a focus too, how do we develop those metacognitive skills?
385	**Ss independence**	**independence may be a metacognitive skill**	ma- I bet you independence is a big part of that
386			r- 10% of our population is independent, maybe that's part of the test score?"
387		Independence may be part of the assessment scores	ma- It is

388		**CCA Interview**	
389	**Ss independence**	Students in the first grade classroom stay on task, work independently, and collaboratively	cca- but yet you saw in that first grade classroom…
390			cca- it's the opposite
391		How teachers teach may be getting in the way of students learning the standards	cca- and just because you're using the module, if you're not doing "the how" most appropriately, or most effectively, maybe that's what's getting in the way of the learning
392		**1A Observation**	
393	**Ss independence**	young students independent	I wonder when they become dependent on T
394			T checks a Ss paper and says he needs to fix it cause she can't read it
395			Ss says Okay
396			Ss looks at his paper and says "it's good"
397			T laughs and says no I mean it has to be changed cause I can't read it
398			Ss goes back to seat and begins working
399	**Ss independence**	Ss makes answers neater as requested by the teacher	Is this where we should be starting with editing skills and what that really is
400	**Ss independence**	1st graders use math practices	Alternate source students are very familiar with these and independently use math games another thing I noticed in the Kindergarten class a few years ago (Ss can use math games with each other without T direction)

401	**Ss independence**	1 student not working independently	The only Ss that couldn't work independently
402			I don't think this Ss gets it only one
403		**4A Observation**	
404	**Ss independence**	Teacher is scaffolding	students are having difficulty working independently
405	**Ss independence**	Students are working independently	Students are having trouble staying on task and working independently while T walks around helping Ss individually
406		**Journals**	
407	**Ss can't read math**	reading difficulties keeps students from being successful with math content	**(4A)** Unfortunately the majority of students I teach read far below grade level therefore not only do they have a difficult time reading but the math modules are difficult for them to read also. It often isn't the math itself that presents a problem it is the reading that goes along with it.
408		**FG Interview**	
409	**Ss don't know vocabulary**	Ss lack math vocabulary knowledge	Ra- ill pick up where 4a left off. 13.18 I've found the same thing because it's the literacy in the math too. not understanding the vocabulary too there's a lot of vocabulary in math.so and they don't get it. so
410	**Ss do not know vocabulary**	New terms	5a- and there are a lot of new terms that they had never heard I noticed the kids.
411	**Ss do not know vocabulary**		5a- decomposition. uh decomposition, they did they were able to, uh, there group bond work
412			4a- they should know

			decomposition
413			5a- they did not know that. they didn't, they didn't, know decomposition
414	**ss unprepared**		5a- yea yea so when I asked them about breaking fractions they didn't know that they broke them into units. so I asked them that today as well um uh I'm trying to think of a couple
415	**Ss do not know vocabulary**		ma- so when you say decompose they don't know say 3/4 is really a half plus a fourth?
416	**Ss unprepared**		5a- or the way they had them break it down in the module, the fourth grade module, is to start with 5/6 and then you decompose it by breaking it down into 1/6 plus 1/6 plus 1/6 and so they just didn't know that term so then we talked about how food decomposes and breaks down and um so we did a little hands on today but I mean um cut strips and made fractions with thirds and two thirds so they know that two thirds equals one third plus one third and three this equals the whole strip value of the whole is one thing like that, I found out that some of the vocabulary so far but I'm new
417			Ma- but if they didn't even know the word decompress and didn't know that, so you know, you've assessed that already.

418	**Ss retention of information**	Students didn't retain their math facts over the summer	Ma- the biggest thing I'm having to fill time is I have my 7th graders come in and they lost so much over the summer I mean more so than I've ever really seen, I'm in shock, I've actually have like, ——— (student) somebody, hahaha, who you say "what is two times four?" and it just wouldn't come out.
419			Ra- I believe it, I believe it
420			Ma- wow
421			Ma- and I'm like omg (group talking at once, inaudible)
422			4a- and you get to see that first hand because you did it, it's not like, it's not you know exactly
423			Ma- oh yea, I had her once
424			Sa- yea so it's not like you can say the teacher before you didn't teach it
425	**Ss retention of information**	The students use grids to help them with facts	Ma- no, and granted I let the kids use grids not the calculators, you know, so I'm like get the grid there was like 5 kids that I actually said, "keep your grid, you know, like, I collected them at the end of the period, and I'm like, "you keep yours, you keep yours, keep it in your book, I know you're gonna need it every day, ya know?" um, I can't believe what they lost over the summer I, I mean it's amazing. and I think they have it, and I don't think they, but by the end of the year last year, they were

			much more fluent than coming back this year. they are really, whew. . . .
426			4a- well the pollens high
427			Group- HAHAHAHA
428			Ma- oh is that it? you gotta go killing' the goldenrod?
429			4a- yea their heads are a little stuffy
430			Ma- holy cow I couldn't believe it
431	**Ss do not know vocabulary**	Vocabulary issues are taken for granted	Ra- mmhmmm and sometimes you would think its ones that they take for granted and you know they've been exposed because you were in the classroom when it was taught the year before and the year before that and for some reason it just isn't sticking.
432	**Ss do not know vocabulary**	Ss have to use vocabulary words	Ma- well they have to use it that's why, and again it's like Spanish. once you learn a word, if you're not Spanish speaking, it doesn't always come out unless you're using it you know
433			Ra- it goes away
434		T sees a correlation between Spanish grades and math grades	Ma- yea. Da and I always find a correlation between math grades and Spanish grades.

435	**Ss do not know vocabulary**		Ma- shell say, how's this student for you and I go "you're gonna have trouble" hahaha, cause it's a mem, there's certain things you have to know and it builds just like Spanish builds it's a language and if you don't know the vocabulary or are the greatest putting sentences together that we have for years been talking about how students that have trouble in um math will typically, she'll see them having trouble in Spanish.
436			5a- wow
437			Ra- that's interesting
438			Ma- unless they are English as a second language learners, they won't
439	**Ss unprepared**	Ss struggle with math practices	Ma- Something that they can say they're both the same pen length, or the, ya know, and however some of them just sat and went (gestures confusion) "what?"
440			
441		**Math Standards**	
442		**4A Interview**	
443	**Teacher buy-in**		4a- I think the standards are fine,
444	**Too cumbersome**	T struggles to cover content size	4a- fractions are, the one thing about fractions is, that there is so much to learn every single year I have not gotten to fractions and that is, you know, that's definitely lacking yea, yup. And facts also, facts are facts, I mean you do them

445	**not "how" to teach**	T thinks teachers need to be told the content; T thinks teachers need more direction if they are using modules or a required program to help with "how" to teach the standards	4a- I think that um, um I think that it yea, the content is good, but it's not OK to tell teachers how to teach, but if they need help with things, like, if you if you are forcing them to do modules, which we were forced,
446	**Cover content to teach**	T thinks the standards cover the content well	Like, do you think that they cover the content well enough?
447			4a- Who? Teachers?
448			r- no the common core
449			4a- Oh the common core
450			r- standards
451			4a- Oh the standards, oh yes.
452			r- what do you think of the content I guess?
453			4a- yes, I think they do, for sure
454		T does not believe Ss learning has changed since the adoption of the standards	r- so what do you think about student learning? Change or no change?
455			4a- the same
456	**Teacher buy-in**	T thinks standards are good	4a- The modules. No the standards I think they're good
457			r- What about the math practice standards?
458			4a- Like what do you mean?
459			r- Like practicing math, at the focus group uh, MA was saying being able to, cause,
460			4a- to cut down some of the work?

461	**Math practices**		r- No the math practices are where it gets hard because the students need to decide what to do they need to decide what ruler to use or how to measure something or how, this is the way I practice math. Um is that a problem?
462		**5A Interview**	
463	**Teacher Knowledge of standards**	T hasn't had time to concentrate on what the standards are and mean	5a- I have had time to look at them, as far as concentrating no, I'm meeting with a couple of people. I have well, I have because actually the um, the high school teachers gave me a copy of all the standards and they kinda broke it down
464			5a- they are,
465	**T knowledge of standards**	T is looking forward to collaborating with others that know the standards	5a- I'm not really familiar with it, I'm waiting, I'm waiting until tomorrow to be able to see if they can enlighten us a little bit with that and see, if, that's what I'm hoping for. And there you know, that says it all, were able to collaborate tomorrow, were able to learn a little bit more from people who actually do know. I'm hoping that that's gonna help me a lot
466			5a- I'm hoping
467			so I'm wondering if you feel like they're doing their job, or are they not doing their intended job?
468			5a- it's kind of early for me to tell

469	**T knowledge of standards**	T is not sure if the standards are teaching what they are intended to teach	5a- but I think that that's very possible
470		**MA Interview**	
471	**Increase rigor**		ma- its increasing the rigor, I see that, I see like, the fact that rigid motion is a word I would have never used with them but I use it all the time now, um, vector is a, I would call it a ray, I would never call it a vector with my class. I call it a vector. and I know, now that I use vector here, when they get to calculus and they start hearing vector in calculus, they're gonna go oh, it's something I know already!
472			ma- you know, it's like the one thing I did notice is like, for the new 2005 regs
473	**Math practices**		ma- Part of it is with math practices kids have to decide which tools to use. Well if you're not independent, how are you going to decide which tools to use? You're gonna wait to be told what to use! Independence is huge for our math practices.
474		High school math rule	ma- Showing them the rule as you write it in high school in a high school textbook, no I just add that in
475	**Increase rigor**		r- the idea of symmetry and the fact that you can move this and flip it and all that is
476			ma- that all is, that's all the standards

477	**Teacher Knowledge of standards**	T knows standards for high school grade levels	ma- so that's 8th grade, they won't see it again until 10th
478			ma- you know, it's like the one thing I did notice is like, for the new 2005 regs
479		T knows what content is on HS assessments	ma- but the common core tests don't have that, maybe it will be eventually on the regents, but right now it's not
480			ma-no I haven't, no they won't test that at all. that will not be tested
481		**SA Interview**	
482		HS not a lot of weight on state tests	and as far as the test goes, they don't put a lot of weight on the test.
483		HS more weight on standards	sa- they put it on the standards
484		**CCA Interview**	
485	**Educator buy in; Increased rigor**	Values the standards thinks they are challenging require a deep understanding from the students Standards help teach kids what to do and why	cca- OK, well not being familiar with what the standards were previously in math, because that wasn't my area, in attending a lot of professional development on the standards, and the practices, I see the value in the, to me it's a change, um, students are being asked to not simply, you know, do a procedure because the teacher says to do this procedure to figure out a problem, they really have to truly understand what they're doing but even more why. Um, so to me that's good, like, teaching kids multiple ways to uh, attack a problem, to solve a problem. And it might not be a way

			that necessarily you know the student gets right away, but because they get to ultimately choose, so I think they're good. I think that they're hard, I think that they're challenging. They're not what students have been used to. When I think about my own education, um, that's where I really see it, the strategies and the ways that I figured things out, it's all because some teacher taught me some strategy, and I was fortunate enough to be able to remember the strategy and apply the strategy, but I really, mathematically, have no idea what I'm doing. So my understanding is that the new standards help teach kids, well, not only what they're doing but why, like that deeper understanding of math.
486			r- So they teach, do they help the teacher to understand how to teach that deeper understanding?
487	**Not "how" to teach**	Not "how"	cca- no
488	**Math practices**	Math practices part of the standards helps teachers to understand students need multiple ways to figure out problems Math practices emphasize a need to teach multiple	cca- I think the practices help teachers understand the kids need multiple ways to uh, figure out a problem. But I'm trying to think, just division for example, um when I was uh, grading the uh, it was the fourth grade ELA state assessment from last year, just the way that kids attacked the division, there were three or four

		representations	different ways that I certainly wasn't familiar with, that students were able to arrive at not only the correct answer, but their process was correct. So the fact that there are different ways to arrive at the correct answer. But the standards do not teach that, the practices emphasize that for teachers
489	**Math practices**	More depth comes from the math practices	r- so do you think that's where more depth comes from when they talk about more depth, it comes from the practices?
490			cca- yes, yes
491			cca- yes, that is what they say haha
492	**T knowledge of standards; Math practices**	Elementary teachers not experts in math Teacher learning needs to take place with student learning due to time limitations Elementary teachers provided with a deeper understanding Goals should lend themselves to the math practices	cca- I mean it stems in my belief that our elementary teachers aren't mathematicians. They're not coming with a mathematician lens to this, so it's natural that they're going to be uncomfortable with it at first, because they have to learn too. Like its, its new language, its new processes, its, again I can't really speak to the before, but the emphasis on the practices, so it's almost like the teacher has to, the learning that they do is, is happening right alongside with the students. And unfortunately there aren't enough hours in the day for them to do that learning sometime separate from their students. And maybe that's ok, um, the modules were

			built in a way that is unrealistic in most settings, for us to be able to get through the five modules that we have in a grade level. So just like anything else, just like any good teacher, they're going to give it a try, they're going to modify, they're going to learn from one year to the next what's better, and then that might change based on the group of kids that they have. so that's where the conversations between grade levels, its where, maybe even our high school and middle school math can help provide some deeper understanding for our elementary teachers who maybe, one topic in math is like I got this, I'm really comfortable with, but if you're not coming with a math background, you might feel lost. So as far as the goals, you know, it always lends itself back to those math practices. Isn't it more important that our kids are practicing the practices, than they are doing all of the worksheets and every single problem in every single module in every single unit, in every single lesson
493			cca- did they speak specifically to the learning issues that they
494	**Positive change over time**	first year modules are being consistently used across grade levels	cca- so if we think about it here in particular, and correct me if I'm wrong, this is the first year that there's

		3-5	been true consistency with every grade level, a certain section, using the modules?
495			cca- ok
496		**5A Observation**	
497	**Ss success**	Students not 100% participation with equivalent fractions	Perhaps students are not as comfortable with equivalent fractions
498		**MA Observation**	
499		Teacher teaches standard	coordinates movement =congruence
500		**Journals**	
501	**T buy-in**	challenging T likes the standards	**(4A)** My opinion of the math standards: I used to teach sixth grade and now I teach fourth grade, the material I used to teach in sixth grade is now what is expected in fourth. I really like the standards that are expected in fourth grade.
502	**Ss success**	brings students to a higher level	It is amazing what the students can do.
503	**Too cumbersome**	too large don't always get to all the content	I will say, at least in my classroom that there is a lot to cover and I don't always get to all of it. I feel it is that way all the way up through elementary.
504	**Content coverage**	standards are a guide to tell teachers what content to teach	**(1A)** I think having standards are a good thing so that teachers can use them as guidelines to teach what is expected per grade level. I don't really think we need "modules" to ensure this!
505	**T knowledge of standards**	poor roll out	**(MA)** Rolling out the new curriculum could have made things a little better.
506	**math practices**	math practices most important	I believe that this is the most important part of the CCSS

			(math practices)
507	**Math practices**	not enough emphasis on math practices	yet it is treated as an additional item that maybe you can address, if time allows
508	**Content coverage**	content only	There should be methods that address how to accomplish the standards.
509	**Not "how" to teach**	outside source for "how"	Luckily, I am able to attend TLQP workshops which assist in accomplishing this task.
510	**Increased rigor**	rigorous	I am pleased with the rigor and have had some good experiences implementing the common core.
511	**T buy-in**	teacher likes the CCSSM content	Before students would always forget the rules of dividing fractions, but as a complex fraction students do not forget
512	**T buy-in**	teacher likes the CCSSM content	Also, it pairs nicely with unit rates, too.
513		**FG Interview**	
514	**T knowledge of standards**	T doesn't think she has much to contribute yet	5a- its early on, it's really early to be talking about the common core
515			ra- oh early in the year yea
516			5a-i haven't had too much, I mean I think math yea, ELA no
517			5a- so yea in math, you want me to start?
518	**T buy-in**	Standards give you a map of themes and their small	Ma- like the math standards give you a map, a on page map it gives you the major themes the standards are kinda, you know, small
519	**math practices**	math practices are harder	Ma- the part that's always tricky is not so much the standards, but it's the math practices, because that she

			stuff that's a little less tangible.17.51
520	**math practices**	Ss need to choose math tools	Ra- like, here it even says, like (pointing to standards in a book) they have to be able to figure out what tool they need
521			Group- inaudible
522	**math practices**	math practices are not content you are teaching directly	Ma- right that's like alright you're not really teaching that directly you're giving them jobs to do and your saying, now saying (students) "now well what should I use?" and you're like well " what do you think you'd want to use?" that's something we were doing with transformation in eight grade and I said well of those two segments one was like, horizontal, and one was uh, like diagonal, "are the same size?" And they're like, and then I said, "use anything you can, some people use a piece of paper, some took their pen and started using their pen because they didn't have a ruler, well, that was a good thing, I didn't tell them what they could use. They started to think of "what can I use to figure that out, ya know?"
523			Ma- what?
524	**math practices**	Ss need to be able to choose a measuring tool even if it is non standard	Ma- and I'm like, "well this one is using their pencil. this ones using their paper", I'm like "could ya think of something you could use?" So that's the part that's hard, that's like, the practice, it

			doesn't say how to teach that, so somehow they're supposed to get that.
525			r- what purpose do you feel the standards serve, and to what extent do they serve that purpose?
526	**Content coverage**	T seems frustrated that the standards are not doing what they intended	1a- how about what they're supposed to serve
527			r- do to they serve what you think they are supposed to?
528			4a- they would if everybody would follow them I think. I think that there's a lot of people who don't follow them, and for many reasons, one might be they don't get to it, one might be I think a lot of people it's because they don't understand it. um not understand it, not understand the standards
529	**T knowledge of standards**	T need more time to understand the standards	1a- not enough time
530			4a- not enough time
531			1a- not enough time to work with them
532			4a- you know it, in the rolling out of these standards was terrible,
533			4a- yes. definitely.
534			r- Okay what purpose are the standards supposed to serve?
535	**Content coverage**	purpose is to help understand what is supposed to be taught in math	4a- I think they're supposed to . . . I want to be able to look at the standards and be able to understand what it is I'm supposed to be teaching. And it's supposed to be like, and it's supposed to be a . . .

			an easy go to thing that I can just look at it.
536			Sa- as a resource.
537			5a- It's not an easy go to thing.
538	**Too cumbersome**	Standards are too wordy need to be cut down	4a- It's not an easy…it should be..it's like 4 words or less what you have to do bing bang boom. I don't want to have to figure it out.
539			r- What do you think the kids are supposed to be getting out of this? What is the purpose of the standards?
540	**Content coverage**	direct the content to be taught	4a- (while others are chattering about purpose) I think it's supposed to be like..it's sorta like what it is your supposed to be teaching, right?
541			Sa- yea
542	**"how" to teach**	T doesn't want standards to tell her "how"	4a- I mean I don't want to be told how to teach, but tell me what you want me to teach. That's fine.
543			4a- right.
544	**T knowledge of standards**	Want the standards to be simpler to understand	4a- Yup, straight up.
545			r- would it help if we sat down and went through all that? If we had time to do that?
546			Ra- I don't know
547	**T knowledge of standards**	Avhieve.org is a good resource to find standards in a simpler form	Ra- That would be really helpful the only thing is that I'd think it would take forever because we're looking, the standards that are there, the ones that are

			vague it would be like us creating the whole thing because it doesn't have an explanation but like joy was saying going on Achieve.org maybe that has more and it would be a good resource
548		PD	r- in any case its professional development?
549			Ra- right
550			r- so do you think the standards are beneficial for the students, just the standards, keep them separate from the modules maybe. because we determined modules are. the modules are aligned and beneficial to the students. the math ones.
551	**content coverage**	standards are a guide to tell teachers what content to teach	Sa- if nothing else, they're a guide, with the lower
552			r- so what about just having standards, is that beneficial for our students in the united states to have those?
553	**T buy-in**	beneficial to student learning if teachers are meeting them	4a- probably I think it is, but like I said, you know, you've got to have time to make sure that everybody is meeting the standards, that that they're being at least exposed to the standards, I'm not talking about the kids meting them, I'm talking about the teachers meeting them by presenting them and, and attempting them. Now, in our meetings I've heard "oh, we decided that this ones too hard so were not gonna do this, and were

			gonna throw this one away, and were not doing that, and were only doing these."
554			1a- like, we only have two more weeks…
555	**T knowledge of standards**	Can't pick and choose standards	4a- yea and it's like, come on, you can't just pick and choose, and that's what happens in our meetings
556			ma- what meetings?
557			1a- elementary meetings
558			4a- you pick and choose elementary standards, because they determine, certain people determine how hard it is
559	**"how" to teach**	Scripted modules help some teachers	4a- but see I'm telling you here's what I'm gonna keep saying over and over again, the reason that the math standards work is because there is a lot of people who don't who need to have the scripted there you go. and it's like, they don't know how to do they don't know how to get to where they need to be and it's like so and, that's why, I think the
560	**T knowledge of standards**	T need to be held accountable for their standards	1a- but like, our administration needs to also say that like, these are the standards for kindergarten, you need to teach them, you can't pick and choose because you feel this is too many, sorry, this is what needs to be encompassed

561	**Increased rigor**	More rigorous	4a- I just don't think they were as rigorous as they are, you know seriously, they weren't, and people could, people could you know it was like, it was a lot better I think because it was kinda nice to, ya know if you were doing something in science you could go on all day in science, now it feels like math is 3/4 of my day and it's like you know there was like, it was ok to experience and to experience, and it's like everything is all separate now
562		**Teacher Changes in Beliefs/Practices**	
563		**4A Interview**	
564	**Positive change over time**	Teachers become more comfortable with the modules each year as time passes; As curriculum takes hold students begin each year more prepared; T adjusts instruction to meet an individual group student needs each year	4a- hmm, I don't know, I um, I know that every year I learn more, and so I learn, and plus they come up with more, they understand more. So, I make changes in so for that I don't, I don't uh, I'm not, I guess I'm, I'm more comfortable with them. So, so like I can say oh ok, I can move on, I know it's gonna be taught more so I can move on.
565			4a- I'm talking about the modules
566			r- So you haven't made much changes in your classroom or you have?
567			4a- Since when?
568			r- Since you tried to implement these modules.

			Are there a lot of changes going on and a lot of changes you still need to make, as far as needs go?
569			4a- Oh yea probably, every year is different, and I'm always changing, I always am changing I guess
570	**Positive change over time**	T changes content coverage every year	4a- To cover more of the material and to make sure that they, you know, leave hopefully with fractions this year
571		T feels pressure to cover the content	4a- Oh yea, yes it has. It has, like I feel like I have, I don't know I just feel like, I feel pressured, so I don't get to take the time that I would've in the past because I feel like there's pressure to get things done, because I know what it's like when I get kids who aren't ready and I have to move along and push them to get done, and to understand it and to move on so they'll be ready for next year's class, so yes.
572	**T buy-in**	modules have changed T beliefs that students can actually achieve higher	4a- Well I'm surprised, it's like they can achieve a lot more, but it's like I said those will
573		**5A Interview**	
574	**Positive change over time**	T thinks that teaching practices have changed with the standards	r- the standards and modules, do you think that in general, that there's been a change in peoples teaching practices over the years since they came along?
575			5a- I actually, I think so
576			5a- I do, I think I've seen it
577			r- what have you seen

			change?
578		T knows of a teacher that has become more confident in her ability to teach math	5a- well like one teacher whose using the modules feels very confident in her teaching
579			r- and did not before?
580			5a- yup
581			5a- mmmhmmm yea
582		**MA Interview**	
583			ma- so what do we do, and it's not us
584	**Positive change over time**	Older Ss content to younger Ss	ma- you know, the high school rule, I'm always go I'm not gonna teach it like a baby, if in high school you need to learn something, why
585			ma- yea let's just get there, you're able to do it, you're capable
586	**Positive change over time**	now concentrates on vocabulary uses a word wall	ma- and I was an anti- word wall person for many many years, and then I think I went to one of these BRE conferences and I'm like, I'm gonna do it
587		Still uses some older practices to prepare for college	ma- alright now the high school rule that I gave them, which technically could be the old fashioned way, it's the way you see it in college
588			ma- it's just that I know that is important, because like, this years execrated kids when I was teaching them in the summer I wasn't doing this with them, they won't have ever seen this until 10th grade because they're skipping 8th grade

589	**Ss -driven instruction**	T has changed to Ss questions drive instruction	ma- However, ya know, when I like, actually that lesson I've been observed on before, the one that I did today, and I remember um, when PA observed me, it was way back when PA was here, seems like forever ago but it's not that far away. She said, she said uh, students are involved in their own learning or something, and I said, well wait don't you remember don't when the one kid said "what happens, well what happens how do you get it to…" Like I was only moving it to the right, and somebody said wait, how do you get it to move left? I was like, I don't know, how? Ha, come up here play with that thing, tell me how do we get it to move to the left, "hey I think we've got to enter a negative number" and I was like, don't you remember that? Like, I said, did ya see that? That was like, his question, not mine.
590		Ss in charge of own learning	ma- That was his, he was wondering ya know. And that's kinda like what it is to be in charge of your own learning, ask of, think of your own questions and how to
591	**T buy-in**	Change environment	ma- What do they say, my work environment is a kids learning environment, haha, I like that expression ya know cause its true
592			ma- Its gonna sit on the shelf

593			ma- Its gonna sit on a shelf, and why go through all that work if it's just gonna sit on the shelf.
594		**SA Interview**	
595	**T buy-in**	Teacher likes the new teaching philosophy	sa- which is different, you know, like I know it's a different philosophy on it
596			sa- like, every Friday "hey let's do this test packet"
597	**Positive change over time**	Teachers spend less time teaching to the test	sa- I guess I'm saying test review, not state test review does that make sense?
598	**T buy-in**	Teacher thinks standards are really important; Changes in practice that validate for student what they will be doing.	sa- from my point of view I think so because I'd always heard that standards are really important, so I did this whole thing where I have, you'll see when we come to observe today, once we get the lesson going the kids read off the standard and then they look at the agenda and go "oh were gonna be working on that during this part" just to kinda give it, to kinda validate what we're doing. So I thought standards are like a really important part and then there are people coming into my classroom "so what are you doing with the standards?" and I'm like " I'm doing what you guys are doing, like were talking about them"

599	**Ss -driven instruction**	Teacher doesn't know if teaching has changed due to standards, CC, or APPR; Teacher concentrates on a more student-driven practices where students are aware of the standards.	sa- I don't know if my teaching has changed because the standards or common core, or because of APPR. Where it's supposed to be student driven, and students taking the lead on things and students being aware of the standards in that way
600	**T buy-in**	21st century skills help to change practices	sa- they probably do, it's probably part of that 21st century skills where you have to, there's a whole opening line that this is how they change,
601	**Ss-directed learning**	Teaching profession has changed to a balance between teacher directed and student directed	sa- student directed and everything like that, teaching has, it definitely has changed I mean, just the style of teaching, like I think there is always a conflict within the teacher that you're used to doing the lecture, and I think there's a place for lecture where there's like note taking and teacher directed, but I think there also has to be a balance where you do have the student figuring it out
602	**T-buy-in**	More student directed on APPR rubric; Teacher is excited about the students inquiry practices included in the new S.S.	sa- teacher (T directed on APPR), but it's usually a negative. it's not like a, mmmhmmm. and I get excited cause I get your social studies stuff like I'm so excited
603	**change is difficult**	Teaching style gets in way of changing practices	sa- sometimes you do (need a program like S.S.), but it's hard because then people are like, my style of teaching you'll like

604	**change is difficult**	Can't change the test can't change the standards can only change teaching practices	sa- right, at some point the test is the test, the standards are the standards, you can't change the test, you can't change the standards, but you can change your teaching. like what are you doing
605			sa- and I'm going silent on you, haha, (how do you get teachers to change their teaching)
606	**change happens through collaboration**	Can't change teaching by telling seeing what others are doing and having professional discussions ; can't assume everyone has changed practices	sa- no you can't tell them, it's funny though, just having discussions and talking, it's amazing like I said the number of people who have come into my room to see what I'm doing with the standards up on my wall, like I didn't know people were talking that much about it. but teachers talking to each other, and this is how I'm making it work, kinda takes away some of the fear and unknown. and then some people are like well let's see how that goes. you let me know how it goes. which I'm ok being like the test dummy or whatever for it to see ya know, does this work
607	**change is difficult**	Hard to figure out teaching practices that work	sa- so is it gonna work, is it not gonna work. and quite honestly the students I'm teaching in this 9 10 , they are the most challenging students, they are the students that are assumed that they are not gonna pass their English regents, its assumed that they're not

			gonna pass anything.(due to change in practice)
608	**trial and error**	Trial and error to see what works	sa- so if I can get them to pass, or even in the dream world get them to mastery level, that it would be like, ok, maybe she's (herself) got something that's working there. but yet I have all IP students
609	**change is difficult**	Change in practice hard because its' sole up to the individual teacher and no one is checking	sa- so my question back to the researches is so if we know that is it do we change as teachers how teach it, like how do we cause there's only so many things we can do like even though I have these two classes its really up to me, like there's not a lot you don't feel like anyone's checking you know, I know were supposed to be observed and everything, but no one's checking to see like hey SA, what are you teaching in there
610	**change is difficult**	Shouldn't wait 'til students fail to figure out teaching practices	sa- they're just like, well we trust you. you're gonna do what you're supposed to do. and I'm like but..and I'm fine with that I'm a professional I'll take care of that. But I think it's pretty sad that we wait until students do bad on a test and we go wait a minute, why aren't you teaching? well, why weren't you checking like, hey are you working on the standards?

611		**CCA Interview**	
612	**Ss directed learning**	Teaching has changed from straight lecture in math to kids taking control of their own learning through verbalizing, supporting, and writing explanations to formulate their own understanding	cca- yes, well, I think it does make it more challenging because it's not again I always relate it back to my own frame of reference, which is my math teacher stood up in front of the room and taught me the process, and I replicated the process and then we moved on. it seems like now the standards are demanding that kids be able to, just as you are leading your classroom, you have to explain your answer and you have to justify your answer, and you actually want to train kids naturally that you know, they're justifying it in their own head and they go oh wait, and they actually stop themselves when it doesn't make sense or its not working. Which is messy, and it's not every kid is probably at a different place.
613	**change is difficult**	More time consuming to teach with the new practices	cca- oh certainly, naturally, its time consuming. Right because you don't want to move own hen 50% of your class, let's say 50% of your class let's say gets it, well 50% of your class doesn't. You can't move on, I mean, it's more of that personalized learning that has to go on, so how do we do that in the time constraints, in the personnel constraints that we have
614		**Journals**	

615	**T buy-in**	higher level	**(MA)** I have renewed my faith in the fact that if I raise the bar for my students that they will meet me.
616	**T buy-in**	teacher likes the CCSSM content	For example, I would never have taught dividing fractions as complex fractions to middle school students, but it is excellent.
617		**FG Interview**	
618	**T buy-in**	increased T feelings about Ss achievement	4a- I guess it's the modules, what they, the modules have them doing honestly teaching 6th grade for as long as I did all that 6th grade stuff is now being taught in 4th grade, and they're getting it ya know
619			r- so you believe after doing the modules that the kids can do more than you thought they could?
620			4a- yea
621			r- so you have a higher belief in their abilities
622			ma- yea
623	**More Ss-directed**	Ss do more group work, inquiry, Ss-directed	sa- I think the style of teaching is different, like I feel old, but when I first started teaching (standards) it was very like, um group work and students, or the whole thing coming down with social studies the whole inquiry based um, learning now. Its more where the students are doing the work and you reinforce what they're learning, and you support it but it's not as much where your spitting at them
624			sa- sorry, direct

625			Group- chatter
626	**More Ss-directed**	less lecturing	r- ok I've got it, not as much lecturing.
627			sa- there we go, yea, but that definitely has changed
628	**Change "how" to teach content**	T used to teach fractions stay, change, flip now look for a denominator of 1	ma- so my example is, when I solve complex fractions in 6th or 7th grades I thought that's crazy why are you doing this. but for years we've been teaching dividing fractions as stay change flip you know change divides to multiply and flip, and for some reason ever since I put that into a complex fraction, you no longer have to remember the rule, there looking for a denominator of 1, how do you get a denominator of one, well multiply by the reciprocal.
629			group- inaudible
630	**T buy-in**	Changed belief about "how" to teach division of fractions	ma- complex fractions is the way to teach dividing fractions, I'm a believer in that, and I wasn't before. kids do not have to remember a rule anymore
631			sa- cause it's not a trick anymore its actual math
632			ma- yea it's what you're actually doing
633			sa- ya yea
634	**T-buy-in**	More Ss understand new way to teach division of fractions	ma- that was a big ??? complex fractions I thought "that's crazy" and then I go "oh look at that, they all know it!" they used to all get it wrong! and now on dividing fractions they all got

635	**Change "how" to teach content**	Changing "how" to teach concepts has changed teachers belief about "how" to teach math	ra- I find it amazing to be so different with the math to look at how they learned to multiply using the boxes and using the lattice and looking how I learned it and being so different but yet they can do it so much more efficiently and quicker so I like, I like the modules, how they've done that and its changed how I feel about teaching math. some year I could teach it. I have no clue as to what you're talking about, but it least I can watch, watch a student do something, and it's like oh that's really cool that's a different way of doing it
636	**Change is difficult**	T is never sure if she gives enough coverage to content	ma- and there's some questions now we have a bank of questions we can look at but what, like why that's the piece that changes my teaching like, I'm very unsure all the time, and like, whether or not they have enough you know
637			1a- that's where, that's what cause the big issues, like are you kidding, "we can't do…" (some teachers saying) well yea! that's what they're expected to learn (in response)
638			ra- that's what you're supposed to do
639			r- well that's when they came up with ??? something kindergarten exit 46.15 well, but it has to be, it's your standards?
640			5a- right, and that would

			make it easier for us
641		**Teacher Needs**	
642		**4A Interview**	
643	**"how" to teach**	Showing the "how"	4a- then you need to make sure that you are showing them how to do. But yea I think let teachers do their own thing, as long as they're meeting the needs
644	**Vertical alignment**	Need to vertically align	4a- I, my needs are, if people would, need to, however you call that, you know you need to get together kindergarten through 5th grade
645	**Collaboration**	T need more help, more information sharing, and communication	4a- I just think there has to be a little bit more organization you know there has to be more help for the teachers, and on these conference days there needs to be more information shared between the teachers. It's a communication issue, that's most of it
646		Does not find data analysis useful wants it analyzed and then passed on to her.	4a- I, I don't mind looking at it but I don't, I'm getting to the point where I'm getting sick of conferences and these people talking at me it's like you know what, I need to know what they need to know what the issues are. I don't want to be in a group where we look for it, and we do all that stuff, cause there's not enough time. just say what's needed, and let us figure out how we take care of it
647		**5A Interview**	

648	**Collaboration**	T thinks teachers need time to meet and collaborate over vertical alignment	5a- OK, so first of all, alignment, how are we supposed to know if we don't have time to meet with other people, right, it would help! So if we were able to collaborate and meet with other people, like if I were able to collaborate with 6th grade and 4th grade, and even 3rd, we would know if we were aligned or not. but we don't have time for that, so, did I answer that question or are you asking me more?
649	**Collaboration**	communication	5a- I think everybody feels the same way, we just need time to be able to talk about it and say, have you taught this, are we aligned?
650	**Time**	time	5a- I imagine there is, but I have to have time to look at it cause I haven't really gotten there, I cant
651			5a- I do, I'm taking it home, I'm taking things home, I know I'm not supposed to, but that's what I'm doing. Some of us have to take things home!
652	**Time**	Teacher thinks everyone needs more time with the standards and modules	5a- Time, I need time, we need time. I need time to, and here's another thing is, they give you a box of modules and say here you go
653	**Time**	overloaded no time	5a- I mean, so I'm kind of, I'm you know, I'm learning along with my kids, because I'm having to take it all upon myself see what they want, see how they want it taught, and then I'm bringing in a bunch of my own

654	**Time**	time set aside for collaboration	5a- ok. So I just think that time is huge. Anytime we get together and were able to talk, I always take something away from it. And we never have time to do that. It usually happens at lunch or places that you wouldn't expect it to happen. So imagine if we actually had time set aside and I could talk to you, and you could, you know, or if I were able to come into your classroom.
655	**Time**	T teacher needs time to observe and possibly teach in other classrooms	5a- and see mmhmmm, I actually talked to (AC) about that today. He said I think that's an amazing idea. Why can't we put our names in a hat and just pick a grade that were gonna go teach.
656			5a- and that too, and observe. Well both, both, well no but
657			5a- and I said to him, I need to observe other teachers, and I think that's why I'm able to, I'm able to be so animated and enthusiastic about my teaching is because I've taught in fourth grade, I've watched fourth grade teachers, 6th grade, 7th grade 3rd grade, and you pull al little bit from everybody
658	**Collaboration**	T learn from each other	5a- you do! You pull the good stuff and you know what you don't wanna do and you know what you do want to do, it's really important. And he was really receptive, he said that's a really great idea, I'm sure

			it's not the first time he's heard it, but it's something we really need to do. I learn so much when I observe someone else.
659		**MA Interview**	
660	**Time**	T feels grateful for extra plan	ma- well this year is a little different for me than last, well then ever, not just last year. like this is the plan I have right now, I have a fourth period AIS and there's no kids in my, in any of my classes that will fit in there, schedule wise, so I wound having a plan four, winding having one 7th. I've got extra time this year. so I'm doing smart board lessons, that I would always be racing around to get to, I'm able to, for me, I go to the modules I'm looking at 7th grade right now, and I have to screen captured into smart lesson you know there's a lot of work involved
661	**Time**	T sympathizes with elementary having less plan time	ma- yea, right, so I'm having a little more time this year, like time is essential. like, and some of us are getting a little more time in the high school, because of course scares me because I think they're gonna cut is the goal, but you guys are probably not getting a whole lot more time, you get an extra half a plan, but this is a long lesson on the smart board for me to pull it together to pull a module out and to do that takes an obscene amount of

			time
662	**Time**	administrators don't buy in to extra plan	ma- plan time is nice. of course no one ever buys that you know they don't
663			ma- and the reason is that some teachers in some districts only teach 7th grade.
664	**Time**	teaching one subject a day eases the load	ma- so if I'm only down with needing to do one lesson a day, and then download it
665			ma- and then save it, I'm done, ya know. and I can probably do a couple of those in a given day, probably do a whole weeks' worth of lessons if I really sat down in one day and did it, but I've got three curriculums I've gotta do. plus I've got an AIS I've got get ready for and support
666	**Time**	not enough instructional time	ma- and what you see here is like, what you see in my room that you don't see downstairs, they're in, and they're out, grab 'em while you can
667			ma- Ya know its 42 minutes boom boom boom you know, handing stuff back, collecting things, ya know, and when it really comes down to it, you really get 36ish minutes ya know, out of the day which isn't a whole lot of time!

668	**Collaboration**	independence as a school focus	ma- Our school thing, that would be great, and then we can all sit and brainstorm, instead of looking at the data, and all that kinda stuff, let's sit and brainstorm about what independence looks like at each grade level, and what we can with each grade level to foster that
669			ma- Like, that might be the key, one of the keys for the kids. I would like for you guys as curriculum specialists to talk about that
670			ma- Yea, school focus, I mean if we have no other school focus, like it probably even, like Jenny and let it be fractions, like, to me, I'd rather have it be independence. How do we build independence in these kids? Because you know what, we do too much for kids.
671			r- We haven't had any math direction downstairs yet?
672			ma- There was one meeting, once, for like a half an hour last year hahaha a
673	**Time**	Time	ma- That's what they need
674			ma- They have one and a half
675		**SA Interview**	
676			r- asks about the needs that you have, which is where I am trying to concentrate on. Yesterday (at focus group) I heard the achieve (internet source that states standards in a simplified form) and the stated, and now some PD so

			we can align their grade level by grade level. Vertical alignment
677	**Vertical Alignment**		sa- yes
678	**Collaboration**	sometime HS departments meet on the half days	sa- half days, well get ?? 7:49 min time in his department to meet sometimes
679	**Collaboration**	Good collaboration is valuable	sa- they did a nice job, which is collaborating with each other which is huge
680	**Test data**		r- but does that come again into the data that like, ted smith would have to do that. like 4A said yesterday (in the focus group), it was said that she didn't want to sit down and go through all of that, so like we need to maybe find somebody who has that data?
681	**Collaboration**	Teacher values having a professional discussion	sa- I just, I just noted it was nice to talk to other people as professionals, to have that professional discussion. I think we get caught up sometimes where we don't have that time to just you know talk as adults
682		Administration not checking on teaching practices because they are overloaded	sa- I think they're overloaded. (administration)
683		The role of the administration has changed	sa- I think honestly, like I think the role of administrators has changed so much

684		Administration used to take care of curriculum now it's' student behavior and completing paperwork	sa- and that originally was their role, the role was mainly curriculum and just some behavior and just general overall and now they're dealing with, I just feel like they're swamped with paperwork and all kinds of stuff that they're taking care of
685			sa- and whose looking at it, and whose really like, it's not that the teachers need police on it, but you could think that you're doing the correct thing but someone could come in and go like, who you're way off base like
686		Meeting with departments in HS are nice because they check each other's practices	sa- I mean and that's the nice thing about meeting as a department, you kinda ok here's where I'm at, am I on target so you kinda use your colleagues like that but, I don't know, the answer
687		**CCA Interview**	
688	**Standards in simpler terms**	Achieve.com has standards stated in more simple terms	cca- but even if they're doing a little bit every year
689			cca- OK
690			r- I don't know if the ones we have come from achieve but I kinda looked at those with somebody
691			cca- yup
692			r- oh they did?
693			cca- they did
694			cca- and some people didn't like them, no?
695	**Pd that addresses T needs**		cca- strange?

696	**Test Align**	Professional development determined by teachers and their needs, prior to the school year Best communication is between teachers SLO pre assessments are appropriate to gage where students are	cca- well it sounds like the time to be, to do those things, collaboratively, would be very beneficial. Uh, and the grouping maybe needs to be determined maybe by them, if they need to visit first with the grade level below them, and it sounds like it happening prior to them getting their students would be most beneficial maybe to meet with that prior grade level, to understand where the majority of kids are so they're starting in the most appropriate place, not wasting time, starting with something that the kids already have mastered or are proficient at, or the opposite starting too high and having to go back, which isn't a terrible thing, but the faster that you can get that information, the better it is for your students too. some some type of, I mean communication is going to be the best teacher to teacher, but is there some, I'm wondering what is the pre assessment that teachers are using to gauge where their students are before they jump into the modules? are they using one? do they have something that . . .
697	**Collaboration**	Slos and conversation with the teachers below might help teachers gage	cca- so that, is that enough to help them gauge where they should start, plus the conversation with the teacher below?

		where to start	
698		collaborate to vertically align	cca- ok
699	**Pd that addresses T needs**		cca- so that sounds like a professional development need that needs to be addressed, needs to be addressed, it's a need,
700	**Align to test**	Teachers' needs need to be addressed	cca- because if they're finding more value in their SLO assessment and really pulling that apart, and becoming aware of the state data, and thinking how that plays in, we have to start where teachers' believe is the most valuable.
701		Teachers should be aware of state data and how that plays in	cca- eh, right.
702	**Pd that addresses T needs**		cca- we need to start where people think…
703	**Collaboration**	Teachers expressing their needs would take the guessing out for the staff developer	cca- would be, would make the most sense. And it's good, for me, as a staff developer, this is good information for me, because sometimes I do play that guessing game, and I know you can't record this, and it's frustrating all around.
704	**Align to test**	Conversation has to start between teachers and then be brought to the administration	cca- we have to ask them, uh, I don't know if they're always, it's not that they're not honest, but it's almost like the conversation has to start among the department or among a group of teachers and then it be brought to administration or you know,

			whoever is doing the PD or whoever is setting up the PD, because it hasn't always worked in my opinion for me to ask, but I think that if teachers talked amongst themselves they'll come up with a general understanding and then that can be shared and then well move forward from there
705	**Departmentalizing**	SLO tests should be examined by teachers to check for validity is it serving its purposes	cca- I think from what you've shared and the questions that you've asked, teachers know how they want to move forward, which is really important, and if it's their SLO data, it would be very interesting to see what they use, whatever assessment that they're giving, do they really believe in it? and is it aligned? is it going to give them the information that they need to start in the right place with the modules, with their group of students? and they need time to figure that out because it's not something that anyone else can necessarily say, someone else can have an opinion about it, I'm sure I have an opinion about it, but ultimately they have to come to that understanding themselves, because, you don't want to be, metaphorically shooting yourself in the foot, using an assessment that really ultimately is not going to help using the modules,

			because it sounds that they love the modules. they need some things to be, to better utilize the modules, but in the grand scheme of things they're comfortable with them.
706		Departmentalizing is an option that should be explored to relieve time constraints	cca- that's really reality in elementary because even if you didn't sleep, you don't have enough time to be, you can't be an expert in everything, and you teach everything, you're it. Unless you departmentalize, which would be a conversation that I would like to have
707			cca- yup
708			cca- yes, and there are districts that do that
709			cca- yes and they feel successful about it, so, my own selfishness would want to survey that and put that out and put some feelers out. Would that take a burden off some shoulders? Or would it create more, would it not work? I don't know, I would like to visit that.
710		**Journals**	
711	**Time/vertical alignment**	time to adjust the module lessons	**(MA)** This does mean it will take me more time which is difficult. I do feel that this is because each grade is experiencing this which means we are not getting

			time to adjust for the gaps of implementing the new curriculum vs. the old.
712		**FG Interview**	
713	**Test Align**	Need to see test coverage of content	ma- is there a percentage on 4th and 5th grade that tells you how much is fractions, cause like for us it's like like I know functions is big in 8th grade. it's a big part of the test, so like, maybe we need to see those percentages because maybe even though the modules is last, maybe its more important than
714			4a- than other things and
715	**Test Align**	T wants data to be all analyzed	4a- ok but here's what I want to tell you, I don't need TS tell me, just give me the information, and I don't, it doesn't, I don't want to hear anybody tell me. just tell me what it is we need. if you say we need fractions, I believe you. I don't want over all that data.
716	**Pd that addresses T needs**	T would like more constructive PD to address test alignment needs	4a- and I think that we have to start using these PD times, we gotta get to the point, it's like you know what, I'm so tired of sitting in these meetings and not getting a anything out of them and it's too long of a time between one meeting and the other meeting, it's just like let's just get to the point get the whatever leg work you've got to, just do and say here it is, I don't want to do the discovery and guess whose name is or anything else

			discover it for me tell me what it is and let me go
717			sa- this is just totally being honest, but isn't that what our students are saying to us about the common core curriculum, like
718			1a- yes
719			sa- so weren't you taught in your PD like the common core that were supposed to be teaching and were out with the money
720			Group laughter
721	**Pd that addresses T needs**	does not need to discover info like Ss	ma- we do not have to mimic the way a student is learning, the way our PD is
722			4a- right
723			sa- OK
724			ma- I don't need,
725			sa- but I think that's what they're doing, they're mimicking the common core hahaha
726			Group laughter
727			ma- I know what pair-share looks like, sounds like, I can see it, you don't have to sit me in a room, and say, alright, MA you and 4a . . .
728			1a- pair-share!
729			Group is finding PD amusing
730		T need to speak up about needs	Ma- so if one to three four people, five people who think that in the meeting, why aren't you guys like screaming at them, "what are

			you crazy?"
731			ra- because we try
732			1a- they do
733			4a- and we do but like
734			Ma- I know but
735			Ma- well what's their response say? like honestly like what, why, what are you thinking…
736	**T need time to address the standard/modules**	T thinks with time limits and all there is to cover you need to keep moving	1a- there's sometimes, like when you do, if you look at like, what you're supposed to teach in math from like, you know from September all the way through June, yes, there's a lot and you have to keep moving and you have to keep going and you know, there's no time for play time, there's no time for movies, there's no time for, you know,
737	**Modules need to be vertically aligned**	T thinks teachers need to vertically align modules	1a- I don't want to be like, a witch teacher, but there's a lot of people who do other things who should be like, because really if you don't talk about what you're supposed to, let's say kindergarten, I'm not saying, but then it goes on to first, they fall behind, then second,
738			sa- because you're already very behind,
739			ra- you're behind before they walk in the door
740			sa- you haven't even started and you've already sunk
741			ra- yea
742			sa- wow

743	**T need time to address the standards/modules**	not enough time modules need to be cut down	1a- yea, you know and it's not always easy to squeeze it all in but
744	**T need to vertically aligned**	T thinks it a mindset change	sa- so is it, teacher mindset then, that
745			r- and it makes it so that you can check it?
746	**T need time to address these standards/modules**	T thinks we need to develop a checklist of standards to hold people accountable	5a- right, exactly
747			r- because I need people to check on it? 46.25
748			
749	**Time to Collaborate**	T thinks we check each other with standard coverage when we collaborate	1a- we all need to check each other
750			r- were busy, I don't always have a check on it, you have it on your report card and you're checking it?
751			5a- you have to
752			5a- like, you're being held accountable
753			sa- right, because we all thought that was a great idea cause it's like, they can just say, yes covered it, they did well, you know, mamma
754	**Time to collaborate**	T thinks we need to develop a standards cheat sheet	Ma- we even talked about at one point having this thing, and having the standards out and checking it yourself, like having your own cheat sheet and ?? 46. 50 were talking about copying that
755			Group Inaudible 47.15

756	**Vertical alignment**	T thinks it would help to vertical align	ma- and then if we can't get to the next years sequence, right, you would say "5A, fractions, not done"
757		T thinks it would be extremely helpful	4a- and that would be very good, that would be extremely helpful
758			ma- goes with the kids in other words
759			sa-the whole portfolio thing that was horrible, but instead one sheet
760			ma- and the date should cover it maybe or something like that, check the box
761			r- so this would go under a need? right, I know its late, I just want to make sure that I ask you, what supports I guess you have, are the modules and I don't know, whatever, do you have any other supports that you have?
762			sa- BOCES, um JB
763			Group- inaudible
764			laughing about JB
765			sa- JB
766			sa- sorry
767			ma- what supports we need to implement the common core,
768			ma- or the new program that you're doing?
769			4a- to help us implement our standards right?
770			Ma- oh ok
771			4a- are they extending the school day until 8 o'clock?
772			sa- grade level specific, what do I need to do
773			ra- mmmmhmmm

774		T wonders what's different from previous standards	Ma-what's so different now than before, we used to have standards? like I'm trying to think, like what's so different?
775			r- well is ok to read science, and do math and science?
776			1a- I think it's because of the support, like the people that come in for AIS and then you have ESL coming in
777			4a- that's the other thing too
778			1a- it doesn't make sense
779			ma- you have to collaborate more to do that
780			ra- isn't it all about cross content literacy for math and reading
781			r- so we need to integrate?
782		T thinks integrating the subjects would help	ra- That's what I would think
783			sa- it becomes how?
784			r- pd?
785	**Pd to address T needs**	Pd to help teachers on "how" integrate subjects	ra- yea
786	**Time**	Felt pressure to get going with math modules	5a- because I actually have had more experience with the uhmm ELA modules upstairs and I don't really uh have that much that I can look at right now, I haven't had time to actually dive right into it. the math I really felt like I really had to start THAT because they really needed this I I think I'm strong enough with ELA and have done that upstairs and I know the terminology and I know where I can start

787		5th grade module new to this teacher	5a- I can. and I haven't gotten to that in math yet (able to asses without the module), so because the module is so new to me, so I don't know.
788			5a- I haven't been able to give them homework
789		**Teaching/Student Learning Strategy**	
790		**4A Interview**	
791	**T facilitates independence**	Manipulatives	4a- I like it when they're doing hands on things, I like you know when…
792		manipulatives to combat motivation issue	4a- oh as much, as much hands on things as I can find, I do some from, so from what is that other book we do?
793			4a- Trailblazers, yup.
794		T likes programs that utilize math manipulatives	4a- OK, um, I think, I liked the trailblazers and doing they uh, you know whatever those things are, the manipulatives
795			4a- to do place values, yea I like the manipulatives
796			4a- for place value
797			r- And that serves the students well?
798			4a- Yes it does
799		**5A Interview**	
800			5a- we have a word wall
801	**T facilitates independence**	T uses a math word wall to help with vocabulary	5a- we have a math word wall anytime they learn a new word, they put it in their notes. We have a word wall and were always referring to the word wall. It's on the right hand side as you walk in. We just put up evaluate

802			5a- so I put it to music
803			5a- we sing the words laughter
804	**Teacher facilitated learning**	T uses singing to help student remember vocabulary	5a- no just like, if it comes up and something comes where, cause I think kids will always think, cause I sing to them it's all about that bass, like the bass, and the exponent, and we sing it. So they're gonna know what bass is and what an exponent is cause now they have something to
805		T uses old math books to supplement the modules	5a- alternate sources yea, well, yea mmmhmm
806			5a- Well I have a couple of math books, old math books
807			5a- Oh I forgot the name of it, there's a couple of different ones, there's Trailblazers and then there's an old, old one, but I remember
808			5a- there's a red and there's a blue
809			5a- No I used to do it with 4A
810			5a- mmmhmmm this is something different
811			5a- There's some great books in there
812			5a- it was, it was, and I have a whole copy of them
813			5a- mmhmm, so I remember using them in 6th grade and they were really good books
814			5a- I only used them in 6th, I don't

815		T is using what use to be considered 6th grade materials in 5th grade	5a- but 5th is now using 6th grade materials, what we used to teach in 6th we now teach in 5th. And a lot of those books, like I can pull a lot of the factor you know, strategies, out of there. how to teach in factors and exponents and things like that so that's what we used to teach in 6th grade many years ago, all that stuff, so I use that and I use the internet as well, I've taken a lot of different worksheets off of the internet
816			5a- no
817		**MA Interview**	
818	**Ss collaboration**	group work	ma- were doing group work
819	**T facilitates independence**	word wall	ma- and you saw, we used that wall today twice, or three times?
820			ma- Trevor, yea I didn't know that then, Trevor was like, I saw him image, he was like, he called it the figure, or something
821		sophisticated vocabulary	ma- we have a more sophisticated word for that
822	**T facilitates independence**	posted agenda	ma- But like, I put the agenda up there every day, every day the agenda is up there, and so now,
823	**T facilitates independence**	extra copies folder	ma- Like those folders in the back there, anything I hand out to them there's extra copies in the folder. and they're like "I lost it" and I'm like "hhhhhahhhh, what do you do when you lose something?" right? You come in on your time, you just go and grab it, you come

			in, you go look for it, it's in there,
824			ma- and if it's not, somebody used the last one, and I'll get ya another one.
825	**T facilitates independence**	Ss get own materials	ma- Well, they get their own stuff, ya know, if you lose something, it, if, like it didn't say it on here because we had gotten the graph ready yesterday, so like, for this group that you saw, yesterday's agenda up there said, "get your graph ready", which means, go write a piece of graph paper, get a ruler, and start getting it ready and be ready
826			r- And are they able to do that?
827			ma- They are
828	**T facilitates independence**	Ss help each other	ma- Somebody will just start grabbing the rulers and start handing them out, and somebody will get the graph paper and start handing them out, ok, because they're like, if I'm like in the hall which like, I consider my job while I'm waiting for them you know, for the bell to ring, right so like, I'm expecting they've read it, and when I come in, everybody will have a piece of graph paper. Like, yesterday, when that happened, there was like, two kids who did not have graph paper, like, they got missed somehow, maybe they were late, I can't

			remember why, but I'm like, look around, and often I just thought, can you look around the room and look at what everybody is doing at their desk, and the kid that's not doing is like "OHH!
829		Ss engaged	ma- They're very engaged, they're very together. This is a normal, it wasn't like they were behaving for you or anything, that's how they are, and they're pretty good
830		Interactive internet source	ma- like I'm not using, todays lesson wasn't a module lesson, so like I used an internet source that has translations that shows them how to do it, and that's what we did first, so at
831			ma- not common core module, and the
832			ma- I feel like the common core part of my lesson today, clearly I've taken on a couple of things that I would have never brought up before, ever,
833		source mixed with pieces from a module	ma- without the modules, would've never done a few things that are in there
834		**1A Observation**	
835	**T facilitates independence**	Ss decide and get blocks as needed as a tool to help them	T "you have blocks etc." If you need help ask at your table
836	**Ss collaboration**	T encourages group work	T "then if you really need help who do you ask"?
837			Ss Mrs. B
838			T "yes but ask someone at

			your table first"
839			Ss begin work
840			4 Ss get blocks
841			1 Ss playing then takes them
842	**Ss collaboration**	Ss work together	Ss reads aloud to others at table
843			Ss discuss
844	**T scaffolds learning**	Ss work collaboratively while teacher walks around and scaffolds learning where necessary	another Ss says to another "let me read to you"
845			T sits with a Ss helps them get started
846	**T scaffolds learning**	formative assessment and guidance	T walking around helping
847			3 Ss read aloud together
848	**Ss collaboration**	Ss work together	2 Ss discuss how to solve a problem
849			Ss reading aloud to another takes her pencil and writes on her paper she is attentive to what he is doing
850			Ss Listening to others work across the table
851	**Ss collaboration**	Through helping another Ss monitors own learning	This Ss came back and got his paper he already turned in and changed his answer
852			Helping another Ss helped him to monitor his own learning this is supposed to be how collaboration works
853			Ss from 3 tables have merged into 2 discussing the work and talking through their thinking
854	**Ss independence**	Ss gets own materials	Ss going to get more blocks as needed

855	**T scaffolds learning**	formative assessment and guidance	3 Ss go to the T to have their work checked
856	**T scaffolds learning**	T reminds students what helping is not	T reminds a student helping is not doing it for another
857		Internal reward	2 Ss that finish come to T desk and pick up a "good Job" stamp and stamp their papers
858			T announces when they are done they can play math games
859	**T scaffolds learning**	formative assessment and guidance	T sits with SsT gets up
860			2nd to last Ss turns paper into T
861	**T scaffolds learning**	formative assessment and guidance	T gives Ss corrections to make
862			T continues to help Ss that's been off task
863	**T scaffolds learning**	T scaffolds with manipulative	T walks Ss through how to solve a problem with blocks
864	**T facilitates independence**	Ss independently get started	Other Ss color fall leaves
865		formative assessment and guidance	2 remaining students still are working with T assistance
866			2nd to last Ss finishes and stamps her paper her paper 1 problem at a time as T gives instruction for each problem
867			T continues to help remaining 2 Ss on same math problem
868			other Ss are visiting and coloring leaves
869	**T Scaffolds**	T probes to scaffold learning	T asks probing questions to the 2 Ss ‘til they make it through
870			all Ss are done

871			T says "okay a lot of you need to clean up"
872	**Teacher Directed Instruction**	Guides lecture with T probing questions	T demonstrates on board while Ss work at seats
873			guided lecture
874			T questions Ss
875			T writes 6+1=1+6
876			T says "now you think you can do it right"
877			T writes and asks "is this right"?
878			T "is this the same"?
879			T "is it important we watch where the = goes"?
880			Ss says not right
881	**Teacher facilitated learning**	Ss has some skill at verbalizing and explaining math	another Ss says "6+1 is 1+6 so I think it is right"
882			all Ss except one are on task
883			Ss explains 2+4=6 and 6=2+4
884			Ss yes
885	**Teacher facilitated independence**	Ss engaged, independent, and collaborative	This reminds me of a Kindergarten class I was in a couple years ago the young Ss seem so engaged, independent, and able to work together collaboratively
886	**Ss collaboration**		All Ss are on task
887			1 Ss off task playing with cubes
888			Ss still playing with cubes
889			Finish playing with blocks cut down????
890			Ss starts playing with the blocks again
891	**Teacher facilitated independence**	All but 1 Ss working independently	only 1 child working on his own

892		Ss very motivated to get the jobs done	I love how Ss begin helping
893		**4A Observation**	
894	**T facilitates independence**	Teacher uses timer for students to complete work	T sets a timer to time Ss on a sheet from the modules
895	**Ss directed learning**	Student directed, teacher facilitated discovery	Ss asks a question
896			T helps Ss to helps Ss to determine where to begin
897	**T scaffolds learning**	Formative assessment	T walking around checking Ss work
898	**T facilitates independence**	Students work at their own pace	there are between 4 and 5 questions on a sheet the students are working on different sheets from one another
899	**T scaffolds learning**	Formative assessment	T helps this Ss
900	**T scaffolds learning**	Formative assessment	T continues Continues to walk around answering questions and helping Ss
901			T prompts with questions for understanding
902	**T facilitates independence**	Students work at their own pace; Students work on independent projects	Ss has finished and is staring to work on an independent project
903			appears to be an ongoing project for this student
904	**T scaffolds learning**	Teacher helps student who hasn't been working	T is helping a Ss that hasn't been working
905			T trying to get Ss to guess how counted
906	**T scaffolds learning**	T asks probing questions	T is probing to try and get student to discover multiples
907			T asks Ss what they are counting by
908	**T scaffolds learning**	T gives hints	T shows student where there

			is a hint in the problem
909			T rotates back around to Ss she was helping previously to check for Ss understanding
910	**T scaffolds learning**	T walks around and conducts formative assessments	T rotates back around to Ss she was helping previously to check for Ss understanding
911		T gives student strategy	T asks Ss to try making a chart
912			T walks away
913			T asks the group "how do you do this one"?
914	**Ss -directed learning**	S can verbalize math procedure	Ss comes up with a reasonable answer about what changed
915			Second Ss finished and T checks work and praises Ss
916	**Ss directed learning**	T uses positive feedback	Ss moves on to work on biography
917			Ss off task T checks on Ss
918	**T scaffolds learning**	Formative assessment and guidance	T helps Ss and Ss says she gets it
919			T reminds another Ss to move on to the ones she can do
920			another Ss finishes
921			other Ss continue to work
922			Time is up I leave as they continue in this fashion
923	**Teacher facilitated independence**	Students not working	Some Ss not working
924			One Ss is playing with a paper clip
925		Partial student engagement	5/10 Ss not on task
926		Students not working	T checks on a Ss yawning (paper clip Ss)
927		Ss struggle with independence in a	This is a 100% Ss-directed class Ss lack independence

		Ss-directed classroom	
928		Partial student engagement	T walks away and Ss begins to play with the paper clip
929		Partial student engagement	5/10 Ss not on task
930		Student reads to teacher	4/10 on task
931		Partial student engagement	Ss is reading to T
932		Ss struggle with independence in a Ss-directed classroom	This teacher is working very very hard to create independence
933		S off task	4/9 not on task
934		S back on task	5/9 Ss not on task
935		S off task	Ss is rolling pencil while T is talking to the Ss
936		S off task	Ss starts working
937		S back on task	Ss plays with hair
938		Partial student engagement	Ss plays with pencil holder
939		S off task	T rotates back around and Ss begins her chart
940		Partial student engagement	8/9 Ss not on task
941		Partial student engagement	Ss playing in desk
942			6/8 off task
943			3/8 off task
944		Students working	Ss begins working
945		**5A Observation**	
946		Students turn in homework	Ss turn in 3 homework questions
947	**External rewards**	Teacher gives rewards for completions	T gives tokens for completion
948			Nice to begin the day with a reward however I wonder how this affects the students that didn't complete the homework

949	**T facilitates independence**	Teacher utilizes timer	T times Ss as they do a "mad minute" fact sheet
950			T calls stop and hands up after 1 minute
951	**T facilitates independence**	Teacher calls out answers and students correct their own	T calls out answers
952			Ss correct their own and write the number correct on top
953	**T facilitates independence**	Teacher lets student know how much time is left	T gives the students 1 minute to finish up with the ones they get incorrect
954	**T scaffolds learning**	Formative assessment; Teacher gives positive feedback	T walks around gives positive feedback
955	**T scaffolds learning**	Teacher probes students for different methods	T asks if someone has a different way
956			T picks a Ss
957	**External rewards**	Teacher gives positive reinforcement	T says "wonderful"
958	**Ss collaboration**	Students collaborate; Students share work	Ss now call on classmates to write a sentence and Continues with 2 more Ss that share
959	**T facilitates independence**	T encourages students to monitor own learning	T says "so if some of you still need us you can see us"
960	**T facilitates independence**	Teacher provides individual instruction; Students monitor their own learning	Individualized instruction and Ss monitoring their own learning
961	**T facilitates independence**	Students practice module independently	Ss begin independent practice on a sheet from module lesson
962	**Teacher Directed Instruction**	Teacher returns quiz sent home	T passes back a quiz she sent home for the weekend to the

		over the weekend	students
963		Teacher gives positive reinforcement; Teacher identifies areas of opportunity	T tells the students they did well but they need to work on some stuff
964		Teacher writes example on the board	T puts example on board
965			T tells some of them turned the fraction around to make it easier
966			T write 6/5 on Smartboard
967		Teacher asks students questions and Ss respond	T asks Ss what's the whole
968			T calls on Ss and Ss responds 5
969			T asks what she should break the whole into
970			Ss says 5
971			T asks 5 what?
972			T asks who can give her an addition sentence
973			T calls on Ss and
974			T says "great"
975		Teacher directs lesson to another topic	T says we were working on equivalent fractions
976			T says "we took 2/3 " as she writes on board
977			T asks Ss how to find an equivalent fraction
978		Teacher calls on student	T calls on Ss
979		Teacher requests student to explain answer	T asks Ss to explain to tell everyone what she did
980		Teacher asks students to write	T asks Ss to write their example in math notebooks

		examples in notebooks	
981		Formative assessment; Teacher gives positive feedback	T and aide walk around and check Ss work
982		Teacher encourages students to share work	T randomly calls on Ss to share
983		Formative assessment	T says "nice, you know exactly what to do -----will check on your work
984	**Teacher facilitated learning**	Teacher uses physical movement to get attention	T shakes a maraca
985			T tells Ss she's going to wake them up with "multiple madness"
986		Students engaged with physical movement	Students twist and turn as they call out multiples of two, three, etc.
987	**Teacher facilitated independence**	Some students do not participate	Some students in the back not calling out multiples only exercising
988			Ss suggest alternate moves lift and hit knees, sliding, etc.
989			I love the way the teacher uses physical movement and chanting to familiarize students with multiples
990		**MA Observation**	
991	**T facilitates independence**	Student practice	Ss practice
992		Formative assessments in preparation for an Ss directed lesson	T walks around and checks Ss work
993	**External rewards**	Positive feedback	T says “so far so good”

994	**T facilitates independence**	Teacher guides students on how to check their work	Reminds Ss they should get a congruent shape if not something could be wrong
995	**External rewards**	Positive feedback	Positive feedback
996	**T facilitates independence**	Teacher guides students on how to check their work	T says she'll do the same and hopefully they'll all get the same answer
997			T talks through the answer and asks them to check theirs' to her's
998	**T facilitates independence**	Student directed, teacher facilitated discovery	Ss share in groups about 9 hands go up
999			T says something must be wrong
1000			T reviews each step with the Ss as they show thumbs up thumbs down until they get to the error
1001			Formative assessment walking around
1002	**T scaffolds learning**	Probing questions for understanding	T inquires with student about what happened to get an error
1003	**Ss collaborate**	Teacher encourages group discussion	Asks Ss to talk about it amongst themselves for a minute talk to their partner
1004	**T scaffolds learning**	Probing questions for understanding	T asks for Ss ideas on what went wrong Ss answer
1005	**T facilitates independence**	Student directed, teacher facilitated discovery	Unique teaching strategy having students discover an incorrect step in problem solving
1006			Students are very comfortable with this "fix the mistake" approach
1007	**Ss-directed learning**	Teacher facilitates student presentation	Ss is called on to share
1008			Ss begins to share and forgets what it is called
1009	**T facilitates independence**	Student directed, teacher facilitated	T says "it's up there" and points to the word wall

		discovery	
1010			Ss says “congruent” and finishes
1011	**T facilitates independence**	Word wall for math vocabulary	This is the teacher that mentioned word wall being an effective strategy for teaching math vocabulary during the focus group
1012			Teacher calls on Ss to share aloud to the group
1013	**Ss collaboration**	Teacher encourages group discussion	T asks if anyone disagrees
1014			T says “Okay not many”
1015			Teacher calls on a Ss that disagrees
1016			Teacher says “why who’s right”
1017	**Ss collaboration**	Students collaborate	Ss explain and come to a consensus
1018	**T facilitates independence**	Student directed, teacher facilitated discovery; Word wall for math vocabulary	Ss use word wall to help
1019	**Ss collaboration**	Teacher facilitates student collaboration	T assigns a “do now” asks them to complete it with their neighbors
1020		Students collaborate	Students are very comfortable working as pairs
1021	**Ss-directed learning**	Students working on secret special project	Teacher adds them to a “do not use” list
1022		PBL	She reminds Ss to keep them a secret or they go on the list
1023			Teacher tells the students they can use upper and lower case letters
1024			She reminds them that vertically they are harder to fold in half
1025		Secret project	What is this secretive

			project?
1026		SmartBoard proficiency and creativity	Cool SmartBoard lesson
1027		Interactive Internet source	Teacher is very familiar with SmartBoard, interesting material
1028	**Teacher Directed Instruction**	Teacher provides students materials	T passes out a paper
1029			T asks if they have their materials
1030		Students working on secret special project	Asks student to put away their projects "they are not to be shared"
1031		Teacher uses lecture	T instructs about congruence and coordinates
1032		Teacher demonstration; SmartBoard proficiency and creativity	T demonstrates on SmartBoard
1033		Teacher provides students materials	Homework and daily agenda posted on the board
1034		Teacher asks students questions	T and Ss engage in question and answer
1035		Formative assessments	T asks if they completed 3 for homework
1036			Teacher says good and assigns plots to complete as she walks around checking
1037			As Ss finish she puts the shape of congruence on the SmartBoard
1038		SmartBoard proficiency and creativity	T displays plots on SmartBoard
1039		Formative assessments	Teacher walks around encouraging Ss to finish up
1040			T asks the students to write the new coordinates
1041			and always talking students through each step

1042		Teacher demonstration	T demonstrates how to write the rule step by step Ss listen
1043		Students copy teacher	The students copy the statement of congruence
1044		SmartBoard proficiency and creativity	T puts points up on SmartBoard
1045		Teacher gives students points to plot	She asks the Ss to plot points while she takes attendance.
1046		Teacher goes over homework assignment	Teacher goes over what Ss are expected to do for homework
1047			T assigns do odds or evens Ss choice
1048			T also assigns them to write a rule and give the directions
1049		Formative assessments	Teacher writes on board exit ticket formula and walks around encouraging the students to write the directions for it
1050		Teacher reminds students of expectations	Teacher continually reminds students what needs to be completed
1051		Teacher goes over homework assignment	Teacher reviews what Ss need to do for tomorrow Ss and teacher chant properties
1052		Teacher reminds students of expectations	Teacher reminds students constantly of what they need to do and where they are headed
1053		Students working on secret special project	T discusses words that came up for students independent projects
1054		Students dismissed	Ss dismissed
1055		Students copy teacher work	T displays answer Ss start to copy
1056		Formative assessments in preparation for an Ss directed lesson	This teacher moves around the room during her lectures,

1057			Teacher walks around
1058		Formative assessments in preparation for an Ss directed lesson	Teacher walking around
1059		Formative assessments in preparation for an Ss directed lesson	T walks around and checks Ss work
1060		Formative assessments in preparation for an Ss directed lesson	Continually walking around checking
1061		Formative assessments to see if the Ss are ready for the next day	T walks around and checks and says they are ready for tomorrow
1062		**FG Interview**	
1063		Teachers are using word wall	Ma- well JMA is doing a word wall, she's doing vocabulary tests in math in 9th grade
1064			Ra- good idea
1065			Ma- yea
1066	**Teacher facilitates independence**		Ma- I mean I do part of that as part of my curriculum completely, the word wall, there's always vocabulary on the test but it's never been in high school so the fact that she's picking I thought ahhh that's pretty good, it must be that some of the words are really getting to them
1067			ma- and you used to do that remember with your um your books they were great you know I really liked them, what was it called again
1068			1a- trailblazers
1069			5a- no, the red ones

1070			Group chatter about the color of the books
1071			ra- oh Bits in Pieces