HOW TEACHERS PRIORITIZE REFORM: THE COMMON CORE STATE STANDARDS

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A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

Educational Policy—Doctor of Philosophy

2014

ABSTRACT

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Administrators, teachers, parents, and students are familiar with policy and reform changes in the United States' educational system. Our nation is well-known for frequently adopting and implementing new reforms, especially in the core subjects of English, history, mathematics, and science (The National Academy of Education, 2009). Teachers are major catalysts for reform implementation and change within schools, largely because they will ultimately be responsible for implementing their ideas in the classroom (Smith & Southerland, 2007). Teachers implement and structure the curriculum in a fashion that could either benefit or detract from the intended reform. With this in mind, the goal of this dissertation is to understand how teachers prioritize reforms. I use the example of the Common Core State Standards in mathematics to illustrate how teachers understand and interpret reform.

I have conducted a mixed-methods study to address the following research questions: (1) How do teachers prioritize reform? and (2) How do teachers prioritize reform related to the Common Core State Standards in mathematics? Phase I used a qualitative approach, and Phase II used a quantitative approach. In Phase I, I addressed my first research question by conducting interviews with every fourth grade teacher in one district in the Midwest. In Phase II, I addressed my second research question by conducting 400 teacher surveys in three states: Illinois, Indiana, and Michigan.

This dissertation is dedicated to the loving memory of
my Babajoon (March 2010) and my Mamanbozorg (May 2013).
You will forever be in my heart.

ACKNOWLEDGEMENTS

I am deeply grateful to a variety of people and to Michigan State University College of Education, which helped me make this dissertation possible.

Foremost, I would like to express my deepest appreciation to my guidance committee members, who patiently and thoughtfully supported me through my doctoral journey. They each exemplified such wisdom and have generously donated their time and energy to see me succeed. To my advisor, Dr. Christopher Dunbar Jr., who consistently reminded me to stay calm and inspired me to take pride in my research, without his guidance this study would not have been possible. Thank you to Dr. Amita Chudgar, for encouraging my first conference paper and presentation submission as a first year Masters student. You truly opened my eyes to a brighter future. Dr. William Schmidt challenged my thoughts not only through this dissertation, but also through all educational affairs. I feel very fortunate to have you as my mentor. Dr. Peter Youngs for believing in my determination and aiding me to reach my potential. It has been an honor having you all at my side.

To two of my undergraduate professors, Dr. Alison Renteln and Dr. Micheal Channing, thank you both for believing I have a place in the world of education.

Thank you, Dr. Michael Sedlak, for believing in my vision, and the Educational Policy Department at Michigan State University, for their financial support through fellowships and grants. To my peers at Michigan State University, Brian Boggs and Christie Poitra– this journey would not have been the same without you by my side. A special thank you to my editorial team and graphic design team, Dr. Douglas Campbell, Brenda Errichiello, Tony Moore, and Mirabella

Olszewski. Most of all, thank you, Chun-Lung Lee, who spent countless hours guiding me through the quantitative portion of my doctoral studies.

And of course to my friends and family–thank you for keeping me sane and providing me with unconditional love and support. Nothing can really express my feelings and gratitude towards my parents for the countless hours you spent around the dinner table, over the phone, or in the office boardroom listening to my thoughts, dreams, and, most of all, for reminding me never to take no for an answer, but that when one door closes there is always an open window. Mom, you were always there to listen and spread positive energy, especially when I grew frustrated and discouraged. Thank you for playing the role of not only a loving mother, but also an irreplaceable friend. Dad, you are the fountain of hope and inspiration in our family— the voice of reason. The hardships and experiences you have endured have motivated us to succeed. Thank you for pushing me to grow to my full potential and for encouraging a quick completion of this dissertation. To my brothers, Vahid, Saeed, and Farid, I will always be grateful for your unique role in supporting me emotionally through love and laughter. To my aunt, Zore, you've always been there to love us unconditionally.

Thank you for being present and supportive through this journey.

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Chapter I: Introduction

The educational landscape in the United States is dominated by new reform initiatives. These initiatives promise the advancement and improvement of our educational system in order to provide higher student achievement outcomes. Each reform begins with publicity, excitement, and the promises of improvement in student achievement improvements. The expected outcomes are smarter, faster, and more educated students. However, as time elapses, these reforms slowly fade from the limelight with little to no positive impact on the education system or the students themselves, becoming a distant memory and often a regret. The reform failure occurs for various reasons, including disorganization of execution and implementation, political pressure, and budgetary concerns, to name a few. In fact, some may argue that reforms create more bureaucracy, more rules, more red tape, and more convoluted procedures, circumstances that may hamper the success of the education system rather than bolster it.

This pattern of reform failure has become very familiar to education's front line: teachers. As implementers of these reforms, teachers have experienced constant change in the mandated reforms imposed upon them. On the federal level, when a new president takes office, education policies also tend to change because education is often among the leading issues in presidential campaigns. On the state level, when a new governor takes office, he or she may also want to make a strong footprint on education platforms. On the district level, when new school board members or superintendents join the task force, they may also make adjustments and changes to policies. This trend continues down towards administrators, curriculum coaches, etc. Once again, this pattern of continual change forces teachers to adjust their practice and lessons to meet the reforms' demands. Unfortunately, these changes do not necessarily result in the positive outcome that was intended. Further, because reforms have a tendency to change so frequently, many

teachers have become skeptical about any particular reform's staying power. The reforms also have a tendency to dictate in-classroom practice to teachers, and thus, loss of autonomy is also a great concern. Being that teachers believe they know their students and their students' abilities better than any other stakeholder, they do not want to feel that they have no say in how and what they teach their students.

As teachers are the implementers of any given reform, the role of the teacher is important in determining the success of an educational reform and is essentially the foundation that drives a reform's success. In order to optimally implement a reform, teachers must understand all aspects of the reform and respond positively to the change because they are ultimately delivering the message—and the instruction—to the lower tiers of the education system: other teachers, parents, and most importantly, their students.

In order to secure the support of teachers, it is imperative for all stakeholders involved in the reform implementation process to understand the importance of a joint and collaborative structure in order to create a cohesive message. It is additionally important for all stakeholders to understand the reform's intentions and what is being asked of all parties that are involved in the reform. In addition, reformers must instill confidence in the reform process in order to assure teachers that new reforms are not another fad in the laundry list of unsuccessful education reforms. Without these precautions, each reform will continue to fall victim to the same ineffectiveness as its predecessors.

In order to accomplish the goal of implementing a successful reform, it is important to understand how a teacher processes reform information. Once this process is understood, it will help other stakeholders determine how best to package the important details of a reform. The theoretical framework used in this study is Coburn's sensemaking theory (2001), and it has been

applied to help understand how teachers receive the reform information, whether the information received is identical to the actual reform in question, and whether the information received is correctly understood by teachers. While there is no calculated method by which teachers decide to implement a reform, literature does identify and confirm six categories that contribute to whether or not a reform becomes a priority to teachers. The six categories are: (a) how a teacher values a reform, (b) whether it aligns with their beliefs, (c) whether they are able to relate to the reform ideas, (d) whether they see the reform as achievable, (e) whether the motivating factors of the reform outweigh the non-motivating factors, and (f) whether the teacher receives the support necessary from the various stakeholders. It is important to note that one category does not necessarily outweigh the other, as each teacher's personal approach varies. Also, this is not an exhaustive list of categories because some teachers may have other circumstances or beliefs that impact their ability or desire to prioritize reforms in their classroom. However, one of the most significant and overarching themes throughout this research is how teachers make sense of the reform and how these processes influence how they prioritize reform. This dissertation aims to understand better the ideas above by responding to the following research questions.

Research Questions and Methods

Research Question #1: How do teachers prioritize reform? To answer this question, a qualitative case study approach was used. Interviews were conducted in all four elementary schools within a single district in Michigan during the academic year of 2012 to 2013.

Research Question #2: How do teachers prioritize reform using the Common Core State Standards (CCSS) in mathematics? These standards are an example of a current reform and were used to understand further how teachers in the Midwest prioritize reforms. In order to gather data, I employed a quantitative approach and surveyed 402 kindergarten through fifth grade

teachers in three Midwestern states: Illinois, Indiana, and Michigan. These surveys were all administered within the academic year of 2012 to 2013.

Prior to exploring the results of this study, it is important to understand the reform initiative it involves: the Common Core State Standards.

What Are The Common Core State Standards?

The Common Core State Standards Initiative (CCSSI) is a state-led effort coordinated by the National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO). The standards were developed in collaboration with teachers, school administrators, and educational experts. Their goals were to provide a clear and consistent framework for the subjects areas of both mathematics and language arts and to prepare our children to enter college and the workforce.

The NGA Center and CCSSO received initial feedback on the draft standards from national organizations, including but not limited to the following groups: teachers, postsecondary educators (including community colleges), education and research specialists, civil rights groups, English language learners, and students with disabilities. Following the initial round of feedback, the draft standards were opened for public comment, receiving nearly 10,000 comments, with some of these suggestions being incorporated into the final standards.

The standards are informed by the highest and most effective models from some of the 45 states across the country and wordwide (as of February 2014). The process of state standards adoption is dependent on the laws of each state; some states are adopting the standards through their state boards of education, while others are adopting them through their state legislatures. Clear and consistent standards provide appropriate benchmarks for all students, regardless of where they live, and define the knowledge and skills students should learn within their K-12

education. The standards are aligned with college and work expectations and are designed to ensure high school graduates who matriculate from schools using the Common Core will graduate equipped to succeed in entry-level jobs, credit-bearing academic college courses, and workforce training programs. The standards include rigorous content and application of knowledge through high-order skills, and they build upon strengths and lessons of current state standards, are evidence-based, and are informed by other top-performing countries, with the intention that all future graduates will be prepared to succeed in our global economy and society.

Effects of the Common Core State Standards

The CCSS will affect virtually every American in some way because they affect nearly every aspect of public school curriculum, instruction, and assessments. Arguably, these stronger standards would drive improvement in school educational performance, which will stimulate future prosperity for both individuals and the nation. Teachers and students make up the two most affected subgroups, but administrators, parents, specialists, politicians, those in higher education, and community members will be affected as well. As these groups prepare for implementation, it is imperative that all parties work together, openly sharing concerns and ideas so as to benefit the students who are the focus of these endeavors.

Summary

In order to understand how teachers prioritize reform in general and then understand how they specifically prioritize a new reform, such as the CCSS, we require two separate approaches. The first approach is fully exhausting the literature and the existing themes within that literature pertaining to the topic, and the second is conducting a thorough investigation with teachers whose states are currently involved with the implementation of the CCSS.

The literature outlines six significant categories that are pertinent in understanding how teachers prioritize reform. The following categories are: (a) how a teacher values a reform, (b) whether it aligns with their beliefs, (c) whether they are able to relate to the reform ideas, (d) whether they see the reform as achievable, (e) whether the motivating factors outweigh the non-motivating factors, and (f) whether they receive the support necessary from the various stakeholders. These categories follow the overarching framework of the sensemaking theory. This dissertation aims to describe these categories in great detail while relating them to the research question.

The second part of this study was a two-phase mixed methods analysis. Phase I was the qualitative portion, which responded to the first research question: How do teachers prioritize reform? A case study method was used with a series of interviews. These interviews were conducted in three states: Indiana, Illinois, and Michigan. All fourth grade teachers in one district in Michigan were interviewed, four teachers in Indiana and Illinois was surveyed, and one instructional coach in the same Michigan district was interviewed. I then conducted a cross-case analysis comparing similarities and differences among the teachers.

Phase II was the quantitative portion of the study, which responded to the second research question: How do teachers prioritize reform using the CCSS in mathematics? I surveyed 402 teachers in Indiana, Illinois, and Michigan in order to answer this question. These teachers were asked a series of questions all pertaining to the themes presented in the literature. The survey questions were separated into three parts. Part I will analyzes how teachers prioritized reform as a whole without the consideration of one specific reform. Part II will address specific CCSS questions through three demographic variables—location, level of experience, and grade

level of instruction—to determine trends of implementation. Part III will integrate both Part I and Part II's data to understand how teachers prioritize reform related to the CCSS.

At the time of authorship of this paper, all 45 states have prepared and continue to prepare for the full implementation of the CCSS in both English Language Arts (ELA) and mathematics. The main theme for my research is how teachers make sense of policies and how that sensemaking influences whether or not they implement the reform. These areas of inquiry will be discussed in greater detail in Chapter II.

Chapter II: Literature Review and Theoretical Framework

Teachers are often seen as the gatekeepers to our children's minds. They spend approximately six to seven hours a day, five days a week, thirty-eight weeks per year teaching children. Teachers' roles can be endless, but include instructing the mandated curriculum, disciplining, listening, encouraging, protecting, nurturing, and staying current with professional development programs. Prior to beginning the school day and after the school day ends, teachers reflect on whether their lessons and practice accomplish the reform's goals. With such a heavy workload already, teachers may wonder whether new reforms are worthy of the preparation they require to implement in the classroom. Reforms require teachers to prepare new material, and this preparation may take days, weeks, or months to complete. Without a demonstration of the reform's benefit to students and to their instruction, teachers may question the reform, and it may be difficult for them to determine whether the preparation costs could be linked to more ideal educational outcomes for their students.

Literature Review

It is nearly impossible to predict exactly how a teacher will respond to a change in their school environment and teaching practice. Whether they support and implement the change mandated by the reform depends on several variables that cannot be easily calculated. In my dissertation, I will discuss the list of six categories that the literature dictates teachers will employ when determining whether or not to prioritize a reform. Once again, these categories are (a) how a teacher values a reform, (b) whether the reform aligns with their beliefs, (c) whether they are able to relate to the reform ideas, (d) whether they see the reform as achievable, (e) whether the motivating factors outweigh the non-motivating factors, and (f) whether they receive the support necessary to implement the reform from the various stakeholders.

Values

Individual human beings have different personal, cultural, and ethical values that control their decision-making process. Teachers are no exception. Teachers may value one idea over another based on their knowledge and previous experiences, and how a teacher values a given reform is imperative to its success. Burkhardt and his co-authors insisted that the values and attitudes of all groups concerned with the innovation will affect the likelihood of the innovation's success (Burkhardt et al., 1990).

Values, gained by experience or lack of experience, often frame teachers' practices and inform their commitment to a reform. A teacher's personal experience and circumstances may dictate their commitment and attitude towards a reform, as demonstrated by the following statement: "Experienced teachers who have been teaching for some years will have developed ways of doing things which they have found to work for them in their situation" (Sikes, 1992, p. 47). This is further demonstrated in the research. As a result, teachers are often "reluctant to abandon tried and tested methods for new [methods] which they may be afraid will fail" (Sikes, 1992, p. 47). Therefore, it is difficult for reformers to persuade experienced teachers to adjust their practice. Researchers have also noted that more experienced teachers are not only more likely to resist change but that they are also less likely to believe change will be successful. More experienced teachers also may think the method of instruction they have used thus far has had beneficial effects on their current practice—they might value their experience more than the methods the reform is recommending.

Alternatively, inexperienced teachers also tend to value new reform ideas poorly. Some of these teachers often already feel overwhelmed by their daily tasks and their students. Roehrig and his co-authors stated that "[r]esearch has shown that few beginning teachers implement

inquiry-based instruction, and that beginning teachers tend to revert to traditional practices when they face the reality of the classroom" (Roehrig et al., 2007, p. 886). In this case, new teachers fail to adopt the reform because they value their own classroom experiences as students over the claims of the reform.

Another group of teachers that often rejects various reforms are teachers who are no longer satisfied with their jobs, and so are not trustworthy stakeholders. This group of teachers may include those who have already received tenure or who no longer want to be teachers. These teachers reduce the importance they attach to work, and they put more time, effort, and energy into their families, a particular interest, or an alternative, supplementary career (Sikes, 1992). These individuals treat value reforms as their last priority, focusing on other tasks and responsibilities instead.

Teachers who do not value their jobs and therefore minimize reform ideals have a lot in common with the individuals who participate in short-term education programs such as Teach for America (TFA). TFA is a two-year program that encourages recent university graduates to teach in struggling urban districts. They are provided pre-service training. However, after the two-year commitment has been met, there are many teachers who leave the program and education in general, often feeling exhausted, and instead pursue other careers. As a result, there is plenty of opportunity for teachers in these situations to prematurely disconnect themselves from the school environment.

Teachers may also value how the reform fits with their current practices. In conversations with their colleagues, teachers often reject messages from all levels—state, district, school, and individual—because they do not "fit" their individual and shared approaches to education (Coburn, 2001). Researchers Savasci and Berline (2012) conducted a study of science teachers

and found that all teachers indicated that student behavior and student ability were factors that influenced their classroom practice. The process of making an adjustment to their current practice caused a great deal of confusion and frustration for many students. This difficulty with accommodating change especially affected students from diverse backgrounds and students with disabilities. As a result, teachers who value these students and their experiences are less likely to implement a new reform, knowing that their students may be unable to cope with the change.

As indicated by the previous examples, teachers' values are crucial in determining whether or not a teacher will adopt the new reform change. If a teacher is experienced, their willingness to alter current practice may be rather limited because they may value their personal experiences over the claims of the reform. On the other hand, if a teacher is inexperienced, they may value simplifying their responsibilities over the promises of the reform, and the prospect of adding another regulation to their already overwhelming agenda may be discouraging. Those who prefer to teach the bare minimum are also less likely to adjust their plans as they may value their out-of-school experiences more than reform implementation, as well as teachers who are unable to fit the new approach into their current practice or classroom environment. However, this is not an end result for all teachers. Each individual is able to change, but some teachers may value their own methods over new methods for a variety of reasons, including those posited here.

Beliefs

Similar to values, a teacher's beliefs are also significant in determining whether the teacher prioritizes the implementation of a new reform. Values stem from the beliefs and the assumptions one makes about the environment around them. According to Thompson (1984), teachers' beliefs "seemed to be manifestations of unconsciously held views of expressions of verbal commitments to abstract ideas that may be thought of as part of a general ideology of

teaching" (p.112). Teachers' beliefs dictate who they are and how they teach. Teachers develop their beliefs through personal and professional experiences and oftentimes hold beliefs that contradict those of the reformers, causing roadblocks in the implementation process.

Due to the variation of beliefs, teachers often find themselves either reevaluating their views to meet the reform intentions or opposing the reforms. In either case, the future of a reform's success is greatly dependent on the "teachers' ability or inability to modify their fundamental or central beliefs about what it means to teach and to learn" (Smith & Southerland, 2007, p. 398). Teachers are known as the "root of the problem" in failed reforms due to their history of "variously welcome[ing], improve[ing], deflect[ing] coop[ing], modify[ing], and sabotage[ing]" reforms (Smith & Southerland, 2007, p. 399). Whether these actions are done intentionally or unintentionally, a teacher's beliefs in the classroom help ensure or prevent the reform's success.

Teachers often do not realize that their beliefs alter their practice. Even if they understand the given reform and are willing to implement it, they may still subconsciously struggle with their traditional beliefs. Battista (1994) stated that even if teachers understand and are willing to implement the reform, the knowledge and competency of their traditional beliefs may have prevented them from acquiring the new reform.

Novice teachers may desire to implement the reform, but frequently have barriers due to their beliefs. The beliefs of novice teachers echo their values because, as first-year educators, they may experience a confusing and overwhelming start. Simmons and his co-authors note that the beliefs of novice teachers, which were initially aligned toward the student-centered philosophies, move toward more teacher-centered philosophies during the course of their first two years in the classroom (Simmons et al., 1999). Student-centered philosophies are focused

more towards a student's individual needs, social reconstructionism, student preparation, etc. Teacher-centered philosophies are essentialist and perennialist. They embrace the idea of transferring information and knowledge to youth. This philosophical adjustment was attributed to the various pressures placed on teachers; because their aim is to be as efficient in their teaching as possible, this shift made that objective seem reachable. When first entering the classroom, novice teachers' beliefs are often centered on the idea of equal opportunity, and they desire to place attention on each individual student. However, as things become challenging and demands on novice teachers continue to rise, teachers' beliefs may shift to become more aligned with the traditional educational system. Whether the adjustment is beneficial is determined by the success of each individual student. When new policies are leveraged upon these novice teachers, many revert to their teacher-centered philosophies and use their beliefs to assess whether the reform meets their intended instructional goals.

Oftentimes, teachers believe in the reform or parts of it but know their students will not be capable of applying elements of the reform to their daily routine. With good intentions, they adjust their beliefs and the reform material without realizing they are altering the reform's intentions. Kennedy (2006) stated that "teachers frequently mentioned institutional guidelines when they accounted for their practice, [and] they often reinterpreted those guidelines to fit better into the landscape of their own beliefs and values" (p. 230). Adjusting or only applying some of the reform ideals to their instructional practice is not what the reformers intended. Therefore, it is detrimental to the progress of the reform if such actions are taken.

Those opposed to the new reform often hold various beliefs that are converse to those who want to implement the reform, and these beliefs provide support for the teacher's decision to negate the change. In order to justify their current practice, teachers may revert back to

traditional practices of lecturing on the subject matter instead of focusing on how students learn and what motivates them (Kennedy, 2006). Unfortunately, when this shift occurs, teachers' beliefs result in inappropriate curricula and block understanding and acceptance of the reform movement, therefore "precluding the possibility of substantive curriculum change" (Battista, 1994, p. 467). These teachers often do not feel that altering their practice is necessary because they believe they already greatly aid their students and should have the autonomy to control their classroom practice.

Kennedy (2006) affirmed the idea that some teachers hold unproductive and dysfunctional beliefs about how students learn. And although teachers may have good intentions when it comes to altering their beliefs, some are unsuccessful even when they are open to change. Although not ill-intended, many teachers attempt to alter their beliefs to abide by the reform, but unintentionally are unable to comprehend the adjustments necessary to their beliefs. The individuals who elect to reject the reforms due to their personal beliefs and their experiences—or those who desire to change and are unable to—drastically harm the reform efforts.

In order to gain the buy-in of teachers and accommodate their values and beliefs, stakeholders must consider the perspectives and concerns of teachers of all levels and attitudes. Stakeholders must understand the teachers' subject matter before creating a uniform policy. When teachers feel that their values and beliefs are respected and understood, they are more likely to consider adjusting their current practice to meet the reform criteria. One of the greatest problems within reform implementation is the lack of teacher voice. Reformers and other stakeholders often fail to include the implementer in the discussion and fail to consider their

thoughts of what changes are needed in the classroom and what should be altered about their daily practice.

Ability to relate to reform ideas

When implementers are able to relate to the various reform ideas, a sense of belonging and comfort occurs. When this sentiment occurs, teachers often feel they have control over the situation due to their familiarity with the idea. This encourages them to implement the reform idea, and it encourages them to support their colleagues in doing the same. Although it is fair to assume that when a teacher best relates to the reform idea they are more likely to implement it, this does not guarantee they will do so correctly.

There are three categories of teacher when it comes to how they relate to reform. The first group of teachers are those who are able to relate to the reform materials and who encourage their colleagues to implement them correctly. The second group are those who believe they can relate to the material but incorrectly interpret the reform or the reformers' intentions. The final group is composed of teachers who are unable to relate to the reform material and who become disinterested and removed from the reformer's goals and intentions. Each school is typically a blend of all three types of teachers, which causes a great deal of concern for a reform's success.

Within the first group, there are a number of teachers who are able to relate to the reform ideas and feel confident and comfortable implementing them, and these teachers are generally positively contributing to the successful adoption of the reform. They not only believe in the ideas but also encourage their colleagues to do so as well. In an informal setting, they often explain the reform intentions and interpret the material in a simpler form for their colleagues. Teachers have been known to spend their lunch, their time after school, and their break periods mentoring one another to gain a better understanding of the reform expectation. They sometimes

use everyday examples to aid their colleagues in relating to the material. In a more formal setting, these teachers often participate in school-wide professional development events or invite their colleagues to observe their class for constructive feedback.

In 2012, I conducted an observation in a classroom in mid-Michigan for the CCSS. I observed as one teacher watched another teacher teach seventh grade mathematics. The teacher observer diligently took notes and watched how the teacher presented the information and how students related and responded to the information. At the end of the class, the teacher observer asked a series of questions for clarity and was confident in her ability to implement a similar lesson plan. This process was helpful and provided clarity for the struggling teacher observer. While speaking with the teacher observer, she mentioned she'd had a difficult time visualizing how to place the idea into practice but now grasped its intentions. She had seen how her colleague executed the plan and was now able to do so herself.

The second group of teachers is more problematic when it comes to successful implementation of reform ideals and practices. This group is composed of teachers who have good intentions but misinterpret the reform, causing themselves and the colleagues they aid to misrepresent the intended goals. It is far more common for this to occur than one might predict. The reason for this misunderstanding is often that teachers do not fully comprehend what the reform is asking of them and use similarities between what they know of the reforms and their previous knowledge of education to connect the dots. This can be detrimental to the successful implementation of a reform as it can cause great confusion and misinformation for all parties involved.

A personal example of this situation was witnessed in 2011 when I volunteered at an Afrocentric charter school. I observed teachers discussing the Michigan Educational Assessment

Program (MEAP) during their planning period. One teacher stated that the test allowed teachers to pronounce and clarify words the students did not understand because that would better aid their students in answering the question correctly. However, after careful review of the administrators' summary, the direct opposite was true. The directions specifically state that test administers and proctors may NEVER pronounce words in test questions. As I assisted with proctoring the exam, I observed many teachers aiding their students in pronouncing and understanding certain terms. This is a direct result of misinterpretation and false information unintentionally making its way into the school.

Lastly, there are often some teachers who clearly reject the reforms due to their inability to relate to the reform materials, and they are the final group. This rejection may occur due to their lack of understanding or lack of experience. Coburn (2001) stated, "In conversations with their colleagues, teachers rejected messages from the [policy] environment because they believed it doesn't 'fit' [within their lesson plans]" (Coburn, 2001, p. 155). Once a teacher determines that a particular reform does not fit within their daily routine, they are less likely to implement it or discuss it with their peers.

The difficulties in relating to the classroom environment and its demands of the reform are discussed in author Priscilla Eide's text, *Coping With Change: Educational Reform in Literacy Practice* (2001). Eide described her struggle with reform change and relates that she questioned her sense of belonging in the classroom and among her colleagues. Eide described her relationship with a fellow teacher Judy Merchant because they often engaged in dialogue pertaining to lesson planning and teacher practice. Unfortunately, due to a new literacy reform implementation, their relationship began to change: "Since the implementation of SFA, I realize that although this dialogue is still a powerful professional resource, the parameters within which

these conversations take place are more restrictive now; there are limitations on where our limitations and speculations can take us" (Eide, 2001, p. 19). Both teachers had an inability to relate to the topic, and as a result, they had a difficult time aiding each other through the process. This failure to relate discouraged both parties in implementing the reform.

The "one size fits all" approach does not work in the field of education. Each individual teacher has a unique personality with different experiences and thoughts; the same is true for each individual student. Asking all teachers to relate to one reform in the same manner is not reasonable. Therefore, as researchers and policymakers, we must take into consideration our audience and our approach. Yes, the ability to relate to a given reform creates a calmer, more organized environment for teachers, which will lead to a positive environment that facilitates the success of others in the greater teaching community through the transitional period. However, stakeholders must be cognizant of the various adaptations and differences in understanding that will take place. Reformers also must be cognizant of the fact that teachers' objective ability to relate to a reform is distinct from teachers' belief that they have related to the reform material, often this kind of confusion about reform ideals and implementation leads to an endangerment of reform efforts. When an individual is unable to relate to the material, the reform is rarely accepted. Therefore, it is the duty of the reformers and administrators to create a method to implement the reform that teachers find relatable and that they can easily understand.

Achievable versus unachievable

When teachers are deciding to implement a reform, one question they ask themselves is this: Is this idea is within reach for both my practice and my students? What defines an achievable and unachievable task varies by each teacher's ability and the abilities of the students they instruct.

As previously mentioned, there is no "one size fits all" approach to teaching students. Students come from all over the world with different learning abilities. These abilities differ throughout the classroom, with not one student learning the same as the others. Due to such vast learning styles, teachers may fear the reform will not meet their students' academic abilities. Alternatively, they may fear that the reform is not challenging enough. Furthermore, teachers may reject new ideas out of fear of taking on a task they are unable to manage—if they do not know that their students will be successful, they may not try to implement the reform at all.

There are many elements that may cause a reform to appear unachievable: overlook by policymakers, different sets of priorities by teachers, and unattainable expectations. In addition, presentation and content are two significant factors that are taken into consideration when assessing whether a reform is achievable for teachers.

Nature of policymakers and the impact on teachers

Policymakers believe that their reform policies are both significant and effective and should take priority over previous policies. Oftentimes, policymakers place unrealistic goals and expectations upon teachers because they don't understand their other tasks and responsibilities. Additionally, policymakers often overlook the overarching problems that schools and teachers face that need immediate attention. Kennedy described this idea by stating that reforms are unrealistic because they impede practice in a way that suggests they do not address many of the problems facing teachers and students in implementing reform, which in turn prevents teachers and students from finding a way to resolve them (Kennedy, 2006). Policymakers are not always keen on understanding how to resolve the challenges teachers face because they tend to focus solely on what would satisfy their own agenda. For example, Kennedy described the possibility of teaching rigorous and demanding content to all students with the possibility that all students

will become intellectually engaged with this content (Kennedy, 2006). However, she did not think these assumptions can apply to all students, for example, "students whose parents have instilled anti-intellectual attitudes in them, or they may not apply when classrooms contain an exceptional array of students, or they may not apply when there are gang rivalries among students that dominate all interactions and render serious intellectual discourse impossible" (Kennedy, 2006, p. 18). The teachers who instruct these types of students are therefore less inclined to participate in the change, and they do not feel it is necessary to alter their practice to meet reformers' needs due to the unrealistic expectations of the reform and obvious future failure of their students were the reform to be implemented.

Unfortunately, policymakers and teachers differ in their views about which reforms are achievable. This creates a large disconnect in policymakers' expectations. Policymakers do not understand "the nitty-gritty problem of how to organize and manage learning in large groups…reformers tend not to think about the ways in which, in real schools, their ideals may conflict one another" (Kennedy, 2006, p. 18). For example, the idea of universal rigor and knowledge presented by the CCSS often varies by the school's geographical location and socioeconomic status. While observing classrooms in mid-Michigan, the definition of rigor largely varied by district, school, classroom, and student. Rigor was adjusted by a student's capabilities and prior knowledge. As I observed the teacher instructing his students, it was clear that rigor varied per student. The teacher would often ask one student a more difficult question, knowing her capabilities, while simplifying the question for another student.

When teachers think a reform is completely inconceivable, they immediately reject it. What teachers felt that what they perceived as unachievable were goals "so far out of the bounds of what they saw as appropriate that they were not even worth considering" (Coburn, 2001, p.

154). There is no doubt that the last major education reform, No Child Left Behind (NCLB), lacked potential to survive through the implementation process due to its rather complex message and unattainable goals. NCLB presented an extremely overwhelming message for teachers. Due to the length, expectations, and timeframe, educators, and even some policymakers questioned the feasibility and fairness of the goals (Hess & Finn, 2004). Not only was the message difficult to understand for teachers, but six years later, during the summer of 2013, politicians sat down to deconstruct the policy and make changes at the NCLB markup. There an attempt was made to simplify certain demands and remove unnecessary content.

If teachers are being demanded to implement a reform, it is imperative that those who are issuing the demands comprehend the expectations and ensure that the reform is presented in a simplified, achievable manner. If material is unachievable, or if expectations are too high, teachers immediately resist the change. Additionally, content and presentation must be altered to cater to a teacher's instructional needs, and they must understand what their students can achieve.

Motivation

Motivation is a psychological action that occurs when an individual is driven to reach a goal. Based on one's goal, motivation can occur through various methods. In the realm of education, teachers are in dire need of motivation to implement a given reform because non-motivating factors play a more attractive and convincing role (Burkhardt et al, 1990). Teachers' personal levels of motivation and their personal reaction to motivation is a factor that impact the successful implementation of the reform.

There are several motivating and non-motivating factors for teachers. For example, a motivating factor of reform is positive reinforcement. Non-motivating factors are usually

perceived ideas, reforms, or goals that are difficult to attain and that receive very little incentive. Burkhardt and his co-authors stated that "people need some motivation for embarking on innovative activities; this is well worth spelling out to all participants in advance of the introduction of innovation" (Burkhardt et al., 1990, p. 10).

There are several factors that have the potential to motivate teachers. Although the list of motivating factors can be rather exhaustive, for this discussion I have selected the two factors that I find to be the most significant and which are often discussed. The first motivating factor is reforms that permit teacher to have the flexibility to implement the reform correctly but also do not jeopardize the teacher's own creativity in the classroom. The second factor: reforms that create innovative and exciting ideas that attract a teacher's interest. The first method for motivating teachers is by providing room for flexibility in their practices. For instance, many new reforms have limited teachers to a scripted curriculum. A scripted curriculum is used to guide and encourage teachers to stay on task in primary and secondary classrooms. For example, "teachers are often provided workbooks that contain daily objectives, lessons, and scripts by which they are expected to abide" (Eisenbach, 2012, p. 154). Due to the robotic fashion of the instruction, teachers become discouraged and unmotivated to teach. The lack of flexibility within such a reform presents a negative message to teachers and implies that their method of instruction is flawed. Further, "[i]t suggests that today's teachers are not intelligent enough to generate lessons and activities that promote student engagement or stimulate intellectual growth and maturation" (Eisenbach, 2012, p. 154). Policymakers justify this type of curriculum by stating that it improves standardized test scores while encouraging common classroom objectives. However, "many teachers perceive such mandates as a slap in their face" (Eisenbach, 2012, p. 154). Affording teachers the flexibility of creating their own lesson plans and resources

motivates them to participate in their practice and implement the reform for their students in their own personal ways. The second method of motivation is to encourage innovative and exciting activities and ideas. When a teacher is approached with a new, innovative, and exciting idea, they are more likely to feel like they are a part of the overall environment of change.

Unfortunately, non-motivating factors are more likely to sway teachers to ignore a reform. Again, the list of non-motivating factors is rather lengthy, and I have therefore only included the two more significant and relevant. The first non-motivating factor is a teacher's loss of positive self-image, and the second is a teacher's feelings of failure and anxiety.

One of the strongest non-motivators for teachers is the idea of losing their positive self-image. Most teachers take their time in the classroom very seriously and derive a lot of meaning from their work in the classroom, and reforms can influence this image as demonstrated by the following: "Typically, people want to believe that they have performed well in the past and are hesitant to believe that their efforts have failed particularly regarding practices central to their self-concept or self-schema" (Spillane, et al., 2002, p. 402). Teachers spend a great deal of time focused on the best method to instruct their students. Lambdin and Preston (1995) stated that "a teacher's self-perception may come from his or her professional activity, [and] changing teaching practice is a highly personal process. Teacher change often involves admitting that their prior practice was problematic" (p. 131). Teachers may then react in a rather defensive manner, which negatively impacts their ability to implement the reform.

The second non-motivator for teachers is the anxiety of failure. Teachers who care greatly about their students' overall understanding and achievement may become anxious and panicked over the change. They feel that too much is at stake if they fail, as demonstrated here: "Most of these emotions came up when teachers feared that they might lose students' full

attention or lose control of the classroom, and when they articulated their strong need to avoid these outcomes" (Kennedy, 2006, p. 42). Because of this fear of failure, many teachers would prefer not to implement the reform and continue with the curriculum they have used in the past. Especially in the current educational climate, where teacher evaluation is based on test results, risk-taking in order to implement a new reform may be especially problematic as students' success or failure may hinge on the teacher's ability to implement a new reform with little support in a short amount of time.

To best aid the implementation of a reform, reformers must focus on encouraging what motivates teachers and eliminating non-motivational factors. More often than not, reformers present ideas that work as non-motivators, and therefore they are less likely to receive support from implementers. Additionally, reformers must work with teachers to support them through this process, as it may increase their likelihood of following through with the idea—encouraging them and pushing them forward through the process. It is imperative that reformers work hard to motivate teachers by giving them the freedom to be flexible, to be creative, and to take risks.

Support and Resources

Throughout the last three sections, I have discussed the roles of stakeholders in reform change and illuminated how teachers understand and respond to this change. This next section will explore how best to support teachers, because support is not only critical in aiding teachers to have a better understanding of reform but because the information provided also alters how they respond to a new reform. The support of teachers can be accomplished through various methods. Here I have included a small selection of three types of supporting mechanisms: (a) providing teachers with the knowledge necessary to carry out the reform, (b) providing the tools necessary through professional development, and (c) encouraging teachers to participate in

curriculum development. I have selected these three categories, as opposed to others, due to the frequency that other researchers have discussed them and their significance.

Knowledge

Knowledge is a key ingredient in any successful reform. Knowledge dictates how a teacher understands the material, and in turn how they implement the reform. Kennedy posits that "[t]eachers need more knowledge and guidance in order to alter their practices: missing knowledge having to do with content, student learning, pedagogy, or most common, the lack of subject matter knowledge" may negatively impact a teacher's practice. Whether a teacher is able to teach consistently with the reform's ideals in place is based on their knowledge of the subject matter and reform material. Battista (1994) used mathematics as an example to explain this concept when he stated, "Because its instructional goals are cognitive rather than behavioral and because it seeks to mold students' own personal mathematical ideas, teaching that is consistent with the reform movement requires an extensive knowledge of how students learn mathematics" (Battista, 1994, p. 467). Further, increased content knowledge also aides in increasing a teacher's comfort level in implementing the lesson and reform ideas (Stickles, 2011).

Reformers can best aid teachers with gaining knowledge through proper preparation of reform material. Kennedy (2006) believes that "policymakers could enhance teaching a great deal by seeking more supporting evidence about the value of knowledge vendors' programs before adopting them" (Kennedy, 2006, p. 228). This creation of knowledge can be achieved through pre-service instruction or in-service instruction. Stickles (2011) used an in-service example by citing specific workshops that "include activities designed to increase content knowledge in addition to making connections to the *Standards* and the reform vision of mathematics education" (Stickles, 2011, p. 45). In these workshops, teachers were provided step-

by-step reform instructions and were asked to create learning logs. Learning logs are journals that teachers use to record what they will be teaching and how the students react to the material. After logging what they taught and students learned, teachers stated, "I found out at the IMI workshop I had been teaching the lesson wrong" (Stickles, 2011, p. 45). Stickles concluded, "[A]s with content knowledge, increased pedagogical content knowledge may increase the teachers' comfort level in implementing the lessons and teaching their students" (Stickles, 2011, p. 45). The purpose of these workshops is to provide teachers with a supporting resource that better instructs their practice. This can aid in avoiding content knowledge confusion and misinterpretation of reform ideals.

A teacher's comprehension of the reform and ability to implement correctly a given reform is a result of the teacher having proper knowledge. It is the responsibility of reformers and administrators to provide teachers with pre-service and in-service reform training. Without such support, teachers are less likely to aid and implement reform efforts.

Professional development

An additional resource for teachers to gain knowledge is through professional development training. Professional development (PD) is one of the key resources for a teacher's success. Professional Development provides an opportunity to present teachers with additional skills usually attained during one's employment to strengthen one's knowledge, as demonstrated by the following: "High quality professional development is essential to increase educators' knowledge, skills, attitude[,] and belief so that they may enable all students to learn at high levels" (State of Vermont Department of Education). Although PD can be focused on a variety of skills and educational topics, it is a resource that many states, districts, and schools use to better

aid their teachers through the reform implementation process. PD resources can be presented through such methods as instructional webinars, websites, workshops, and mentorships.

Although there are various approaches to PD, one such strategy is demonstrated through the Japanese practice of lesson study (Viadero, 2004). In this practice, teachers create a model lesson and teach it while videotaping the lesson. The lesson is then observed by other teachers, who analyze the strengths and weaknesses of the taped instruction (Viadero, 2004). This allows teachers to see how a model lesson should look and gives them the opportunity to provide positive feedback and constructive criticism.

Education Week discussed a three-part study of professional development by the Stanford Center for Opportunity Policy in Education in partnership with the National Staff Development Council. The three-part study in 2009 and 2010 utilized a mixed methods approach of using both teacher surveys and data from three administrators of federal schools and staffing. The study found that "United States teachers generally spent more time instructing students and less time in professional learning opportunities with their peers than those in top-performing countries" (Professional Development, Education Week, August 4th, 2004). Another opportunity for professional development is through the mentor/mentee relationship. In 2008, the study indicates that 78% "of beginning teachers reported having had a mentor, though not always in the teacher's content area" (Professional Development, *Education Week,* August 4th, 2004). This finding indicates that there are many teachers who do not have mentors at all, and many teachers who do have a mentor may not have one in their same subject area. Not having a mentor in the same subject area is a great concern because the same subject mentors would be more beneficial to beginning teachers due to their commonality in content and instruction. The study also found that "[t]he intensity of other types of professional development decreased between 2004 and

2008. Training of at least nine to 16 hours on the use of computers for instruction, reading instruction, and student discipline all declined notably" (Professional Development, Education Week, June 29, 2011). This is problematic because without PD, the opportunities to support a teacher in the implementation of reforms is limited, and this study indicates that there are less opportunities now than ever to integrate PD into the working schedule of teachers in the US. In order to aid in the PD of teachers, schools found they needed to change their traditional routines. For instance, "In order to provide enough time for teachers to work together effectively, such models frequently require schools to overhaul their schedules or arrange for a delayed-start time" (Sawchuck, Nov. 2010b; Sawchuck, 2010). Unfortunately, because of the logistics, many districts or schools do not encourage their teachers to participate in PD programs or they lack the resources to provide their teachers with PD tools. However, some states are getting creative in order to address the problem. During an interview with a director of instruction in a southern state, information was revealed that the southern state did not have the financial means to support professional development tools for their teachers. As a result, the state paired up with a neighboring state in order to utilize the neighboring state's resources in order to provide teachers with PD opportunities.

Teachers' participation in curriculum development

The beginning stages of a reform are crucial to the success of the reform. Encouraging all stakeholders to participate and believe in the reform is often one of the most difficult tasks for reformers. Teachers are the key implementers in reform movements' and therefore their buy-in is the most important. Research has found that teachers who participate in constructing the reform are most inclined to implement the reform ideals correctly and readily.

Saban (1995) believes that teachers who participate in curriculum development recognize the connection between the two important systems in educational structure, curriculum, and teaching. One method by which this can be obtained is through feedback mechanisms provided by teachers. Teachers are the implementers of reform and therefore better understand what role the curriculum plays within their classroom. Teachers are better suited to construct a reform in a manner that encourages other teachers to implement the reform. Additionally, most educators agree that including teachers in the curriculum development process leads to at least four positive outcomes: (a) curriculum excellence, (b) staff development, (c) professional growth of teachers, and (d) school improvement (Saban, 1995).

First, teacher inclusion in curriculum development may lead to curriculum excellence, which allows teachers to understand what works and what does not work in a real classroom. They are able critically to analyze their students' demographics and their past experiences to determine what may aid their students. Young (1985) believes that a teacher's practical knowledge allows them to assess both the workability of curriculum materials developed previously and whether the ideas being asserted will work in a classroom teacher situation (Killion, 1993).

Second, staff development is beneficial to both teachers and the overall success of the reform. Staff development is different from professional development in that teachers are aiding in the reform development rather than being trained to implement the reform. Killion (1993) believes that when teachers are involved in the reform development, they also engage in an important form of staff development. The author cited the example of the Virginian Plan, which was a statewide curriculum revision program involving teachers, students, and administrators to aid students in public schools. According to Burlbaw (1991), this curriculum revision process

helped teachers to understand how to provide better learning experiences for their students, and as a result, it aided teachers in their practice. Although its initial goal was to improve the curriculum, it was also equally effective in developing teachers.

Third, teachers who participate in curriculum development programs also tend to have professional growth as a result of their experiences. According to Young (1988), the opportunity to participate in these types of programs aids teachers to meet their ever-changing demands of teaching by being introduced to new instructional ideas, materials, and strategies (Killion, 1993). Participating in curriculum development allows them to increase their self-understanding, and content knowledge and encourages them to think and act beyond the classroom context (Killion, 1993). In addition, teachers are better able to develop a critical understanding of the mission and educational goals of the school and to broaden their knowledge of the subject area as well as assessment procedures of student progress (Saban, 1995).

Lastly, school improvement is often seen as a result of teachers' participation in the development of curriculum. Saban (1995) believes that the opportunity for teachers to participate in curriculum committees helps them develop collaborative working relations with other instructional professionals in the school. Community building should be the cornerstone of any school improvement effort because it binds school members to shared ideas about school, teaching, and student learning and provides a sense of identity and belonging (Sergiovanni, 1994). In order to redesign the school movement, a cooperative effort is necessary by all stakeholders.

Theoretical Framework

To make sense of the issues surrounding this research, I draw on Coburn's sensemaking theory (2001) as my theoretical framework. Coburn stated that "some researchers have

suggested that rather than policy influencing teachers' practice, it is more likely that teachers shape policy" (p. 145). This viewpoint further substantiates the idea that teachers interpret, adapt, and even transform policies as they are put into place (2001). Teachers, like people in general, construct and reconstruct multiple policy messages through collective sensemaking, which means that understanding is co-constructed through the teacher's choice of which messages to pursue and by negotiating the technical and practical details of implementation. It is the nature and structure of formal networks and informal alliances among teachers that shape the process of implementing the reform, and this personal interaction has implications for the ways that messages from the policy environment influence classroom practice. Coburn also highlighted the concept of cognitive dissonance that occurs in the sensemaking process, which occurs specifically when expectations do not meet reality and cause discomfort among the actors. This cognitive dissonance occurs because information is placed into preexisting cognitive frameworks that are not the same frameworks as those employed by the policy creators, especially because many policymakers are arguing from contradictory perspectives. As a result, this structure fails to provide teachers with a sound understanding of the expectations placed upon them.

However, even a failed structure contributes to what Ingersoll (2003) referred to as empowerment, which is a method to assess empowerment and perceptions of control among teachers. If sensemaking produces a negative understanding among teachers, for example, then it is possible that the administration has not managed to gain teacher commitment on a particular policy. This could be gravely dangerous for the success of a reform.

The literature on the topic of how teachers prioritize reform stems first from understanding and obtaining knowledge about the new policies and mandates placed upon them.

It is then followed by the six categories that aid teachers in processing the information, which is discussed in the literature review section of this study.

Final Remarks

In order to support teachers in implementing a new reform, three mechanisms are necessary: (a) providing teachers with the knowledge necessary to understand the reform, (b) providing the tools necessary to implement the reform in the classroom through professional development, and (c) encouraging teachers to participate in curriculum development to create ownership of the resultant reforms. Although not an exhaustive list, these tools will greatly aid in encouraging teachers to effectively implement a reform. When a teacher does not have the knowledge necessary to implement a reform, he or she may do so incorrectly or may ignore the reform ideals altogether. Professional development tools will aid teachers in receiving the necessary information and mentorship they desperately need. If a teacher is involved in the curriculum development processes, his or her engagement in the effort may drastically increase, resulting in positive outcomes for students, teachers, and schools.

Chapter III: Research Methodology

This study applied a mixed methods approach, consisting of both qualitative and quantitative methods, to its investigation. There are many advantages to using both a qualitative and quantitative approach to research. Onwuegbuzie and Johnson argued that, "[o]ne of the exciting results of [mixed methods] research is that in a single study practical questions can be addressed, [from] different perspectives" (Onwuegbuzie & Johnson, 2006, p. 46). A mixed methods approach allows for greater variety in securing one's results. This is because the study is not only seen through one research method, but also is further secured through another approach.

Phase I responded to the first research question: How do teachers prioritize education reform? The first phase used a descriptive, qualitative case study approach. The research includes a series of teacher interviews (see interview questions in Appendix A). I used open-ended questions that allowed for free-flowing conversations. This allowed the respondents to express themselves without being limited to one or two words. This type of conversation allowed for the development of trust, and in essence garnered a more thoughtful and detailed response.

Phase II responds to the second research question: How do teachers prioritize reform related to the CCSS in mathematics? This phase used a quantitative survey study (see survey questions in Appendix B). In addition, the teachers interviewed in Phase I were also included in the survey. I used both open- and close-ended questions in the survey. I predominantly used a close-ended questioning approach, as it proved beneficial to both my respondents and the nature of the study. The respondents were less likely to participate if all questions were open-ended. The limitations to what types (open-ended/close-ended) questions I could pose was given by a small sample of teachers whom I had previously spoken with. However, at times, when necessary, open-ended questions were posed to further elicit the respondents' thoughts.

The diagram below depict both phases:

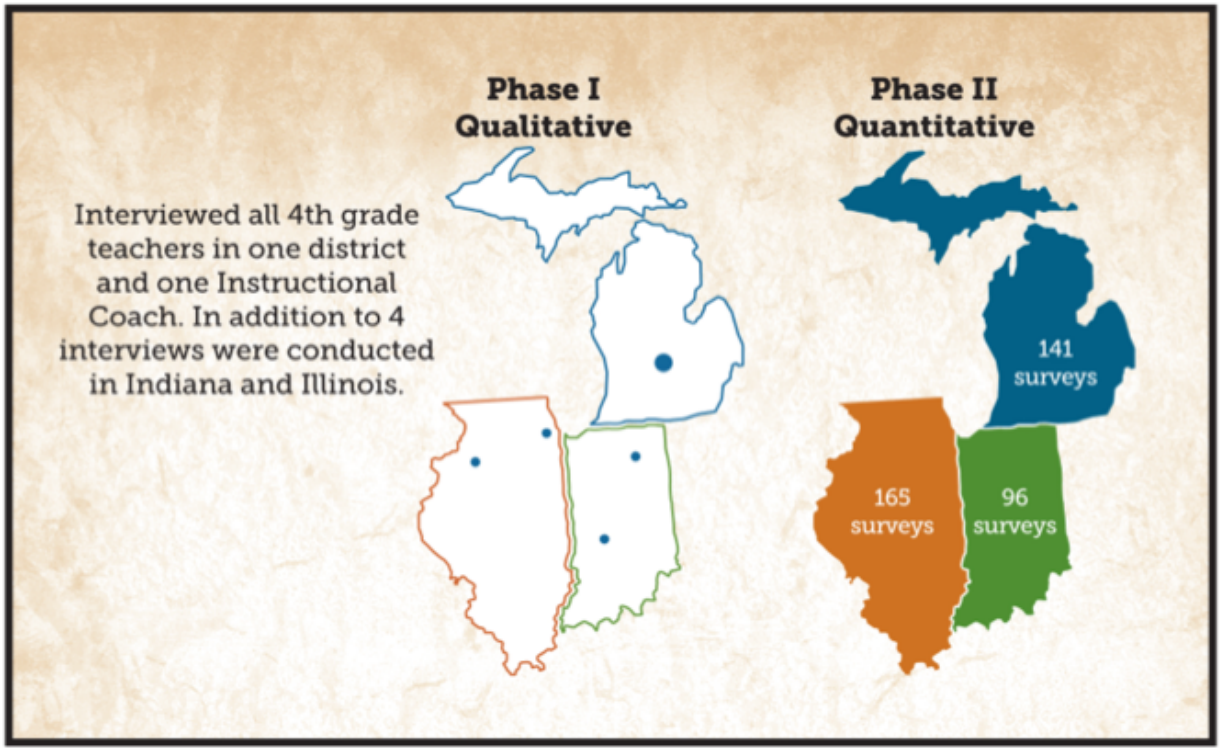

Figure 1: Phase I and Phase II Descriptions

Phase I

According to Hesse-Biber, "A qualitative approach to research aims to understand how individuals make meaning of their social world" (2010, p. 455). This phase of my research consisted of a series of teacher interviews. This study used purposeful selection sampling, which is also often referred to as purpose sampling (Maxwell, 2012, p. 97), explained as, "Individuals were selected deliberately to provide information that is particularly relevant to [the] questions and goals" (2012, p. 97).

In order best to understand how teachers prioritize reform, a case study approach was used. I considered the perspectives of the teachers, and then I conducted a cross-case analysis, comparing similarities and differences among the teachers. I used a descriptive research design

that involved a one-time interaction with my subjects. This involved gathering data that described events, and then having the data organized, tabulated, depicted, and described in the data analysis (Glass & Hopkins, 1984).

The descriptive case study approach requires a theory to guide the collection of data (Yin, 2003); the theory is adopted from the literature pertaining to the topic. This literature played a significant role in identifying six categories that guided my analysis of the data on how teachers determined whether or not to prioritize a reform. These categories were: (a) how a teacher values a reform, (b) whether the reform aligns with their beliefs, (c) whether they are able to relate to the reform ideas, (d) whether they see the reform as an achievable goal, (e) whether the motivating factors outweigh the non-motivating factors, and (f) whether they receive the support necessary from the various stakeholders. Dr. Hugh Burkhardt et al. (1990) insisted that the values and attitudes of all groups concerned with the innovation will affect the likelihood of the innovation's success. Therefore, I compared and contrast my results with the existing results of the literature.

Interviews

Prior to conducting the main study, I conducted a pilot study with ten fourth grade teachers from outside the Midwest who volunteered to participate in an interview about how they prioritize reform. The participants were from North Carolina. A state that is comparable to that of my original study. The districts selected provided equal implementation of the CCSS and other mathematics policies in comparison to that of the primary participant group. The reactions and responses I received from the pilot group allowed me to determine whether or not the questions were clear, concise, and met the overall needs of my research. Fortunately, no major adjustments were necessary.

My original proposal aimed to interview fourth grade teachers in three out of four public elementary schools in one district in Michigan. The reason I originally targeted this group was that I did not think I could obtain participation from all fourth grade teachers in this district. However, I successfully interviewed all fourth grade teachers in all four public elementary schools in that district. Increasing the number of participants and targeting the entire group of fourth grade teachers in that district promoted a more complete vision of the participants' activities and opinions. Further, it increased the accuracy of my findings. Additional interviews were conducted with same grade level teachers in Illinois and Indiana. The reason for this addition was once again to include a wider range of participants and increase the fidelity of the data. A final interview was conducted during the coding portion of my research. During this time, I perceived it to be necessary to interview an individual who not only had teaching experience, but was also able to provide a summative stance on the issues developed through the interviews, which will be discussed in Chapter Four. This individual held the position of the only Instructional Coach in the district, whose task was to work to strengthen teachers' instructional practices whether that be through professional development, material resources, or additional instructional support as needed. The Instructional Coach in this district served as a liaison between the administrative staff and the teachers. They did not hold the burden of evaluating teachers, and therefore garnered great trust among the various stakeholders. I selected this individual due to the lens through which they viewed the classroom, school, district, and state demands. With their less-biased stance, they were able to speak candidly about what really occurred behind closed doors.

Teacher interviews were conducted in April and May of 2013. The Instructional Coach interview was conducted in November of 2013. Prior to the teacher interviews, I emailed and

asked for their participation in the study. I offered them an incentive of a $50 Amazon gift card. The e-mail merely stated that the interview was for dissertation research and pertained to education policy change. No other information was released, in order to avoid having teachers preparing their responses ahead of time; as a researcher I did not want the teachers to discuss the topic amongst each other, swaying their opinions prior to the interview. The questions posed to participants all remained the same in order to maintain the integrity and accuracy of the research results. All interviews were held in empty classrooms in their school before, during, and after school hours. The Instructional Coach's interview was also held in an empty classroom, selected by the coach themselves. No other individuals were present in either set of interviews. Due to the anonymity clause, teachers were more inclined freely to discuss sensitive topics. I took several steps to guarantee my subjects' confidentiality. All interviews were coded by color (school code) and number (teacher name). I used pseudonyms to protect the identity of the participants, district, teachers, and schools. All interviews were tape recoded, and notes were taken during the discussion. All tape recordings and notes were secured on a password-protected computer. Interviews ranged from 30 to 75 minutes in length, based on the flow of conversation. Each participant answered all questions.

Open-ended questions were used for the interview segment of this research. This approach allowed me to gather concise data to inform my study. I collected data on teacher demographics, personal history, mathematics instructional practice, and key questions pertaining to implementing the mathematics of the CCSS.

Qualitative Data Analysis

After the interviews were transcribed, transcripts were openly coded to allow themes to emerge from the data and become aggregated into common domains (Emerson et al.,1995; Miles

and Huberman, 1994; Spradley, 1979). This allowed me to understand certain trends, similarities, and differences in my results. Concepts derived from the literature guided my initial inquiry, but during the course of my analysis these themes began to categorize themselves into a different trend. This trend will be further discussed in the section that includes research findings.

Phase II

According to researcher William Hopkins (2000), a quantitative research design aims to "to determine the relationship between one thing (an independent variable or a covariate) and another (a dependent or outcome variable) in a population." This study used an exploratory data analysis (including frequency and percentage analysis, descriptive statistics, and statistical graphics) method to respond to the second research question: How do teachers prioritize reform related to the CCSS in mathematics?

In order to answer this question, I created an instrument that surveyed the perceptions of teachers on the CCSS and their implementation of the CCSS. To maximize accuracy and improve efficiency for the study, 1,000 teachers were invited to participate in Indiana, Illinois, and Michigan, anticipating a survey response rate about 20% (200 teachers). I received an overall response rate of a little over 40% (402 teachers). This is considered a large enough sample to detect statistical significance for my research question (assuming the significance level of 0.05 in the study and the effect size of the CCSS to be moderate between demographic groups in population models).

The reason I selected these particular Midwestern states was due to their ranking on the National Center of Education Statistics (NAEP) 2011 scores. The state of Indiana indicated a higher average scale score than the national mathematics results. The state of Illinois indicated a similar average scale score than the national mathematics results, while the state of Michigan

indicated a lower average scale score than the national average. In this study, the survey responses collected from these selected states could be viewed as a general opinion on the CCSS implementation in the Midwest states having either a higher or a lower average NAEP math score to that of the national average score (that is, the generalizability of the study samples and results is not limited to a population with either lower or higher performance on the NAEP math).

The survey instrument collected demographic data pertaining to a teacher's professional work history (such as teaching experience, grade level taught, and school district location). Further, it specifically posed questions pertaining to mathematics policies (such as "Have you heard of the Common Core State Standards? "Do you implement the standards in your daily practice for mathematics?") and reform change (such as "Have you altered your methods of practice since the adoption of the CCSS?" "Are there adequate resources for you to fully implement the CCSS?" "Do you receive support from others through the implementation process?") All the surveys were conducted over a three-month period, between April, 2013, and July, 2013.

Prior to the distribution of the survey, a pilot study was conducted with a dozen teachers outside of the pre-selected states. These questions were previously approved and validated by members of my dissertation committee. This provided me with a guideline that illustrated how teachers would interpret the questions and experience with filtering any misconceptions that could arise. Based on the results of the pilot study, some changes were made to the original questions in order to enhance the validity and reliability of the survey questions. The main concerns were in regards to detail and ensuring each question was clear and concise. The survey

questions were validated through this pilot study so that the quality of the survey data could be assured and the focus of the research question would not be too broad and weaken the study.

Research studies show that incentives and rewards can increase a respondent's motivation to respond and complete a survey, which more likely produced a larger response rates and provided better quality of data. Using such a survey strategy to improve response outcomes, the results of obtaining information from potential respondents were promising, and the online survey response rate was considered exceptionally successful. Because of incentives and rewards, teachers were eager to log on and participate in the survey (via The Qualtrics online survey platform) during their spare time or any time of the day (according to the records and logs of responded survey data) within 24 hours. If their survey responses were qualified as valid data (that is, no missing data across all questions and no multiple responses per individual participant), then they would receive an Amazon gift card that not only thanked them for their participation, but also encouraged others in their social networks to participate. The online survey is one of the most cost-effective tools for this type of research design, due to its convenience and flexibility for data collection (e.g., survey skip-logic user), and its effectiveness for further data analyses (e.g., importing survey data from Qualtrics to SPSS). Further, "[b]ecause internet usage continues to grow exponentially, and remains especially popular…web-based surveys provide a time-and cost-saving option for data collection" (Sax, Gilmartin, and Bryant, p. 410).

The fourteen questions posed were a combination of close-ended (i.e., dichotomous yes/no options) and open-ended (i.e., text input comments) questions. According to Pew Research, "[C]lose-ended questions, are a type of survey items that the interviewee is asked to respond from a list of answer choices" (2013). Unfortunately, close-ended responses can be influenced by "how each option is described, the number of response options offered and the

order in which options are read" (Pew Research, 2013). Therefore, it is important to have open-ended questions as well. I appreciated the use of both question-type options for this study. It is imperative that the survey questions include and provide a follow-up aspect of text answers, which close-ended questions often do not provide.

After the survey responses were collected via the web-based facility on Qualtrics, the data was cleansed through statistical software (Excel and SPSS).

In order to respond to the research question regarding how teachers prioritize reform, using the CCSS an example, the survey questions were divided into three parts. Part I analyzed how teachers prioritize reform as a whole without the consideration of one specific reform, Part II used specific CCSS questions through three demographic variables of location, level of experience, and grade level of instruction to determine trends of implementation. Part III used both Part I and Part II's data to answer the research question of whether there is a relationship among how teachers prioritize reform as a whole in comparison with today's education reform of the CCSS.

The research and analytic questions of interest in Phase II:

Part I. Research Question One: How do teachers prioritize reform?

Teachers were asked, in what order do you prioritize the following when implementing reform? (1 being most important 7 being least important)

(a) Do they value the reform?

(b) Do they believe in the reform?

(c) Do they see motivating factors in implementing the reform?

(d) Do they easily understand the reform?

(e) Do they see the reform as achievable?

(f) Do they relate to the reform intentions?

(g) Do they receive support for implementing the reform?

Part II. Specific CCSS Questions and Teacher Demographics

1. Analytical Questions For State Comparisons

(a) Does the number of respondents in each of the grades vary per state?

(b) Do the responses change based on district location?

(c) How does each state's response pertaining to adequate resources vary?

(d) How does each state's response pertaining to support vary?

(e) Does each state have a different response to whether they believe the CCSS would remain?

2. Analytical Questions For Comparing Novice Teachers and Experienced Teachers

Novice Teachers' Perspectives:

(a) How do novice teachers (1-6 years) respond to whether they believe they have adequate resources to implement the CCSS fully?

(b) Do novice teachers receive additional support? If so, by whom?

(c) Do novice teachers fear the CCSS will be replaced by a new policy?

Experienced Teachers' Perspectives:

(d) How do experienced teachers (12 to 16 years and 17+ years) respond to whether they implement the standards in their daily practice form?

(e) How do experienced teachers (12 to 16 years and 17+ years) respond to whether they have altered their method of practice?

(f) How do experienced teachers (12 to 16 years and 17+ years) respond to whether they have adequate resources to fully implement the CCSS?

(g) How do experienced teachers (12 to 16 years and 17+ years) respond to whether they receive support?

(h) How do experienced teachers (12 to 16 years and 17+ years) respond to whether it meets their student's abilities?

(i) How do experienced teachers (12 to 16 years and 17+ years) respond to whether the CCSS will be replaced?

3. Analytical Questions For Comparing Grade Level

(a) Do the key questions for the CCSS adjust by grade level K-2 and 3-5?

Q1. Have you heard of the Common Core State Standards (CCSS)?

Q2. Do you implement the standards in your daily practice of mathematics?

Q3. Have you altered your methods of practice since the adoption of the CCSS?

Q4. Are there adequate resources for you to fully implement the CCSS?

Q5. Do you receive support from others through the implementation process?

Q6. Does the CCSS meet your students' academic abilities?

Q7. Do you think the CCSS will be replaced by a new policy in the near future?

Q8. Do K-2 grade levels have a different response to 3rd-5th grade as to whether they believe the CCSS would remain?

Part III. Research Question Two: How do Teachers Prioritize Reform Using the CCSS as an Example of a current reform?

Q1. Do you implement the standards in your daily practice of mathematics?

Q2. Have you altered your methods of practice since the adoption of the CCSS?

Q3. Does the CCSS meet your students' academic abilities?

Q4. Do you think the CCSS will be replaced by a new policy in the near future?

Part I: Principal Component Analysis

I conducted a full principal component analysis to understand what relationships the seven categories had with one another and whether the hypothesized relationships holds with the actual data. The analysis of the data (which will be further discussed in Chapter V) confirmed the structure of producing three indices, with a possible fourth (motivation) correlation between the following questions (In what order do you prioritize the following when implementing a reform?):

Index of Mental Support:

1. Do I value the reform?
2. Do I believe in the reform?

Index of Achievability

1. Is the reform easily understood?
2. Is the reform achievable?
3. Do I receive support to implement the reform?

Index of Relatability

1. Can I relate to the reform intentions?

Index of Motivation

1. Do you see motivating factors in implementing the reform?

Based on the theoretical structure (i.e., four indices in my model), the model was composed of two main principal components (mental support and achievability) in addition to two categories. These were used to represent the other two indices (reliability and motivation). The indices of relatability and motivation contained a single category (a question about motivation was used for the index of motivation and a question about reform intention was used to represent

the index of relatability). Thus, they did not have a component matrix or a percentage variance. Principal components analysis are conducted to create two components and as such, the indices of relatability and motivation were built using a simple component structure, which was a component built by a single category, and which directly related to the hypothesized principal component.

Part II: Hypothesized Relationship 1

I also conducted the exploratory data analysis (frequency and percentage) to study and recognize patterns of observed survey responses across collapsed groups of teacher characteristics, and I ran a confirmatory statistical analysis via General Linear Model (GLM, which includes both Regression and ANOVA models) to determine if any meaningful and important relationships in terms of quantitative and statistical perspectives existed among the CCSS-related variables. The purpose of the multivariate (mostly in multivariate/bivariate statistics and correlation analysis) exploratory data analysis "is to learn more about the relationship between one or several independent or predictor variables and a dependent or criterion outcome variable" (StatSoft Electronic Statistic Textbook, 2013). The reason I selected a GLM over a t-test was due to a matter of complexity. A GLM provides a broader perspective on the data. I used the statistical tool SPSS to execute model estimations and equate my results according to the hypothetical models (see Figure 2).

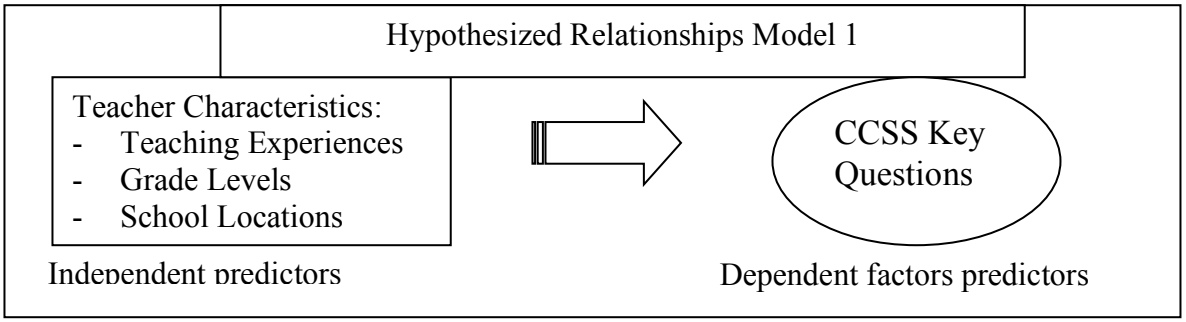

Figure 2: Hypothesized Relationship Model 1

In Figure 2, the hypothesized models demonstrate a simple path structure of statistical modeling for the study of Phase II. The theoretical path models illustrate that the observed CCSS-related variables are used to examine whether the CCSS factors attributable to some impacts on the CCSS implementation have any relationships with teacher demographics. It is important to consider whether teachers' demographics alter how they view the CCSS.

Part III: Hypothesized Relationship 2

In Figure 3, the models demonstrate a simple path structure of statistical modeling for the study of Phase II. The theoretical path models illustrate that the observed CCSS-related responses questions 6, 7, 12, and 14 were used to examine whether the CCSS factors attributable to some impacts on the CCSS implementation had any relationships to the seven categories presented in question 13 and in the literature and the qualitative portion of this study. The survey items can be found in Appendix B.

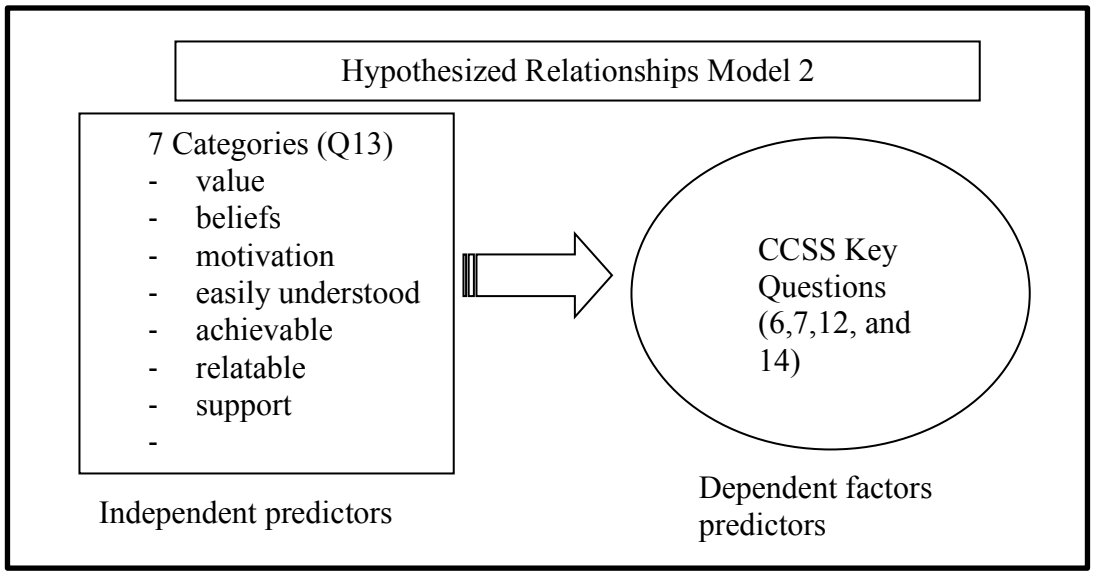

Figure 3: Hypothesized Relationship Model 2

Quantitative Data Analysis

For all three parts of this quantitative portion of this study, descriptive statistics were used to summarize sample characteristics from the questionnaire.

Part I—Research Question One: How do teachers prioritize reform?

In response to the overall research question regarding how teachers prioritize reform I used descriptive statistics (mean score and standard deviation) to determine the score in each category. First I computed for the survey questions related to the teachers' perceptions regarding the implementation of the CCSS. Teachers were asked specifically how they prioritize the seven categories found in the literature. The survey items can be found in Appendix B. Each given term was designed as a 7-point Likert-type rating scale for the priority levels of the CCSS implementation related issues (where 1 was rated as being the most important, and 7 as being the least important). An overall score was calculated to summarize all the information across the seven survey items, where all seven items were reverse coded before averaging the item scores. To compare the differences of the overall scores among demographic groups, GLM (specifically, multiple regression models) were conducted where the dependent variable was the overall score across the seven items and the independent variables were the teacher characteristics.

Part II—Specific CCSS questions and teacher demographics

In response to the research questions in Part II (Analytical Questions For State Comparisons; Analytical Questions For Comparing Novice Teachers and Experienced Teachers; Analytical Questions For Comparing Grade Level), I also first used descriptive statistics (frequencies and percentages) and then employed the GLMs in order to describe teacher demographics and to explore significant patterns of the sampled teachers.

The demographic variables which define teacher characteristics included the following variables: (a) state (including IN, IL, and MI); (b) teaching experience (including 1 year, 2-6 years, 7-11 years, 12-16 years, 17+ years); (c) case study of one district in one state; and (d) grade level (including K-5).

To measure the scale of the second research question for the study (i.e., how do teachers prioritize reform related to the CCSS in mathematics), the CCSS-related variables in the survey questions were used with the following variables: (1) Have you heard of the Common Core State Standards? (2) Do you implement the standards in your daily practice for mathematics? (3) Have you altered your methods of practice since the adoption of the CCSS? (4) Are there adequate resources for you to fully implement the CCSS? (5) Do you receive support from others through the implementation process? (6) Does the CCSS meet your students' academic abilities? (7) Do you fear the CCSS will be replaced by a new policy in the near future?

Descriptive analyses based on sample frequencies and sample proportions were computed on both the teacher characteristics variables and the CCSS-related variables in order to describe the teacher demographics of the sample and to explore significant patterns of the sampled teachers. In addition, the data were organized, displayed, and examined by using various graphical techniques (such as pie chart, bar chart, and line chart).

Part II of the study also compared the differences in each state, independently and across one another, to survey (math) teachers' perceptions of the CCSS implementation in mathematics (specifically, similarities and differences in Illinois, Indiana, and Michigan). For the comparisons by these three states, the GLMs (i.e., ANOVA models) were used to examine whether there were any differences among the three states in the response scores for each of the key questions. For further analyses concerning the specific research sub-questions, the study was based on statistical

analyses (including exploratory analyses and confirmatory models via inferential statistics in order to generalize results to the population) for the CCSS-related survey questions along with the teacher demographics. The purpose of these analyses was to examine whether there existed any factors of teacher characteristics related to the teachers' opinions on the CCSS implementation, where teacher demographic information included (a) Novice Teachers (1-6 years) and Experienced Teachers (12 + years); (b) Geographic Locations (Indiana, Illinois, Michigan); and (c) Grade Levels (Kindergarten-Grade 2 versus Grades 3-5).

In order to answer Part II, Question One (i.e., comparing each state's results in their perspectives of the CCSS implementation in order to compare all survey questions related to the CCSS implementation), descriptive statistics were first used to summarize each state's sample mean percentage scores of teachers' responses to each of the seven survey items related to the second research objective, where the states variable had three levels—Indiana, Illinois and Michigan. For the comparisons among the three states, the GLM (i.e., ANOVA models) were used to examine whether there were any differences among the three states in the response scores for each survey question.

In order to answer Part II, Question Two (i.e., Compare the differences between novice and experienced teachers in their perspectives of the CCSS implementation. such as "Do they have adequate resources to fully implement the CCSS?" "Do they receive additional support?" "Do they fear the CCSS will be replaced by a new policy?"), a series of the GLMs given by a categorical predictor of teaching experience was conducted, to understand group differences in terms of the responses on key questions, and to determine whether perceptions of the CCSS implementation were different between novice teachers (who had been teaching 1-6 years) and experienced teachers (who had at least 12 years of teaching). Additional analyses, based on

descriptive statistics (mean proportion and its standard deviations) conditional on respondents' teaching experiences (i.e., novice or experienced teachers), were also conducted for the survey items related to the third research objective, where the items here were designed to measure respondent's opinions of the CCSS implementation related issues on a dichotomous scale.

In order to answer Part II, Question Three (i.e., Compare the differences in the teachers' perspectives of the CCSS implementation by Grade Level), a similar method to that of the above state level comparison was used. Descriptive statistics were first used to summarize the subsample (conditional on Grades) mean percentage scores of teachers' responses to each of the seven survey items related to the fourth research objective, where the Grades variable had two redefined and collapsed categorical levels—Grades K-2 versus Grades 3-5. For grade level comparison (i.e, Grades K-2 vs. Grades 3-5), a series of the GLMs (i.e., ANOVA models) were conducted across all the survey items to test the differences of the item positive response scores (i.e., a percentage of a positive response to an item) between the two grouped grade levels.

Note that research question 8 ("Do K-2 grade levels have a different response to 3^{rd}-5^{th} grade as to whether they believe the CCSS would remain?") can be answered by the findings for research question 7—specifically, grade-level comparisons for the survey item "Do you think the CCSS will be replaced by a new policy in the near future?" That is, a GLM (where the outcome is the item responses and the predictor is the collapsed variable of two grade levels) was built to find if there were any differences in the item responses (which were reverse coded before testing) between the two specified groups (K-Grade 2 versus Grades 3-5).

Part III—Research Question Two: How do teachers prioritize reform using the CCSS as an example of a current reform?

In order to study the relationship of seven categories to the CCSS key questions, I ran a confirmatory statistical analysis via GLM to examine if there existed any meaningful and important relationships in terms of quantitative and statistical perspectives among the CCSS-related variables.

Connecting Part I and Part II

From there, I grouped my qualitative and quantitative findings using a typology that best illustrated the nuances (categorizing answers to CCSS questions). I created a typology to link the various key informative themes that emerged from the data by teacher characteristics, using the comprehensive questions posed in both the interviews and the surveys. I found trends or patterns within the data.

Trustworthiness and Validity

It is important to establish trustworthiness and validity in meaningful research. "Research needs to be defensible to the research and practice communities for whom research is produced and used" (Onwuegbuzie & Johnson, 2006, p. 48). Trustworthiness is often used in qualitative research as a parallel term to validity.

Trustworthiness supports the argument that the inquiry's findings are "worth paying attention to" (Lincoln & Guba, 1985, p. 290). There are four categories of trustworthiness: (a) credibility, (b) transferability, (c) dependability, and (d) conformability (Lincoln & Guba, 1985). Credibility "is an evaluation of whether or not the research findings represent a credible conceptual interpretation of the data drawn from the participants' original data (Lincoln & Guba, 1985, p. 296). I evaluated my research as credible for three reasons.

First, I invited individuals to participate in my interviews who were of the same grade level, minimizing differences in their curriculum. Second, these individuals were in the same district, again minimizing potential curriculum and district differences. Third, 100% of the teachers were interviewed, versus a smaller pool of 50% or 25% of teachers. The larger group created a more credible result.

Transferability "is the degree to which the findings of this inquiry can apply or transfer beyond the bounds of the project" (Fenton & Mazulewicz, 2008). I have employed a coding system based on the literature provided under this topic, which will further aid other researchers to use this material. I have included my interview questions in Appendix A to further aid other researchers to transfer and utilize the material.

Dependability "is an assessment of the quality of the integrated processes of data collection, data analysis, and theory generation" (Fenton & Mazulewicz, 2008) while "Conformability is a measure of how well the inquiry's findings are supported by the collected data" (Fenton & Mazulewicz, 2008). In order best to meet the criteria of the dependability and conformability standards, a pilot study was conducted. The pilot study further illustrated the flaws for both categories.

Validity in quantitative research "has been long accepted" as a formal research tool (Onwuegbuzie & Johnson, 2006, p. 49). It is defined as, "whether the means of measurement are accurate and whether they are actually measuring what they are intended to measure" (Golafshani, 2003, p. 600). The two main dimensions are internal and external validity.

Internal validity "is the extent to which the results of the study reflect reality rather than extraneous variables" (Behi, 1996, p. 374). For example, false positives or false negatives can be threats to internal validity (Behi, 1996, p. 374). In order to minimize this threat, I was

cognizant of other variables rather than just the independent variables that could have affected the outcome of the results (Burns & Grove, 2001, p. 232).

External validity is "the ability to generalize the findings of the study to other members of the population rather than the sample" (Burns & Grove, 1999, p. 234). This study has a high generalization factor due to the student achievement results selected per state. Each state was pre-selected based on student achievement results of 2011 based on NAEP. All three categories of results have been selected state achievement results below the national average, above the national average, and at the national average

Chapter IV: Qualitative Results

This chapter discusses the qualitative results of my study. This study used a purposeful selection sampling approach for its case study component, which was a series of teacher interviews. I used the existing literature on how teachers prioritize reform to guide my interview questions (Appendix A), and the same literature was used to guide the interpretation of the results of the study. The overall framework is that of Coburn's (2001) sensemaking theory, and the six categories found in the literature review: (a) how teachers value reform, (b) whether the reform aligns with teachers' beliefs, (c) whether teachers are able to relate to the reform ideas, (d) whether teachers see the reform as an achievable goal, (e) whether the motivating factors outweigh the non-motivating factors, and (f) whether teachers receive the support necessary from all the various stakeholders.

The interview data was collected from all of the fourth grade teachers (four schools with three teachers in each school for a total of 12 teachers) and an Instructional Coach (pseudonym: Sherry Bloomfield) in the same district. Four additional interviews were conducted with fourth grade teachers in Illinois and Indiana in order to provide a broader scope of the results and to identify whether or not the Michigan results were unique to one district or could be applied to other states, regions, districts, or schools. The majority of the interviews were conducted in April and May of 2013; however, the Instructional Coach interview was conducted in November, 2013. The Instructional Coach was interviewed last because I was interested in the coach's general interpretation of teachers' responses to the implementation of reform. Her responses were based on the culture of the school and district. The teachers responses were not disclosed, but merely played a role in the overall analysis.

This analysis consists of a comparison between what I learned from the study and a review of the existing literature on how teachers make sense of education reform. I also discuss the differences in response between novice teachers (1 – 6 years of teaching), moderate teachers (7- 11 years of teaching), and experienced teachers (12 + years of teaching). The results indicate a significant difference between the responses of novice and experienced teachers.

The focus of these questions is to answer this broader question: How do teachers prioritize reform?

Comparison Between the Results of the Study and the Existing Literature

The overall interview questions that aligned with the literature pertained to the following categories:

(a) Teacher demographics (background):

- How long have they been teaching?
- What were their current and past teaching positions?
- How long have they been teaching in their current district/school?

(b) Recognizing reform changes (knowledge):

- Have any mathematics reform changes occurred since they began teaching?
- Were there reforms that impacted their teaching practice?
- Did their teaching practice change as a result of the reform changes?

(c) Key questions that targeted information pertaining to the Common Core State Standards (CCSS) and its implementation (knowledge):

- Were they aware of the CCSS?
- Did their knowledge of the CCSS encourage them to implement the reform?
- Did their knowledge of the CCSS alter their practice?

(d) Key questions pertaining to whether they believe the reform is relatable and achievable:

- Does the reform take into account the differentiated learning abilities of students?
- Do students have a difficult time adapting to the policy change?

(e) Key questions related to whether teachers value and are provided motivational incentives to implement the reform:

- Do the standards/policies enhance or improve their approach to learning?

(f) Key questions to support the tools they receive to implement the standards:

- Do teacher colleagues at their school influence how they learn and respond to the mandated standards/policies?
- What additional support do they need?

There were seven interview items related to a teacher reaching the goal of implementation of a new reform. Teachers asked themselves the following questions:

(a) Do I value the reform?

(b) Do I believe in the reform?

(c) Are there motivating factors for implementing the reform?

(d) Is the reform easily understood?

(e) Is the reform achievable and attainable for my students and practice?

(f) Can I relate to the reform's intentions?

(g) Do I receive support to implement the reform?

Figure 4 illustrates how the literature portrays how teachers prioritize reform:

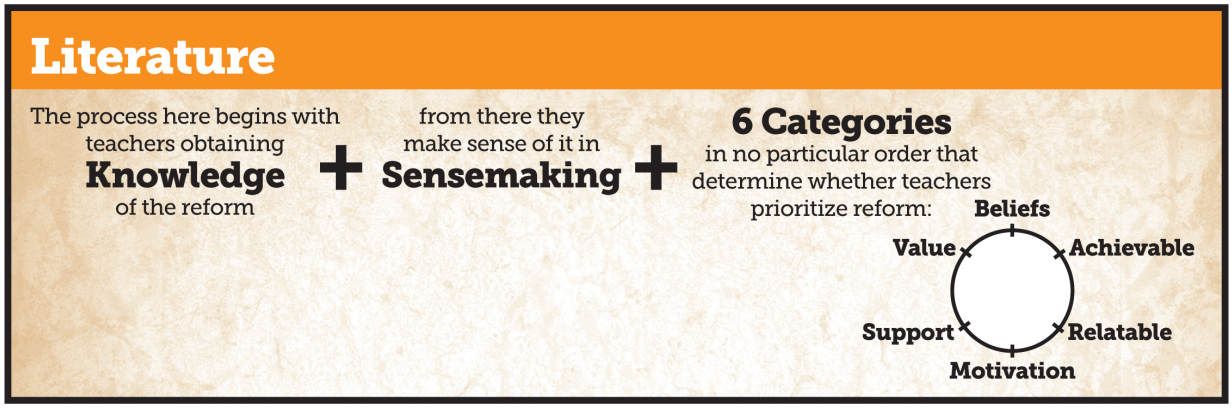

Figure 4: Literature Formula

The literature indicated that if teachers receive knowledge of the reform, make sense of the reform's intentions, and align with the six categories (in no particular order) to agree with the reform's ideals, teachers will place high value on implementing the reform.

However, the results of this study provided a more detailed formula to describe how teachers prioritize reform in this district. This formula is presented as the "research findings."

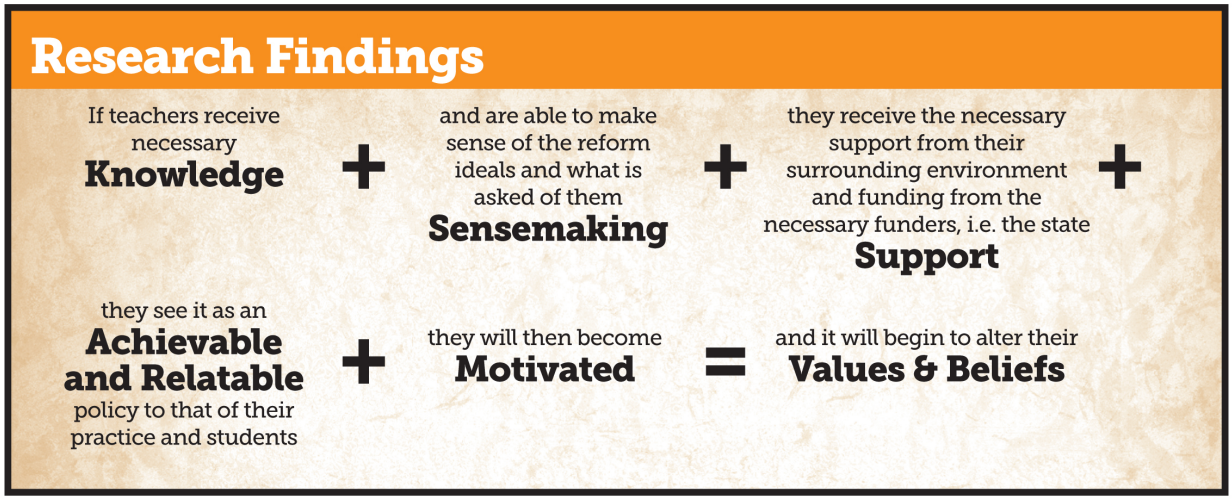

Figure 5: Research Formula

The research findings demonstrate that if teachers receive knowledge of the reform, make sense of the reform's intentions, are provided support pertaining to understanding and implanting of the reform from the various stakeholders and resources, and see the reform as being achievable and relatable to their students and practice, they will become motivated to implement the reform, which in turn will alter how they originally valued and believed in the reform, providing a stronger basis for implementation. These findings hold true not only for the one Michigan district but also were the trend from the four other interviews conducted in Illinois and Indiana. However, it important to note that not all individual teachers in the Midwest would necessarily fit into either formula because there are individuals who do not meet the criteria of either formula.

Interview Findings

Having presented the two different formulas of how teachers prioritize reform from a comparison between the literature (knowledge + sensemaking + 6 categories in no particular order) and the research findings (knowledge + sensemaking + support + achievable and relatable + motivated = values and beliefs). I will now provide the results of the research findings. The participants have been described in Table 1. The questions and responses to each category can also be found in Appendix C.

Table 1 provides a breakdown of the teachers by school, experience level, and response to the implementation of the CCSS.

School	Teacher	Experience	Positive/Negative towards the CCSS
Ashford	Teacher 1E	Experienced (+12 years)	Negative
Ashford	Teacher 2E	Experienced (+12 years)	Negative
Ashford	Teacher 3M	Moderate (7 to 11 years)	Negative
Brookfield	Teacher 4E	Experienced (+12 years)	Positive
Brookfield	Teacher 5E	Experienced (+12 years)	Positive
Brookfield	Teacher 6E	Experienced (+12 years)	Positive
Carlton	Teacher 7E	Experienced (+12 years)	Negative
Carlton	Teacher 8E	Experienced (+12 years)	Negative
Carlton	Teacher 9N	Novice (1 to 6 years)	Negative
Davis	Teacher 10E	Experienced (+12 years)	Unsure
Davis	Teacher 11E	Experienced (+12 years)	Unsure
Davis	Teacher 12E	Experienced (+12 years)	Positive

**E representing experience, M representing moderate, and N representing Novice*

Table 1: School, Teacher, and Experience Demographics

Knowledge

(All teacher responses can be found in Appendix C, Chart 1) Knowledge is the overarching theme of this study. Without teachers having proper knowledge of the reform, they are unable to make correct judgments and decisions towards implementation. Teachers'

responses in this district based on the questions pertaining to this category are presented in Appendix C. For example, when asked, XX, *Davis, Teacher 10E* responded, "I'm not sure, I don't have enough information to give you my opinion as to whether I think the CCSS is a good or bad thing…I'm going to give it more time." The literature posits that "[t]eachers need more knowledge and guidance in order to alter their practices: missing knowledge having to do with content, student learning, pedagogy, or most common, the lack of subject matter knowledge" (Kennedy, 2006). All teachers in this study had heard of and had begun the implementation of the CCSS in mathematics.

With the intention of wanting to know whether these teachers recognized a change in their mathematics policy, I asked whether reform changes in mathematics had occurred since they began teaching, and if so, how this impacted their teaching practice (question 2 of the overall interview questions). One response is as follows "Absolutely math reforms have changed. They've become more demanding. These kids need to think more and process the information" *(Davis, Teacher 12E)*. Another teacher stated, "I have only been teaching for five years, but I do see a change from our last mandate to this one" *(Carlton, Teacher 9N)*. All teachers recognized one change: the reform adjustment between their previous policy and that of the CCSS. This means that they recognized the two policies to be different, and it implies that their method of practice may still need to be adjusted. Some teachers did recognize the difference and this is demonstrated by the following statement, "The common core is a mile deep and inch wide that's very different than the GLICS, that was a spiral curriculum" *(Brookfield, Teacher 5E)*. Recognizing that the policy has changed is the first step in teachers' understanding of an educational reform, and these examples indicate that these teachers are capable of this task.

Although teachers may have recognized a policy difference, they may not have thought to change their practice to meet the policy's demands. Some teachers may not have completely grasped that a change was needed. In order to assess whether teachers altered their practice based on the CCSS, they were asked to describe the difference between their past and current teaching practice (question 5 of the overall interview questions). The results included a variety of responses. Some teachers felt no change was necessary. For example, *Davis, Teacher 11E* stated, "I'm implementing the CCSS, but why should I change my practice? It's the same thing." They felt their past practice could accommodate the reform ideals, while other teachers only minimally changed their practice between, as demonstrated by this statement: "I've adjusted a couple of things to meet the requirements" (*Brookfield, Teacher 6E*). No teacher completely altered his or her practice. This is a problem for the effective implementation of the CCSS because the policy does call for a change in practice. One can infer either that their prior mathematics policy aligned well with the CCSS or that these teachers did not recognize that a change needed to be made in order to comply with the reform. The following statement is in support of the latter premise: "I'm a believer in the CCSS and I'm implementing it, but I haven't altered the way I teach the material, just took some of the pages out of the Everyday Math textbook that I didn't think aligned with the standards" (*Brookfield, Teacher 5E*).

Whether teachers understand a change needs to be made, but choose not to alter his/her practice, or they do not recognize a change needs to be made to their practice and therefore choose not to alter their practice, the implementation process is still in jeopardy.

All teachers were asked if their students had a hard time adapting to the policy change (question 10 of the overall interview questions). One response is indicated of a common sentiment: "These kids don't notice a change. It's not like we are using different books. Maybe

that's a good thing" *(Brookfield, Teacher 4E)*. No matter what their opinion on the reform was, all teachers stated that their students rarely noticed a change in their practice.

The literature anticipates teachers not realizing a change needs to be made to their practice, and thus indicates that in order to alleviate this type of response to the question of whether a new policy mandates change in teacher practice, additional preparations through professional development and other sources are necessary. The state of Vermont recognizes this concern and stated, "High quality professional development is essential to increase educators' knowledge, skills, attitude[,] and beliefs so that they may enable all students to learn at high levels" (State of Vermont Department of Education). Without professional development, teachers are left to the peril of a lost society, unable to decipher what is correct and how to actually implement the changes.

Sensemaking

(All teacher responses can be found in Appendix C, Figure 15) Coburn's sensemaking theory highlights an integral element of how teachers prioritize reform. They have obtained knowledge of the reform, and the next step is understanding of how teachers process this information and ultimately how they break it down and make sense of it. Teachers' responses in this district based on the questions pertaining to this category are presented in appendix #. Teachers were asked if their colleagues influenced how they learned about the reform and how they responded to standards and mandated policies in order to determine where they received their information and how they processed it (question 11 of the overall interview questions). *Brookfield, Teacher 5E* stated, "Absolutely, especially the teachers I work with in the same grade level. We exchange lesson plans and things we find on the Internet. It's hard to do this all alone." The majority of guidance and support these teachers received was from their same grade level

colleagues and the Instructional Coach. "Our Instructional Coach gave us a guide of what pages we should be using from our textbook. It was really helpful. We stopped wasting time on things that were not in CCSS" *(Brookfield, Teacher 6E).* Colleagues at the same grade level provided support through sharing materials, discussing lesson plans, and giving emotional support. The Instructional Coach was said to provide leadership support through professional development and resources.

Not one teacher mentioned receiving support from any administrative staff member or policy leader through the reform implementation process, and in fact many actively resisted such help, as demonstrated by *Ashford, Teacher 2E*, who said, "Oh I don't want help from my principal. Imagine him now evaluating us on some reform that doesn't have any alignment to the textbook or assessments." Many worried that having a principal involved in this process would create a competitive and stressful environment because the teachers felt they were not adequately able to meet the reform's demands. They felt if the principal was involved, they would be evaluated on their implementation of the CCSS instead of being guided through the process.

However, a selection of teachers, mostly novice/moderate teachers, felt that the additional support from their administrative staff could be useful, because they often felt they were not sure if they were correctly implementing the reform. For instance, *Carlton, Teacher 9N*, stated, "Although the other teachers in the grade level have been doing this for a while, it would be nice to get some feedback or support from our principal. He's not really hands on when it comes to things like this, but I don't want to be evaluated on it…I just want to know I can go to him if I had questions about the material." Based on these responses, it seems that teachers would like the principals to play the role of a supportive actor, not one who evaluates them on their

implementation, but one who provides them with tools towards more successful reform implementation.

The last question I posed came from the idea of providing teachers, the implementers of the reform, a voice. Teachers were finally asked their opinion; to my surprise, *Davis, Teacher 11E***,** stated, "No one asks us how we feel our students will cope with the change." Some teachers are obviously unhappy with the many reform changes and the way they are executed, and so it is important to hear their opinion.

When given the hypothetical that if they were in charge of developing a new policy, how would they assure teacher participation and implementation (question 15 of the overall interview questions), the majority of teachers agreed that including them in the dialogue from the beginning would encourage greater collaboration and a greater sense of understanding the reform's ideals and intentions. Out of all the interviews, I felt *Ashford, Teacher 1E* to be more opposed to the implementation than all the others. Therefore, I felt her response to be very relevant. She stated, "Well first I would ask the teachers to step in and help write the policy. It's important to hear what they have to say. They are the ones that this hurts the most." A teacher that followed her lead and was not as experienced, *Ashford, Teacher 3M*, stated, "Maybe it should first be presented to teachers for feedback." This response was echoed by other teachers, as seen here. "The teachers and policymakers should create multiple drafts and go back and forth with ideas" ***(****Davis, Teacher 11E),* and here: "It's important to consider the people it affects the most" *(Davis, Teacher 10E****)***.

When specifically speaking about the CCSS, many were concerned because their administrative staff could not provide them with information pertaining to the reform. Some stated that their principal only focused on such things as evaluation and assessments, and felt that

teachers were better acquainted with the reforms than their leader, as demonstrated by this statement: “It would be nice to have some inner school dialogue. My principal doesn’t know much about the CCSS and I think that hurts us” *(Davis, Teacher 11E).* The same concern about lack of school offerings in PD was shared in this statement as well: “ You know we go to a lot of outside of the school PD events. Besides the Instructional Coach we really aren’t offered too much in-school guidance…Our principal’s job is really to focus on evaluations and assessments” *(Brookfield, Teacher 6E)*. Although they appreciated the autonomy of their classroom practice, they would also have appreciated their principal being well versed in the policy message.

Understanding how knowledge and sensemaking play a role together, *Davis, Teacher 12E*, clearly spoke of an example of how the two are intertwined and each is significant. “Another important factor we need to consider is making sure all of us receive the same message about the policy. Maybe creating a universal book and webinars that are grade specific. Sometimes I don’t know what information to follow” *(Davis, Teacher 12E).* Teachers felt it was important to have a policy message that was correctly interpreted by all stakeholders, providing especially teachers with ample information.

It is evident that with adequate knowledge of the reform, teachers are better able to make sense of the new demands placed upon them. One teacher recalled, “*Brookfield , Teacher 4E and 5E* and I always attend information sessions all over the state. It’s really the only choice we have to make sure we know what’s going on. I know our Instructional Coach does the same” *(Brookfield, Teacher 4E)*. with this information, they are able to make rational decisions about how to implement this reform, although they had to invest their own time and energy to find the information. In order to ensure all teachers have the opportunity to effectively implement reform,

this knowledge needs to be provided in an accessible manner through support from a variety of stakeholders, and from additional external professional development.

Support/professional development

(All teacher responses can be found in Appendix C, Chart 3) Professional development and internal and external support play an important role in preparing and guiding teachers through the implementation processes. One example of the teachers' perception of professional development in this district is as follows: "PD was provided by our district a couple of times, but none of it was helpful. It wasn't about my grade, so I didn't think it was relevant…let alone be about the CCSS" *(Davis, Teacher 11E).* The teachers interviewed all felt they needed additional PD—not only at the school level, but also at the district level. Although they had received district level PD, they did not feel it was a productive use of their time because it did not pertain specifically to the CCSS nor provide grade-specific examples, as indicated by the following opinion. "I need some examples that talk about 4th grade math" *(Davis, Teacher 10E)*. Providing grade specific examples to these teachers means they could connect the CCSS standards directly to their lessons, giving them a clearer understanding of the reform's demands and how the reform works in the classroom.

In order to make up for the lack of PD, all fourth grade teachers within this district sought other resources to structure their lessons and to meet the reform requirements. They met independently to discuss information they had found from other districts and online, receiving support from one another through the implementation process. This collaborative process was explained as so: "We work together. If one of us has a problem we just Google it… I know it's sometimes a gamble" *(Brookfield, Teacher 4E)*. The literature pertaining to teachers who are unfamiliar with reform standards shows that relying on teachers to advise one another is not the

most effective approach to implementing a reform. Although it is not ill intended, guidance from one teacher to another may incorrectly transform or interpret the reform message. Therefore, it is in the best interest of teachers, not only in this district but in all districts, to seek formal PD first in order to be sure the message is clear and correct. However, as we have seen in this district, this becomes problematic when PD is not applicable to a teacher's classroom or it does not cover all aspects of implementing a reform.

Once teachers are provided with the necessary information to understand correctly and to implement the reform, they are able to address whether it is achievable for their students and their practice, as demonstrated here: "I just don't think our school knows enough about it to make any decisions about how this hurts or helps our students…I'm just not sure it's smart to fully implement till they know it sticks" *(Davis, Teacher 11E)*. Also, with this information, teachers can assess whether they are able to relate to the reform ideas, and if so, they can question whether it is enough to motivate them to alter their practice to implement the CCSS in mathematics.

Putting knowledge and understanding into practice

Once teachers have adequate knowledge, are able to make sense of the reform, and are provided support, they attempt to picture how it relates to their students, and determine whether their students and practice positively benefit from the change. From there, they are either motivated to implement the reform, or choose not to be a part of the implementation process. Teachers' responses in this district based on these questions pertaining to this category are presented in Appendix C.

The literature on the topic of teachers' ability to relate to reforms presented in Chapter II highlights three types of teacher. First, there is the teacher who is able to relate to the reform

materials and encourages his/her colleagues to implement them correctly. Second, there is the teacher who believes they can relate to the material, but falsely interprets it for what they believe are the reform's intentions. Last, there is the teacher who is unable to relate to the reform material and becomes disinterested and removed from the reformer's goals and intentions. Relating to the reform material does not mean having previous experience with such material, but it does mean feeling as if they are a part of what the mandates are asking them to do. However, if teachers see the reform as achievable and are able to relate to its ideas, they will become motivated to implement the reform.

The responses from teachers in this district were split, based on their individual school. This seems to be attributable to each school's environment; specifically how same grade level teachers influence other teachers positively and negatively.

Ashford

Ashford's staff consisted of moderately experienced to experienced teachers, to seasoned veterans, ranging from seven to 30 years of experience. This large range of experienced teachers created an interesting environment. When asked if the CCSS takes into account differentiated learning abilities of students in mathematics (question 9 of overall interview questions), all teachers stated that it does not. For example: "No the reform really is 'one size fits all' approach. It doesn't help my low-achieving kids. They get lost trying to catch up… my high-achieving kids just get bored" *(Ashford, Teacher 1E)*. This sentiment was shared here: "The CCSS is really meant for the average student…and I don't have many of those in my class, so it really doesn't help me (*Ashford, Teacher 3M)* After speaking to the second fourth grade teacher, I quickly realized there was one teacher *(Ashford, Teacher 1E)* leading the group. This leader had the most teaching experience and felt, based on her experience, that the CCSS had nothing positive to

offer to her practice of mathematics. Her perspective is conveyed through the following quote: "I've been doing this for years and my kids are doing just fine. We don't need to add anything to stir things up. Its just added red tape, nothing more" *(Ashford, Teacher 1E)*. Even the other experienced teachers in the school agreed with the leader. They trusted and respected her judgment, as indicated by the following response: "I just follow Teacher 1's lead, she's been doing this for years" *(Ashford, Teacher 2E)*. They also agreed that the new policies were unable to be related to their students and practice, and they did not see them to be achievable. *Ashford, Teacher 3M*, further confirmed, "Yeah, its not for us, I don't think we are going to take part in the CCSS" (Teacher 3). These teachers exhibited low motivation, due to the lack of information they received from other stakeholders, and the false information provided by their grade level leader.

Brookfield

Brookfield's fourth grade faculty consisted of three experienced teachers, ranging from 14 to 37 years of teaching experience. Based on the literature and from our example in *Ashford*, one would assume that experienced teachers are harder to persuade when it comes to the implementation and adoption of a new reform because they are more likely to be set in their ways and comfortable with their current practice; however, that was not the case for *Brookfield*, as indicated by the following response: "It's a good change. We are headed in the right direction. It makes more sense. It's more work now, but a lot better for our students in the long run" *(Brookfield, Teacher 5E)*. Other teachers agreed, as demonstrated by this statement: "Of course it meets my students abilities. They are just goals I have to meet. I adjust my practice a bit and teach deeper content and not as much material and I'm good to go" *(Brookfield, Teacher 4E)*. All the teachers in *Brookfield* were excited to implement the CCSS, because they felt that if the

teachers are well-versed in mathematics and understands the CCSS, they can adjust the reform demands to meet their students' academic abilities. This perspective was shared in the following statement: "Our Instructional Coach does a great job aligning our material. We help her put the material together and it makes it an easier transition. This helps us understand things" *(Carlton, Teacher 3E)*. This specific group of teachers was more informed due to their enthusiastic participation in the optional PD that the Instructional Coach and other outside sources offered. Unfortunately, other teachers in the district did not participate in the PD.

When asked if the CCSS takes into account differentiated learning abilities of students in mathematics (question 9 of the overall interview questions), all teachers in this school stated that the reform provides flexibility, "as it is a set of standards objectives teachers are asked to meet and does not mandate a scripted curriculum" *(Brookfield, Teacher 6E).* This is a clear example of teachers being well informed of the reform's objectives. This awareness can also be seen here: "I'm not sure what other teachers are doing in other schools, but we really enjoy traveling and seeing what's out there for us to learn and come back with" (Teacher 3). The teachers at *Brookfield* felt confident in their ability to relate to the reform ideals, and they were driven to do so.

Carlton

Carlton's staff consisted of a novice teacher (less than five years of experience) and two experienced teachers ranging from 20 to 35 years of teaching experience. These teachers did not work collaboratively with the information they received and the resources pertaining to the CCSS. Both experienced teachers in this school voiced concern. One stated that her students were only being used as "guinea pigs, for a reform that will fail." When asked if the CCSS took into account differentiated learning abilities of students in mathematics (question 9 of the overall

interview questions), she said, “This reform sure does not consider the skills of my lower kids…I can’t use it…it just doesn’t relate to my kids” *(Carlton, Teacher 7E)* specifically speaking to her perception of the skillset of these students. The novice teacher in this school also was not fully implementing the CCSS in mathematics, stating, “I had a hard time following what the mandate wants us to do…when my kids are having a difficult time with the material and I’m not provided support its just hard to focus on putting the CCSS at the top of my list of priorities.” This could perception be due to the lack of guidance, not only from the administrative staff, but from veteran teachers in these schools. These teachers negatively viewed the reform and therefore were not motivated to implement the reform in their classrooms.

Davis

The staff at this school consisted of only three experienced teachers, each with more than 25 years of teaching experience. The teachers at this school also did not work collaboratively, because they felt confident with their teaching practices and did not feel it was necessary to work together. When asked if the CCSS took into account the differentiated learning abilities of students in mathematics (question 9 of the overall interview questions), two out of three teachers responded that they wanted to wait to see how the reform unfolded, as this quote indicated: “It’s too soon to tell, but it’s something that I’m slowly implementing…I guess we are just waiting for everything to align…we need more material” *(Davis, Teacher 11E)*. They felt they needed more time to allow the reform to develop before attempting to form an opinion. The last teacher had a different view, and stated, “Of course it meets my students’ academic abilities…it is up to you as the teacher to make any reform relatable to your students and instruction.” The motivation of teachers implementing a reform stems from their attitude towards the reform. Those who feel

hesitant often proceed with caution, and those who are flexible and comfortable with their practice and the reform material are more likely to be motivated to make it work.

Conclusion

Out of the 12 teachers in this district, most were experienced teachers. Their perception of the CCSS and its ability to take into account the differentiated learning abilities and needs of their students were split between teachers who were flexible to change and were well-informed, and those who preferred not to alter their practice and who prevented themselves from seeking additional PD. The experienced teachers from *Ashford* did not possess the knowledge to understand the reform ideals and to make a thoughtful decision. They followed one teacher's opinion, which held them back from making a calculated decision for themselves. *Brookfield*'s teachers took a different approach. They embraced the change and sought the means necessary to educate themselves. *Carlton* also negatively viewed the CCSS, due to their teachers' lack of flexibility and knowledge. *Davis* had mixed results. The teachers who were not knowledgeable about the reform were taking cautious steps towards implementing it, and the teachers who were open-minded and willing to understand its intentions were open to implementing the CCSS. The novice teacher in *Carlton* felt overwhelmed and unsure of the reform's intentions. Had she been provided adequate PD, perhaps her views and motivation to implement the reform would have been altered.

Values and Beliefs

Once teachers become motivated to implement the reform, we begin to see their values and beliefs shift to meet the reform's ideals, as demonstrated by the following quote: "I was a bit hesitant at first…I just was afraid of another reform coming into my classroom… I guess what persuaded me was understanding this was not a curriculum, but a set of standards I had to meet

and the material was actually the same. It really was a matter of how deep I was supposed to go in my teaching instruction, and I was happy to do that" *(Brookfield, Teacher 4E)*. Teachers who shared this perspective understood the bigger picture and saw how it fit into their practice and classroom. Motivation was significant in determining how driven teachers were to implement the changes.

Teachers' values and beliefs are consistently altered based on their environment. Teachers' responses in this district based on these questions pertaining to this category are presented in appendix #. For example, the power of one individual to change many teachers' opinions is demonstrated by this explanation: "When I first heard about the CCSS, I thought it would be a step in the right direction, but after speaking to *Ashford, Teacher 1E* and *Ashford, Teacher 3M* about it, I started to doubt myself… then when all this negative gossip started to come out…well forget it" *(Ashford, Teacher 2E)*. Some teachers may be surprised about what they learn from their students or colleagues, and they may re-evaluate their values and beliefs based on those events. The literature shows that values are gained by experience or lack of experience. This often frames how a teacher commits to a new reform. It is evident from the results that experienced teachers have a more difficult time altering their beliefs to meet new changes within their school; as one stated, "I've been doing this for years and its worked" *(Ashford Teacher 2E)*. Teachers in this school all exhibited different values and beliefs, based on the culture and demands of their school. Although experienced, some teachers embraced the new reform, while other experienced teachers negated it. When teachers were provided adequate knowledge, their opinions began to change. They were either more secure about their position or they completely change their decision. It would be interesting to conduct a further study that

describes how teachers' values and beliefs alter based on the knowledge and the vision of success they see for their students.

Understanding Teacher Responses: Another View

As I was analyzing my qualitative results, I was rather distracted by my findings. Several questions came to mind. For example: If we know that support is significant to the implementation of any reform and alignment is necessary, why don't we do anything about it? Better yet, what is the role of each stakeholder in making sure teachers have the proper tools to implement the CCSS? These questions and many more led me to seek the advisement of a neutral liaison, who not only taught in this district for several years and knew the teachers exceptionally well, but also could provide greater insight on the administrative side. I asked the Instructional Coach in this district, Bloomfield, to explain how she thought the teachers responded to the same 15 questions originally asked of them. Her response is as follows:

> Due to the politics surrounding this issue, all teachers in this district have heard of the CCSS…doing anything with it is a totally different answer. They just don't have the resources, expertise. They don't know where to start and what to do. I can honestly say we don't have district support. We have outside resources that help, but when the superintendent isn't on board and is passive about the rollout, there really isn't much we can ask our teachers to do… They are not given a consistent message, they don't know whether they will adopt it or fund it. Here's our leader wasn't sure and therefore it wasn't marketed. To be honest teachers want nothing to do with it because the administrators are hush, hush and secretive about it. (Bloomfield, November 2013)

When I asked Bloomfield to elaborate on the responses she believed teachers would give pertaining to whether they implement the standards in their daily practice of mathematics

(Question # of the interview questions), she stated, “Those who are implementing honestly believe in the reform. They aren’t doing it for job security… but what would motivate these teachers to do so is if they felt they were going to lose their job” (Bloomfield, November 2013). She believed that those opposed to the implementation of the reform would most likely participate if they were evaluated on it and if the incentives were high.

Understanding why so many teachers did not feel it was necessary to alter their practice when implementing the CCSS was a question of grave curiosity. Bloomfield explained, “Alignment work that was done is more along the lines of taking the program that already exists and removing things that weren’t common core. When they see the same textbook they just assume it’s all the same material and don’t change anything.” (Bloomfield, November 2013).With resources being an issue, I asked what resources are needed to implement fully the CCSS (Question 12 of the overall interview questions). Besides the ones listed on the questionnaire, alignment of textbooks/workbooks, professional development, teacher meetings, and alignment of standardize testing, Bloomfield added, “Review of supplemental materials, providing something that shows how deep each grade level teacher should go” (Bloomfield, November 2013).

Resources are provided by supportive stakeholders, which leads to the question of who should be responsible for providing support, and in what capacity (Question 12 of the overall interview questions). Bloomfield’s response assigned some responsibility to the teacher groups themselves: “I wouldn’t say administrators in these schools provide support that’s why me and the curriculum chair are here. I would most probably say other teachers within the same grade level. Mostly K to 2, 5 and 6 within buildings. Not 4th grade, though, they don’t work well

together at all. I think there is one school, but that's pretty much it" (Bloomfield, November 2013).

Support is not always positive either, as Bloomfield indicted in this statement said, "Anti-common core support is also seen a lot in these schools. Teachers send around e-mails bashing the Core and saying how it does not help our students. Even the president of the union sends out anti-common core weekly e-mails… the newer teachers have no idea what to do with it, and the experienced teachers would just rather not be involved and ignore the Core all together" (Bloomfield, November 2013).

The theory that the CCSS does not meet students' academic abilities, Bloomfield confirmed, is false, as evidenced by the following quote.

> The excuse that a lot of teachers give me is that it's not developmentally appropriate. That's not true. Teachers don't know how to teach to the necessary depth that the Core calls for. It's the fault of the training of teachers. They should be provided more PD from someone who is really knowledgeable. Keep in mind these teachers need to want to help themselves and be flexible to pick up the instruction. (Bloomfield, November 2013)

The results of this statement, as presented by Bloomfield, is that if teachers are flexible and willing to change, they do not believe the demands are overly rigorous and out of reach for their students.

My last question pertained to the hypothetical question that teachers were asked: if they were in charge of developing a core standard, how would they ensure their teachers would participate in the reform? Bloomfield responded, "Have teachers work on it and be a part of it. Bring in teachers from our school district to do work on this. People would buy-in if they knew one of their own was involved. They don't have the excuse to say this was just written by an

outsider. This wasn't in the classroom they don't know what they are talking about etc. But you know besides having their input I would really suggest providing them with information. Information is key…" (Bloomfield, November 2013).

Final Remarks

The qualitative portion of this study encompassed interviewing all fourth grade teachers in one district of a Michigan suburb of Detroit and their Instructional Coach. The analysis of the results indicate that there is a formula that can be used in order to aid reformers in aligning a particular reform with the values and beliefs of teachers who are prioritizing the reform and ultimately implementing the material or not. This formula is guided by the literature on how teachers prioritize reform. The findings suggest that if teachers are provided with knowledge of the reform, are able to make sense of its ideals, and are provided adequate support, they are better able to visualize its success in their classroom. With these tools in place, they proceed to analyze whether applying this reform is something their students and their practice are able to achieve and accommodate. This then becomes a motivating factor for teachers, who then decide either to implement or not implement the reform. From this, their values and beliefs begin to alter to accommodate this reform, or to reject it. Sherry Bloomfield, the Instructional Coach for this district, provided great insight on how teachers in this district think about the CCSS and what would further encourage and aid their implementation process.

Chapter V: Quantitative Results

Phase II

This chapter discusses the quantitative survey results of my study. The survey data was gathered from 402 kindergarten through fifth grade teachers within three states: Indiana, Illinois, and Michigan. The breakdown was as follows: 96 teachers in Indiana, 165 teachers in Illinois, and 141 teachers in Michigan (see Appendix D). Surveying such a large sample was advantageous, due to the array of comparable variables. These variables were represented through demographic information (grade level of instruction, teaching experience, location, etc.). Additionally, variables were presented through the seven categories discussed in both the literature and the qualitative portion of the study.

The survey instrument was created based on the literature review (discussed in Chapter II) and a pilot study (discussed in Chapter III). In order to make the surveys more reliable, a pilot study was conducted. This gathered the opinions of the dissertation guidance committee members and teachers outside the sampling pool. In addition, the qualitative phase of this study allowed for a more fluid execution and understanding of the survey questions and results, as the understanding developed here further guided the study. It is important to note that the qualitative phase did not provide bias for the quantitative phase of my research. I did not adjust my questions based on my interview findings, as I knew they only represented the views of teachers in one district and in one state.

The three-part quantitative analysis used the survey questions alone (Appendix B) to determine its results. Survey questions were divided into two groups: (a) teacher background and demographics (Questions 1 to 4 of the overall survey), and (b) reform and CCSS-related questions (Questions 5 to 12 and 14 of the overall survey). Teacher demographics were surveyed

in order to isolate variables pertaining to location, years of teaching, and grade level. For example, one question that arose from this inquiry was: Do reform implementation efforts vary based on teacher demographic categories? For instance, people often assume that the reform message understood and prioritized by novice teachers differs from experienced teachers' interpretation of the reform message. Another question that emerged was: Are the early grades more or less likely to be affected by new reforms pertaining to a single subject? The data was analyzed with these additional questions in mind. The reform and CCSS-related questions focused on the seven categories of the literature. This not only allowed teachers to answer questions related to similar themes, but provided a difference lens when evaluating their responses.

The rest of this chapter discusses my findings as a result of this survey. In Part I, where the survey respondents were asked to prioritize seven questions ("Do I value the reform?" "Do I believe in the reform?" "Are there motivating factors to implementing the reform?" "Is the reform easily understood?" "Is the reform achievable?" "Can I relate to the reform intentions?" "Do I receive support to implement the reform?") in order of most important (1) to least important (7), I examine their responses and the implications of those responses. This section of the survey was intended to provide an overview of how teachers prioritize reform unrelated to any specific reform.

Part II details my findings after utilizing the overall survey response data to understand how teachers perceive and implement the CCSS. These questions followed the theme of the seven categories presented in Part I, but did not directly compare them.

Finally, in Part III, I isolated the demographics in three groups (a comparison by state, experience level, and grade level of instruction). Part III-1 describes the variation in responses

between all three states —Indiana, Illinois, and Michigan—specifically focusing on any significant similarities or differences in responses. Additionally, two state differences (higher NAEP results and CCSS implementation efforts) were used to create a more detailed comparison. Part III-2 describes the variation between novice teachers (one to six years of teaching experience) and experienced teachers (seven plus years of teaching experience). Part III-3 describes the variation among grade levels between two groups: (a) kindergarten through second grade teachers and (b) third to fifth grade teachers.

This chapter concludes by comparing the seven categories to the CCSS-related questions. The significance behind the comparison is to find whether the CCSS can truly be an example of a reform that illustrates how teachers prioritize reform. The seven ranked categories are themes that signify what teachers deem to be the most important and the least important when considering reform implementation.

Part I: Seven Categorical Questions and Analysis

When any individual is introduced to a new concept or thought, in order to accept or reject the idea, he or she begins by conceptualizing and compartmentalizing it, thus creating an inner dialogue of positive and negative attributes. In order to understand the mindset and process of teachers, I asked them to rank the seven categories provided by the literature on this topic by most to least important. The goal of this question was to understand, independent of the CCSS or any other reform, how teachers generally process new ideas. Teachers were asked the following questions:

(h) Do I **value** the reform?

(i) Do I **believe** in the reform?

(j) Are there **motivating** factors for implementing the reform?

(k) Is the reform **easily understood**?

(l) Is the reform **achievable**?

(m) Can I **relate** to the reform's intentions?

(n) Do I receive **support** to implement the reform?

Then, they were asked to rank each element against the others to determine which factor was most important when deciding to implement a reform and which factor was least important.

Overall Results

The overall responses of these teachers are provided in Appendix D. In order to provide clarity to this analysis, the scale of seven categories was condensed into three groups: negative response (rankings one to three), neutral response (ranking four), and positive response (ranking five to seven). Table 2 provides the number of respondents (N) by the percentage who responded for the given category. In addition, the categories are split in the three groups, Negative, Neutral, and Positive.

How do teachers prioritize the following when implementing the reform?	*Negative Response*		*Neutral Response*		*Positive Response*		*Total*	
	N	*%*	*N*	*%*	*N*	*%*	*N*	*%*
Q1. Values	129	32.1%	38	9.5%	235	58.5%	402	100.0%
Q2. Beliefs	101	25.1%	50	12.4%	251	62.5%	402	100.0%
Q3. Motivation	207	51.5%	58	14.4%	137	34.1%	402	100.0%
Q4. Easily understood for knowledge/sense making	153	38.1%	87	21.6%	162	40.3%	402	100.0%
Q5. Achievable	143	35.6%	65	16.2%	194	48.3%	402	100.0%
Q6. Relatable	271	67.4%	55	13.7%	76	18.9%	402	100.0%
Q7. Support	202	50.2%	49	12.2%	151	37.6%	402	100.0%

Table 2: Categorical Rankings
Note. The rating scale "Positive/Neutral/Negative" is recoded based on the original 7-point Likert-type scale (where the original item scale is from 1 "being the least important" to 7 "being the most important"). Given the new recoded rating scale, "Positive Response" represents the

scores from 5 to 7 on the original 7-point Likert Scale, "Neutral Response" for a score of 4 on the original scale, and "Negative Response" for the scores of 1 through 3 on the original scale.

Table 2 shows that teachers are more likely to implement a reform if they believe in the reform (positive response rate 62.5%). This result is trailed by teachers valuing the reform (positive response rate 58.5%), which indicates that teachers must be guided to believe in and value the reform and be supported mentally prior to considering implementation. Mental support in this study refers to the idea of psychologically thinking something will present a positive result for one's self and therefore buying into the concept, while also respecting every aspect of the message and its intentions and understanding it, may have constraints. For example, some teachers may find they are strong believers in the idea that all students can achieve; regardless of the students' academic, socioeconomic background, or experiences, they have the potential of achieving. Teachers will use various tools and practices to support their students' growth. As a result of their experiences and understanding, they strongly believe and value their students' capabilities. The same can be said for a new reform. If teachers strongly believe in and value its intentions, they will strive to protect the implementation and existence of the reform.

On the other hand, teachers tend not to place great value on whether they can relate to the reform's intentions (positive response rate 18.9%). This is more of a stylistic approach, as teachers can adjust their relatability standards based on their student demographics, classroom setting, understanding of the reform material, and curriculum, among other factors. There are several variables that dictate whether or not a teacher relates to the reform intentions, which makes this category difficult to measure. But, regardless of the low positive response rate, this factor should still be taken under consideration by stakeholders because we often hear teachers say they cannot relate to what is being asked of them.

The raw data presented above revealed significant findings. However, it is also important to consider average response data. The average response data are important because the resulting figures combine both the most important category and the least important category that teachers consider when deciding whether or not to implement a reform. Taking both sides into account provides a broader overview. It further confirms that the data analysis results are consistent with the raw data. In this study, the average response results indicated findings identical with the raw data, which does not often occur. The figures below (6 and 7) describe the data.

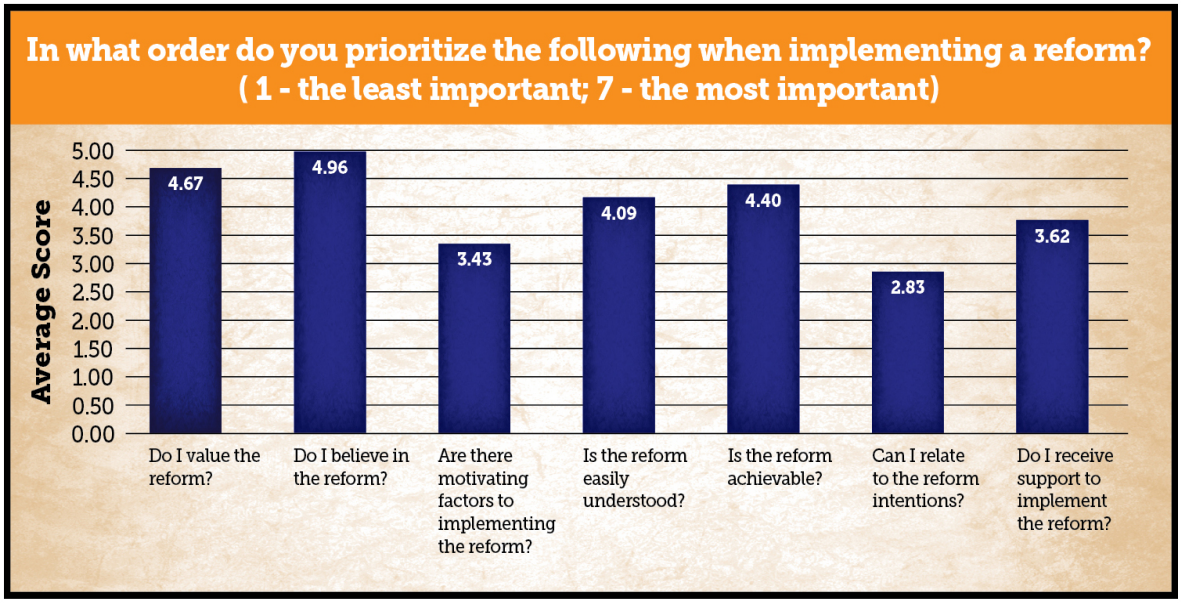

Figure 6: Graphic display of average response data (1 indicates the least important factor in implementation and 7 indicates the most important)

In what order do you prioritize the following when implementing a reform? (1 - the least important ; 7 - the most important)	Do I value the reform?	Do I believe in the reform?	Are there motivating factors to implementing the reform?	Is the reform easily understood?	Is the reform achievable?	Can I relate to the reform intentions?	Do I receive support to implement the reform?
Average Score *(Standard error of mean)*	**4.67** *(SE=0.10)*	**4.96** *(SE=0.09)*	**3.43** *(SE=0.10)*	**4.09** *(SE=0.09)*	**4.40** *(SE=0.09)*	**2.83** *(SE=0.09)*	**3.62** *(SE=0.10)*

Note. A rating of 1 indicates least important: 7 indicates the most important

Figure 7: Categorical Comparison

The average response data also indicates a high ranking of 4.96 in the belief category and a low ranking of 2.83 for the relatability category. The categories were ranked in the following order, from most important to least important average response rate (average score):

1. Beliefs: 4.96
2. Values: 4.67
3. Achievable: 4.40
4. Easily understood (knowledge/sense making): 4.09
5. Support: 3.62
6. Motivation: 3.43
7. Relatable: 2.83

Although the average data score ranking matches the raw data, in order to understand the overall information, I used the score of 4.0 and above as most important and 3.99 and below as least important, due to the average range of findings. Therefore, this places beliefs, values, achievability, and ease of understanding (knowledge/sense making) as most important, while

support, motivation, and relatable are labeled as least important. Supplementary illustrations are provided in the Appendix D.

Cross Tabulation Analysis

Looking at these categories independent from one another is one method of analysis, but in order to have a more deeply controlled comparison, it is important to conduct a correlation coefficient analysis. Table 3 provides the correlation between each category.

	Values	Beliefs	Motivation	Easily Understood	Achievable	Relatable	Support
Values	1.00	0.53** *(0.00)*	-0.05* *(0.03)*	-0.41** *(0.00)*	-0.42** *(0.00)*	-0.17** *(0.00)*	-0.55** *(0.00)*
Beliefs	0.53	1.00	-0.13* *(0.01)*	-0.43** *(0.00)*	-0.39** *(0.00)*	-0.17** *(0.00)*	-0.46** *(0.00)*
Motivation	-0.05	-0.13	1.00	-0.14* *(0.00)*	-0.23** *(0.00)*	-0.24** *(0.00)*	-0.24** *(0.00)*
Easily Understood	-0.41	-0.43	-0.14	1.00	0.02 *(0.66)*	-0.12* *(0.02)*	0.15** *(0.00)*
Achievable	-0.42	-0.39	-0.23	0.02	1.00	-0.08 *(0.14)*	-0.17** *(0.00)*
Relatable	-0.17	-0.17	-0.24	-0.12	-0.08	1.00	-0.12* *(0.01)*
Support	-0.55	-0.46	-0.24	0.15	0.17	-0.12	1.00

Note. The associated p-value of an estimated correlation is shown in the parenthesis in each cell of the (upper-triangle) correlation matrix.

*Note. The symbol ** represents that correlation is significant at the 0.01 level.*
*The symbol * represents that correlation is significant at the 0.05 level.*

Table 3: Correlation Matrix of all 7 Categories

This correlation matrix describes the relationship between each individual category. The table indicates that when teachers were asked in what order they prioritize reform, their responses either had a positive, negative, or no significance between one another. Selecting a sample of these results, I find that the categories of values and support have a negative significance (-0.55**), which means that when a teacher responds that they place values high in their list of

priorities, they will, statistically, not categorize a need for support to be high on their priority list. Placing this result into practice, when teachers value the reform, they do not find support to be an impeding factor when considering implementation. This may be the case because if they truly value the reform approach and goals, if support is not offered, they seek alternative methods. This situation was demonstrated through the qualitative findings of this study. Teachers who supported the implementation of the CCSS sought additional support in and outside their district to better their practice. They valued the CCSS, and therefore they did everything they could to support one another through the process. In reverse, teachers in the same district of this study stated that they did not receive support through the implementation process and also did not value the CCSS. Thus, the findings in this correlation matrix do provide an interesting theory, that if an individual values, believes, and is motivated to implement the reform, whether they receive support is not an impeding factor.

Principal Component Analysis

In the same vein as conducting a correlation matrix in order to compare the similarities and differences of the categories, I wanted to transform the number of possibilities correlated into smaller numbers of uncorrelated variables, thus using a principal component analysis. The principal component analysis aids in discovering and reducing the dimensionality of the data set. Additionally it aids in my effort to identify new meanings of the underlying variables (DiPerna, J.C. & Elliott, S.N., 1999). The principal component analysis in the second Phase of this study found four indices out of the seven categories of how teachers prioritize reform: (a) Mental Support: beliefs and values, (b) Achievability: easily understood, achievable, and support, (c) Relatability, (d) Motivation. However, it is important to note that because relatability and

motivation are independent variables. Based on both tables, my hypothesis of grouping these categories together held true.

Conclusion

Whether these results are considered as independent categories or grouped in four indices, the data indicate that the correlated groups are: (a) beliefs and values and (b) ease of understanding, achievability, and support; and the independent groups are: (a) relatibility and (b) motivation. Thus, when teachers consider prioritizing a reform using a factor within one of the categories, the relationship with the other variable is also strongly correlated. Using my understandings from Part I, that all seven categories are interconnected to one another, either positively or negatively, I sought to understand the results in the context of a current reform.

Part II: How Teachers Prioritize Reform Based on the Common Core State Standards in Mathematics

Putting a new reform into practice is a difficult task. Teachers must have proper knowledge to be able to distinguish between the similarities and differences of the reform's intentions and their previous practice. The CCSS does vary from other reforms, and therefore, if implemented correctly, it should alter one's practice. This segment of the study aimed to explain the overall responses of teachers, targeting questions 5 to 12 and 14 of the overall survey questions. After the results are discussed, it will discuss the correlation between these particular CCSS-related questions in comparison to the seven categories. All charts and diagrams for this portion of the study can be found in the Appendix E.

Specifically looking at the CCSS, of the 402 surveyed teachers, all teachers had heard of the CCSS. The teachers were then asked if they had implemented the standards in their daily instruction of mathematic, and the results here are more telling: although all teachers had heard

of the CCSS, 87.6% of the teachers stated that they do in fact implement the standards. One of the biggest misconceptions of reform by teachers is that they do not alter your method of practice. Many teachers all over the country believe that if they make slight adjustments to their practice, those changes would satisfy the reform's intentions. This misconception occurs due to the lack of understanding of not only the reform's intentions but also the subject matter. I selected kindergarten to fifth grade teachers for deeper analysis in hopes of better understanding how multi-subject elementary teachers cope with adjusting reform and their understanding of the content. The CCSS requires more than slight modification, as it provides a deeper analysis of the content standards. Thus, teachers must alter their method of practice in order to implement correctly the standards. This study found that 41% teachers responded "yes" when asked if they have altered their method of practice since the adoption of the core, and a larger group, 53% of teachers, stated they have "somewhat" altered their practice. The results here suggest several scenarios. First, it is possible that because two out of three of these states have not begun full implementation of the CCSS, their teachers are only beginning to implement the standards, while slowly altering their method practice. This would explain the lower percentage of "yes" responses. Another reason could be that teachers do not recognize that a significant change needs to be made to their practice in order to comply with the reform initiative. They may not identify the differences between the CCSS and their previous practice. Because of the variety of reasons that this may be the case, it is difficult to address all the plausible explanations for this response, but these are two that may be more likely than the others.

One of the greatest criticisms of the CCSS is the lack of materials, textbooks, and assessments that currently align. I found it beneficial to ask the teachers if this is even an issue during the implementation process. I asked teachers if there are "adequate resources for you to

fully implement the CCSS" (question 8 of the overall questions). To my surprise, the response was nearly split in half, with 45.8% of teachers stating that there were adequate resources and only 54.2% there were not enough adequate resources. I was expecting fewer teachers to indicate they felt that they had adequate materials because the CCSS has been hampered by the fact that many textbooks do not align with the reform's standards. Although publishing companies have released "new" textbooks with a CCSS seal, they still do not align to the intended standards. Schmidt (2014) recently conducted a study of two forthcoming reviews of classroom textbooks. He found that publishing companies were merely "slapping shiny new stickers on the same book they've been selling for years" (Herold & Molnar, *Education Week,* March 5th, 2014). As a researcher who has conducted several field observations and interviews pertaining to the CCSS, I concur with Schmidt's assertion. After speaking with several teachers during previous interviews unrelated to this dissertation but pertaining to the mathematics practice standards of the CCSS, I found that they innocently believe that their textbooks have been altered to provide greater alignment to the CCSS. For example, the CCSS provides eight mathematics practice standards to aid in the instruction of teachers. One publishing company that sells their books in Michigan cites the mathematics practices in every unit, but claims there are only seven standards. For a teacher who is unfamiliar with these practices, this is problematic, because they believe they are following a guide that is trustworthy and reliable.

To further investigate the importance of textbooks and materials that align, question 9 of the overall survey questions asked what additional resources would be beneficial to the implementation process. An overwhelming 68.9% of teachers stated having aligned textbooks and workbooks would be helpful to their instruction. In terms of alignment, during the survey

period teachers were introduced to their state-selected standardized assessment consortium. Indiana and Illinois selected PARCC, and Michigan selected Smarter Balance.

In addition to material support, personal support is also important during the implementation process. One-on-one attention from an individual who can provide a teacher with guidance and knowledge regarding the change is always helpful. Teachers were asked whether they'd received support from others through the implementation processes. Fortunately, 83.6% of teachers stated they did in fact receive support from others. To clarify the source of support, teachers further indicated the role of the supporter—73.1% of teachers indicated they received support from other teachers within the same grade level.

While receiving support is one aspect that teachers consider when implementing a new reform, they must also assess whether this reform even meets their students' abilities. In this case, the CCSS design has considered this factor; if implemented correctly, it works as a set of standards, or more so a set of goals teachers should aim for their students to reach. Student abilities should not be a factor, as the teacher can modify their instruction in order to suit their students' needs. However, based on the survey, teachers do not recognize this flexibility of the reform, because 63.4% of teachers stated that the reform "somewhat" met their students' academic abilities and 6.5% stated that it does not meet their abilities at all. This is troublesome, because it means that these teachers may not understand the full scope of the reform's intentions. Perhaps this is due to the beginning phase of the reform, and as the understanding and implication of the reform develops, this perception will change overtime.

Thus we come to the final and most controversial question of all: Is the CCSS another fad and will it be replaced with something new and exciting in the near future? Not surprisingly, due to the overturn of reform policy in our nation, 61.7% of teachers do in fact believe the CCSS will

be replaced by a new policy in the near future. Unfortunately, many elements contribute to this very notion of reform change. However, the cycle of change ultimately returns responsibility back to the implementer. If teachers are provided adequate knowledge of the reform, are able to make sense of it, and lead up to a position where they truly believe and value the reform initiative, they may actually be able to make a positive change and increase the longevity of the reform.

Based on the findings of this section, I have selected four key questions (6, 7, 12, and 14) pertaining to the CCSS to compare the relationship among the seven categories presented in earlier sections of this dissertation. In order to test my theory, I ran a multivariate analysis through a series of regressions, using the four questions as my independent variable and the seven categories as my dependent variable. The results of the data can be found in the Appendix D section of this paper.

I conducted four regressions to analyze if my independent variables (7 categories) correlate with my dependent variables (CCSS questions). The first regression analysis was conducted on question 6, "Do you implement the standards in your daily practice of mathematics?" The results signify no significance.

Analysis of Variance (ANOVA)

Data Source	Sum of Squares	*df*	Mean of Squares	*F*-statistic	*p*-value
Regression	0.48	6	0.08	0.72	0.63
Residual	44.07	396	0.11		
Total	44.55	402			

Note. DV: "Do you implement the standards in your daily practice of mathematics"; IVs: Seven Categories.

Table 4: ANOVA Daily Practice

The resulting ANOVA table above shows that the hypothesized regression model is not significant at the alpha level of 0.05 and that the seven categories did not relate to whether

teachers implement the reform in their daily practice of mathematics (F- statistic= 0.72; p-value=0.63). This means that the seven explanatory variables of how teachers prioritize reform do not seem to determine if teachers implement the standards in their daily practice, as the results are insignificant at the given alpha level.

The second regression analysis was conducted on question 7, "Have you altered your methods of practice since the adoption of the CCSS?" The results signify no significance.

Analysis of Variance (ANOVA)

Data Source	Sum of Squares	*df*	Mean of Squares	*F*-statistic	*p*-value
Regression	1.75	6	0.29	0.84	0.54
Residual	137.92	396	0.34		
Total	139.67	402			

Note. DV: "Have you altered your methods of practice since the adoption *of the CCSS";*
IVs: Seven Categories.
Table 5: ANOVA Altering Practice

The resulting ANOVA table above shows that the hypothesized regression model is not significant at the alpha level of 0.05 and that the seven categories did not relate to whether teachers implement the reform in their daily practice of mathematics. (F-statistic= 0.84; p-value =0.54). This means that the seven explanatory variables of how teachers prioritize reform do not seem to determine if teachers altered their method of practice, as the results are insignificant at the given alpha level.

The third regression analysis was conducted on question 12," Does the CCSS meet your students' academic abilities?" The results signify no significance.

Analysis of Variance (ANOVA)

Data Source	Sum of Squares	*df*	Mean of Squares	*F*-statistic	*p*-value
Regression	0.79	6	0.13	0.42	0.86
Residual	123.81	396	0.31		
Total	124.61	402			

Note. DV: "Does the CCSS meet your students' academic abilities"; IVs: Seven Categories.
Table 6: ANOVA Meeting Students' Academic Abilities

The resulting ANOVA table above shows that the hypothesized regression model is not significant at the alpha level of 0.05 and that the seven categories did not relate to whether teachers believe the CCSS meets students' academic abilities. (F-statistic= 0.42; p-value= 0.86). This means that the seven explanatory variables of how teachers prioritize reform do not seem to determine if teachers believe the CCSS meet student's academic levels, as the results are insignificant at the given alpha level.

The fourth and final regression analysis was conducted on question 14, "Do you think the CCSS will be replaced by a new policy in the near future?" The results are not significant.

Analysis of Variance (ANOVA)

Data Source	Sum of Squares	*df*	Mean of Squares	*F*-statistic	*p*-value
Regression	0.41	6	0.07	0.28	0.95
Residual	94.75	396	0.24		
Total	95.15	402			

Note. DV: "Do you think the CCSS will be replaced by a new policy in the near future"; IVs: Seven Categories.

Table 7: ANOVA Replacing the CCSS

The resulting ANOVA table above shows that the hypothesized regression model is not significant at the significance level of 0.05 and that the seven categories did not relate to whether teachers think the CCSS will be replaced by a new policy in the near future (F-statistic= 0.28; p-value=0.95). This means that the seven explanatory variables of how teachers prioritize reform do not seem to determine if teachers think the CCSS will be replaced, as the results are insignificant at the given alpha level.

When comparing these questions to the seven categories, all four questions illustrated no statistical significance, and all found the category of beliefs to present the highest mean. One example of these results in practice is question 12 of the overall survey questions, "Does the CCSS meet your students' academic abilities?" Selecting the category of "achievable", we find

that if the CCSS does not meet the students' academic abilities, the teacher does not see it as achievable. Or in the reverse, if the reform is not achievable, it cannot possibly meet the student's academic abilities.

Conclusion

The results of the overall survey questions are not surprising in relation to the overall trend of reform implementation, especially because the CCSS has not been fully implemented in Illinois and Indiana. Although teachers stated that they are implementing the standards in their daily practice of mathematics, the question of how much and how little change has occurred in the classroom seems to be a concern. Teachers believe they need additional resources in order to justifiably alter their practice and completely adopt the core; alignment of textbooks and additional support from same grade level teachers are key. However, teachers have two main concerns: that the CCSS does not align with their students' academic abilities, and that, most of all, this reform is merely a reform fad that will quickly vanish once a new and more exciting policy comes into play.

In comparing these questions with that of the seven categories, no significant results were found; however, an interesting finding revealed that each question highly coincided with the beliefs of teachers, which means whether a teachers believes in the reform plays a significant role in how they respond to and act towards the CCSS. Having beliefs as a primary category mirrors the initial findings in Part I.

Part III: Relating the Demographic Changes to the CCSS

Part III of this study found a variety of responses that could very well be altered when isolating certain demographic variables of teacher. Therefore, I used a series of regressions to isolate the demographic variable. The variables selected for this section were state comparison

(Michigan, Illinois, and Indiana), years of experience (novice vs. experienced), and grade level of instruction (K to 2 and 3 to 5). The results of the data can be found in the Appendix G section of this paper.

State level comparison

Three Midwestern states were purposefully surveyed in this study. It is important to understand the variations and similarities among those states. The state distributions were as follows: Indiana, 96 teachers; Illinois, 165 teachers, and Michigan, 141 teachers. The participants were from all three types of districts—urban, rural, and suburban—and there were comparable demographics all throughout the three states. Part III does not only discuss each individual state's findings, but also conducts a planned comparison contrast between the state that scored "above average" on the NAEP 2011 assessment, Indiana, with Illinois and Michigan. And, we will also compare the state that began implementation of the CCSS during this academic year and preceding the other two states, Michigan and Indiana and Illinois.

During the period in which the teachers were surveyed, all three states had adopted the CCSS, but Michigan was the only state that had full implementation. It is important to consider which states fully implemented the standards, because this may have influenced some of the teachers' responses. Indiana adopted the standards in August 2010, but will not be fully implementing them until the 2014/2015 school year. Illinois adopted the standards in June 2010, but has only recently, in the 2013/2014 school year, fully implemented the reform.

A General Linear Model analysis was conducted for all three analyses. The results can be found in the Appendix G. The results found the following: that all teachers indicated they had heard of the CCSS, as presented in question one and illustrated in figure in the Appendix G. However, a frequency table is also provided below.

All Teachers	*Indiana*		*Illinois*		*Michigan*	
	Freq	*%*	*Freq*	*%*	*Freq*	*%*
Q5. Have you heard of the Common Core State Standards (CCSS)?						
Yes	96	100.0%	165	100.0%	141	100.0%
No	0	0.0%	0	0.0%	0	0.0%
Q6. Do you implement the standards in your daily practice of mathematics? ***						
Yes, it motivates me to do so	90	93.8%	134	81.2%	128	90.8%
No, but it would further motivate me to do so	6	6.2%	31	18.8%	13	9.2%
Q7. Have you altered your methods of practice since the adoption of the CCSS? **						
Yes	33	34.4%	76	46.1%	56	39.7%
Somewhat	50	52.1%	82	49.7%	81	57.4%
Not at all	13	13.5%	7	4.2%	4	2.8%
Q8. Are there adequate resources for you to fully implement the CCSS? *						
Yes	52	54.2%	65	39.4%	67	47.5%
No	44	45.8%	100	60.6%	74	52.5%
Q10. Do you receive support from others through the implementation process? **						
Yes	73	76.0%	147	89.1%	116	82.3%
No	23	24.0%	18	10.9%	25	17.7%
Q12. Does the CCSS meet your students' abilities? **						
Yes	40	41.7%	48	29.1%	33	23.4%
Somewhat	52	54.2%	106	64.2%	97	68.8%
Not at all	4	4.2%	11	6.7%	11	7.8%
Q14. Do you think the CCSS will be replaced by a new policy in the near future? *						
Yes	62	64.6%	91	55.2%	95	67.4%
No	34	35.4%	74	44.8%	46	32.6%
Total	96	100.0%	165	100.0%	141	100.0%

*Note. *: marginally significant finding; **: significant finding; ***: strongly significant finding.*

Table 8: Variation Among States Frequency Table

The most significant findings between the states were presented in question 6 ("Do you implement the standards in your daily practice of mathematics?") and 7 ("Have you altered your method of practice since the adoption of the CCSS") of the overall survey questions. One would assume that based on the implementation period of the three states, Michigan would lead in the

implementation of the CCSS. When combining the implementation with whether the teachers in that state have altered their practice, the following results were found:

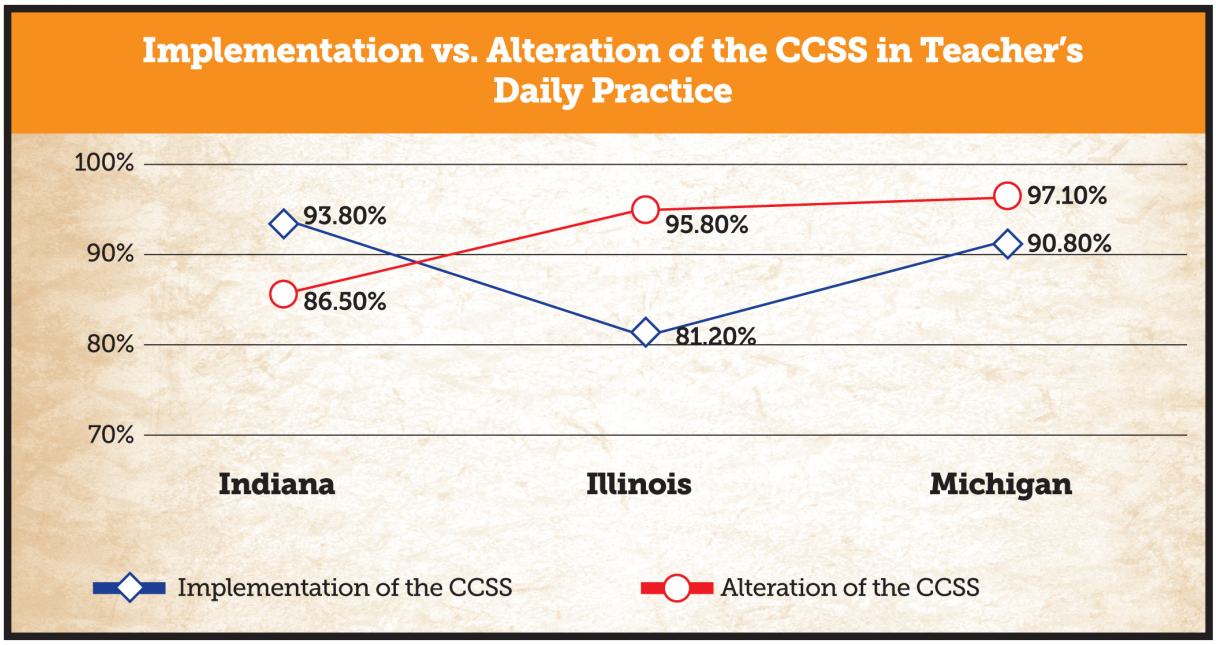

Figure 8: Implementation vs. Alteration of the CCSS in Teacher's Daily Practice

The findings indicate a significant difference between the response in question 6 in Illinois (81.20%) and the response in Indiana (93.80%). Therefore, the hypothesis above is invalid. Surprisingly, Indiana is leading the way for self-reported implementation efforts. However, as previously discussed, it is not sufficient to assume that if teachers are saying they are implementing the CCSS they are actually changing their teaching practice to meet the ideals of the reform. This finding provides supportive results for this assertion. Although teachers from Indiana state that they are implementing the reform, they actually have the lowest number of teachers who state they are altering their practice. The reverse findings are true for the state of Michigan. Michigan should be the largest self-reported implementer of the CCSS purely due to when the state began its implementation process, and they actually have altered their practice more so than any other state. It is possible that, teachers in Michigan are under-estimating their

implementation of the CCSS, but in fact they are actually altering their practice to meet the requirements. On the other hand, they could be altering their practice to meet another change in their classroom. It is difficult to make a definite conclusion. However, there is a significant difference with teachers in Illinois implementing the CCSS and altering their practice as well. This raises the question that perhaps they are somewhat altering their practice and therefore do not accept this as a full implementation.

I have selected two differences among the states to conduct a planned comparison contrast, otherwise known as a planned custom hypothesis. The planned comparison was analyzed using a t-statistic test (Seltman, 2013).

The first comparison is based on the NAEP 2011 mathematics scores. Indiana illustrated a higher-than-average school score, while Illinois was ranked average, and Michigan below average. Due to this variation, I chose to compare Michigan to the other two states. The null hypothesis for this analysis is that there is no difference in the CCSS key questions between Indiana/Illinois and Michigan. The alternative hypothesis is that there is a difference in the CCSS key questions between Indiana/Illinois and Michigan.

Table of Contrast Coefficients for the Comparisons of IN vs Others (MI & IL)

Planned Contrast	Q1		
	Indiana	Illinois	Michigan
	1	-.5	-.5

Note: The rationale of designing this contrast is that "Indiana has the highest NAEP rest in comparison to the other two states." For that reason the coefficient for Indiana has been set at 1.

Table 9: Higher NAEP Results State Comparison

The following six questions (based on the overall survey questions) were selected for this hypothesis:

6. Do you implement the standards in your daily practice of mathematics?
7. Have you altered your methods of practice since the adoption of the CCSS?

8. Are there adequate resources for you to implement the CCSS fully?
10. Do you receive support from others through the implementation process?
12. Does the CCSS meet your students' academic abilities?
14. Do you think the CCSS will be replaced by a new policy in the near future?

Summary of the CCSS Key Questions
For the Planned Comparisons between IN vs Others (MI & IL)

	Value of Contrast	Std. Error	t	df	Sig. (2-tailed)
Q6	.08	.032	2.453	222.009	.015
Q7	-.19	.069	-2.701	399	.007
Q8	.11	.059	1.831	158.059	.069
Q10	-.10	.048	-1.998	137.601	.048
Q12	.18	.066	2.811	154.759	.006
Q14	.03	.056	.589	160.267	.557

Table 10: Summary of CCSS Key Questions – Planned Comparison

According to the estimated value of contrast in the table for questions 6, 8, 12, and 14, Indiana is higher. For example, question 6 of the overall survey questions asks teachers if they implement the standards in their daily practice of mathematics. Indiana had a higher percentage than the other two states, by 8% further resulting in a significant p-value of 0.02. This means that teachers in Indiana do implement the standards in their daily practice of mathematics. To further support this theory, I conducted a General Linear Model analysis.

The analysis found significant results to be present in question 6. The table 11 shows that Michigan had an average score of "yes," teachers do implement the standards in their daily practice of mathematics. The mean response for Indiana was 3.0% above (p-value=0.49) the one in Michigan, and the mean for Illinois was 9.6% below (p-value=001) Michigan. Therefore, these results indicate that teachers in Illinois were less likely (by nearly 10%) to implement the standards in their daily practice than teachers in Michigan. However, it is important to note that

both sets of teachers in Indiana and Michigan had the same responses statistically on the implementation of their daily practice of mathematics.

Hypothetical Model for the state comparisons on the survey item "Do you implement the standards in your daily practice of mathematics":

$$[Item\ Responses] = [Overall\ Mean\ in\ Michgan] + [Differences\ from\ Michigan] + Error$$

Table for the Results of the General Linear Model

Model Parameter	Estimate	SE of Estimate	P-value
Overall Mean in Michigan	0.908	0.028	0.000
Response Differences in Indiana	0.030	0.043	0.493
Response Differences in Illinois	-0.096	0.037	0.011

Note: The test of the corrected model is statistically significant, where the model is tested with F=5.521 and p-value=0.004.

Table 11: General Linear Model/Hypothetical Model

On the other hand, an alternative example can be found in the analysis of question 7. Although teachers in Indiana illustrated they have implemented the standards in their daily practice of mathematics, they scored lower in their ability to alter their methods of mathematics, compared to Michigan and Illinois. The results found that Indiana scored 19% lower, with a p-value of =0.01, compared to its neighboring states. It can be assumed from these results that teachers in this state may believe they are implementing the CCSS, but because their response to altering their practice method is so low, that may not necessarily be the case.

The 2011 NAEP results indicated that the state of Indiana had a higher student achievement average, thus presenting a different characteristic. After comparing six CCSS questions with Indiana as the dominant state, and Michigan and Illinois as the subdominant states, I found a variation of responses, with positive responses for questions 6, 8, 12, and 14. A future study can be conducted to determine whether this result relates to environment and instructional practices in Indiana.

The second comparison is based directly on this particular reform and its implementation. Michigan was the first state, between Indiana and Illinois, to begin implementation of the standards. When this survey was administered, neither Indiana nor Illinois was mandated to implement fully the core. The null hypothesis of this analysis is that there is no difference in the CCSS key questions between Michigan and Indiana/Illinois (combined). The alternative hypothesis of this analysis is that there is a difference in the CCSS key questions between Michigan and Indiana/Illinois (combined).

Table of Contrast Coefficients for the Comparisons of MI vs Others (IN & IL)

Planned Contrast	Q2		
	Michigan	Indiana	Illinois
	1	-.5	-.5

Note: The rationale of designing this contrast is that "Michigan was the first state in comparison to the other two states to fully implement the CCSS." For that reason the coefficient for Michigan has been set at 1.

Table 12: Michigan Full Implementation of CCSS State Comparison

Summary of the CCSS Key Questions For the Planned Comparisons between MI vs Others (IN & IL)

	Value of Contrast	Std. Error	t	df	Sig. (2-tailed)
Q6	.03	.031	1.051	309.434	.294
Q7	.06	.062	.896	399	.371
Q8	.01	.053	.139	280.063	.889
Q10	.00	.041	-.073	270.407	.942
Q12	-.14	.058	-2.477	290.426	.014
Q14	.08	.050	1.487	291.523	.138

Table 13: Michigan Full CCSS Implementation State Comparison For Planned Comparison

The following six questions (based on the overall survey questions) were selected for this hypothesis:

6. Do you implement the standards in your daily practice of mathematics?
7. Have you altered your methods of practice since the adoption of the CCSS?
8. Are there adequate resources for you to fully implement the CCSS?

10. Do you receive support from others through the implementation process?
12. Does the CCSS meet your students' academic abilities?
14. Do you think the CCSS will be replaced by a new policy in the near future?

Based on this analysis, the only significant result is a negative response in question 12 (Does the CCSS meet your students' academic abilities?). The result found a 14% variance between Michigan and the other two states (p-value of =0.01). Due to the experience of teachers in this state with the implementation of the CCSS, they may have attempted to reach out to a variety of students who continue to struggle with the rigor and instruction of the new material. Although the implementation may be well-intended, teachers may not yet realize the standards associates with CCSS are meant for any academic level. Teachers in Illinois and Indiana may not experience such difficulties because they have yet to dive fully into the change.

The goal of conducting such a study is the capability of being able to compare several demographic groups with one another to understand trends that can be replicated in the future. These Midwestern states have not provided a clear conclusion, but they have been able to provide several assumptions that can be further developed in future studies.

Years of experience comparison

Many people believe that experienced teachers are reluctant to alter their practice to meet new reform intentions because they believe their method of instruction has proved successful. These same people also believe that novice teachers are reluctant to adapt to a new reform because they are already overwhelmed with other demands. In order to address these assumptions related to the CCSS, I separated my teachers by years of experience in relation to their responses. In this particular paper, I describe novice teachers as individuals who have taught for one to six years, and experienced teachers as individuals who have taught for twelve plus years. (Intermediate teachers will not be discussed in this portion of the study, but are

individuals who have taught for seven to eleven years.) The total percent of novice teachers is 31.1%, and the total percent of experienced teachers in this study is 49.1%.

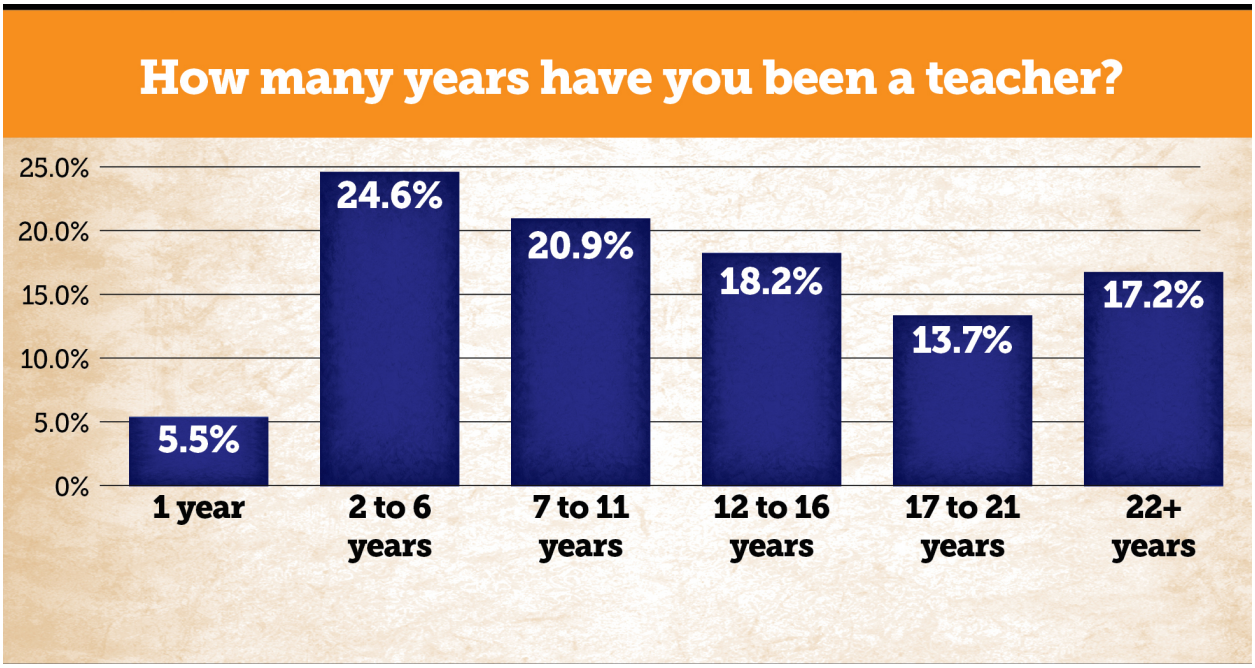

Figure 9: Breakdown of Participants Years of Experience Teaching

Although the survey questions used in this section are the same as the overall survey questions, I have altered some of the specifics to fit the two groups—novice and experienced teachers. I have only selected describing the results that indicate significant and noteworthy findings. Table 14 describes these questions. All other charts and graphs are found in the Appendix E.

Novice teachers' perspectives:	*Experienced teachers' perspectives:*
	(d) How do experienced teachers (12 to 16 years and 17+ years) respond to whether they implement the standards in their daily practice for mathematics?
	(e) How do experienced teachers (12 to 16 years and 17+ years) respond to whether they have altered their method of practice?
(a) How do novice teachers (1-6 years) respond to whether they believe they have adequate resources to fully implement the CCSS?	(f) How do experienced teachers (12 to 16 years and 17+ years) respond to whether they have adequate resources to fully implement the CCSS?
(b) Do novice teachers receive additional support? If so, by whom?	(g) How do experienced teachers (12 to 16 years and 17+ years) respond to whether they receive support?
	(h) How do experienced teachers (12 to 16 years and 17+ years) respond to whether it meets their student's abilities?
(c) Do novice teachers fear the CCSS will be replaced by a new policy?	(i) How do experienced teachers (12 to 16 years and 17+ years) respond to whether the CCSS will be replaced?

Table 14: Question Comparison Between Novice and Experienced Teachers

Novice Teachers (1-6 years)	*Frequency*	*Percent*
Q4. Are there adequate resources for you to fully implement the CCSS?		
Yes	60	49.6%
No	61	50.4%
Q5. Do you receive support from others through the implementation process? ***		
Yes	102	84.3%
By administrator	65	53.7%
By other teachers within the same grade level	94	77.7%
By other teachers in different grade levels	24	19.8%
By teaching coach	38	31.4%
By other	8	6.60%
No	19	15.7%
Q7. Do you think the CCSS will be replaced by a new policy in the near future? *		
Yes	65	53.7%
No	56	46.3%
Total	121	100.0%

*Note. *: marginally significant finding; **: significant finding; ***: strongly significant finding.*

Table 15 Novice Teacher Frequency Table

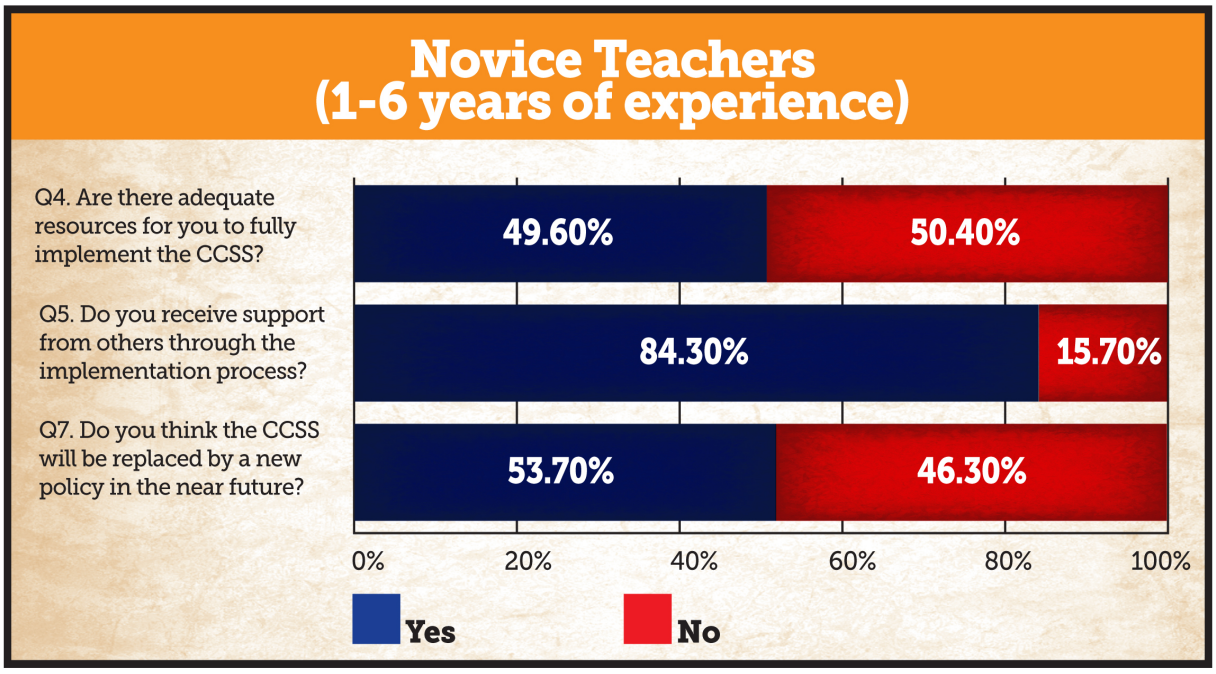

Figure 10: Novice Teacher Reponses: 3 Key CCSS Questions

Novice teachers' perspective

The first question (a) asked, "How do novice teachers respond to whether they believe they have adequate resources to fully implement the CCSS?" (question 4 of the overall survey questions). The findings demonstrate that there was a nearly even split between those who responded "yes" and those who responded "no." According to the results, 49.6% believed that they had adequate resources to implement the CCSS, while 50.4% did not believe that they had adequate resources to implement the CCSS. Therefore, the ANOVA analysis suggests that there was no statically significant difference (p-value=0.92) between these two proportions, and the number of novice teachers who felt there were adequate resources was essentially equal to those who did not. An even distribution is rather rare, but it creates interest in the next question.

The next question, question (b), was "Do novice teachers receive support? If so, by whom?" (question 5 of the overall survey questions). The findings here were that 84.3% of novice teachers felt that they received additional support. The particular individuals who were providing the support are as follows: the same grade level teachers, at 77.7%; their administrators, at 53.7%; their teaching coach, at 31.4%; and lastly teachers in their school at different grade levels, at 19.8%. Statistically speaking, novice teachers received support from a variety of individuals (p-value<0.01). However, it is important to note, based on the Part II findings, that support ranked as number 5 out of 7 in terms of importance for whether or not a teacher prioritizes a reform. These findings are relatively surprising, because we often hear that novice teachers feel they are not provided enough support. However, similar to the overall findings, the same grade level teachers are valuable assets for teachers to have. The reason for this is because teachers at the same grade level cannot only provide teachers additional material to aid their practice, but that they are more familiar with the curriculum. Teachers in the same

school at the same grade level are even more important. The accessibility of these teachers can lend a hand to either providing a positive welcoming environment or a negative environment. For example, this was seen in the qualitative portion of the study, where Teacher 9N Carlton struggled with the implementation of the CCSS because teachers within her school at the same grade level did not collaborate to understand and attempt to implement the reform standards, thus leaving the novice teacher overwhelmed and confused about not only the CCSS, but how it played a role in her school.

The next question, question (c), was "Do novice teachers fear the CCSS will be replaced by a new policy (question 7 of the overall survey questions) ?" The findings indicated that the distribution of responses on this question was nearly split in half (p-value=0.42), with 53.7% of novice teachers indicating that they expected that the policy would be changed and 46.3% of novice teachers did not believe the reform would change. One can assume, based on these findings, that novice teachers either do not have enough experience with change in policy or have heard that policies do not remain in the system and have made a decision based on the opinion of others.

Experienced teachers' perspective

Experienced teachers are unpredictable. One cannot make any assumptions about whether they are tired of reform change or whether they understand its necessity and are eager to implement reforms. The qualitative findings of this dissertation presented experienced teachers in two ways. First, there were experienced teachers who were tired of the constant adjustment to their teaching practice. These teachers rejected reform messages, without considering the value to their students. The second type of experienced teachers found in the qualitative findings were those who were open to reform change on the basis of it providing their students benefits from

the new modality. The survey questions below address if this district is just unique in its findings, or if this trend does exist among other teachers who participated in the study.

Experienced Teachers (12+ years)	*Frequency*	*Percent*
Q6. Do you implement the standards in your daily practice of mathematics? ***		
Yes, it motivates me to do so	173	87.8%
No, but it would further motivate me to do so	24	12.2%
Q7. Have you altered your methods of practice since the adoption of the CCSS? ***		
Yes	79	40.1%
Somewhat	113	57.4%
Not at all	5	2.5%
Q8. Are there adequate resources for you to fully implement the CCSS?		
Yes	88	44.7%
No	109	55.3%
Q5. Do you receive support from others through the implementation process? ***		
Yes	170	86.3%
By administrator	87	44.2%
By other teachers within the same grade level	140	71.1%
By other teachers in different grade levels	62	31.5%
By teaching coach	64	32.5%
By other	28	14.2%
No	27	13.7%
Q6. Does the CCSS meet your students' abilities? ***		
Yes	46	23.4%
Somewhat	137	69.5%
Not at all	14	7.1%
Q7. Do you think the CCSS will be replaced by a new policy in the near future? ***		
Yes	132	67.0%
No	65	33.0%
Total	197	100.0%

*Note. *: marginally significant finding; **: significant finding; ***: strongly significant finding.*

Table 16: Experienced Teacher Frequency Table

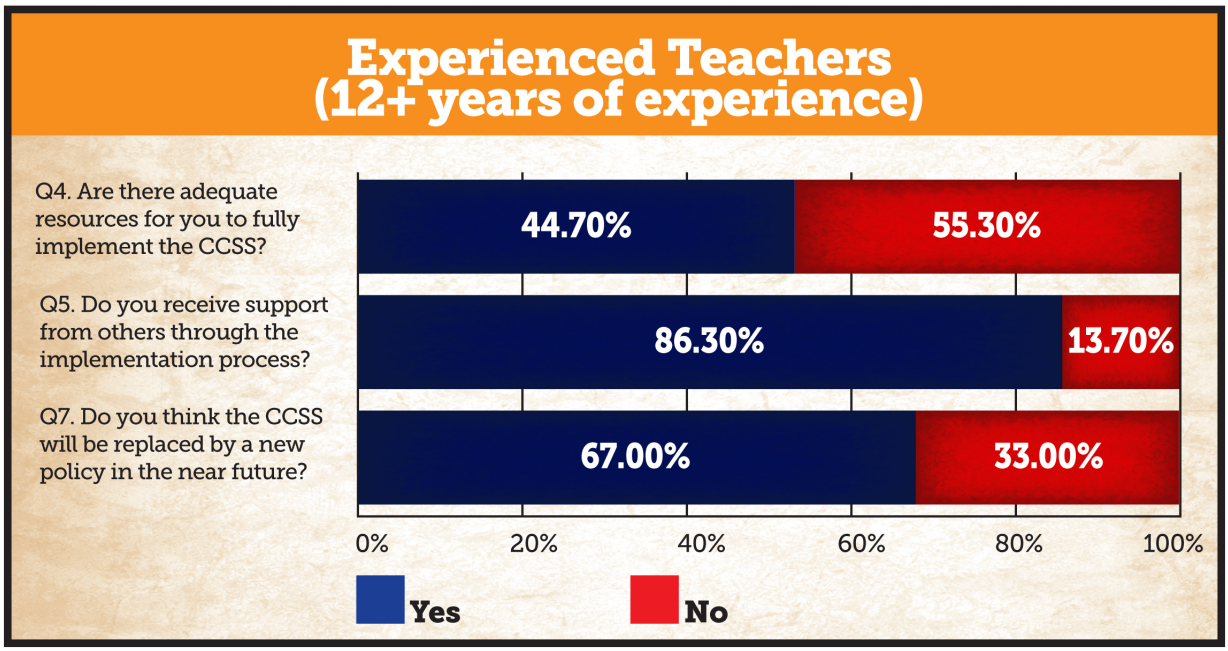

Figure 11: Experienced Teacher Reponses: 3 Key CCSS Questions

The first question that illuminated the experienced teachers' sentiments was question (d): "Do experienced teachers implement the standards in their daily practice of mathematics (question 1 of the overall survey questions)?" The findings (based on the ANOVA analysis) were strongly significant (p-value<0.01) and indicated that 87.8% of experienced teachers did implement the CCSS in their daily practice of mathematics, but 12.2% did not. This shows that experienced teachers were far more inclined to adapt the new standards and implement them in their daily math practice, unlike the even split among novice teachers. However, although experienced teachers were more flexible in adopting new standards, this finding did not indicate whether or not they recognized that a change needs to be made to their actual practice.

The next question, question (e), "Have experienced teachers altered their method of practice (question 3 of the overall survey questions)?", addressed this concern. The findings indicated that 40.1% of experienced teachers did alter their practice, and that 57.4% of experienced teachers "somewhat" altered their practice. The combined score of teachers who did

alter their practice completely and those who did "somewhat" equaled 97.5% (40.1% + 57.4% = 97.5%). Only 2.5 % of the experienced teachers surveyed stated they had not altered their practice. These results are also strongly significant (p-value<0.01). They indicate that even the 10.2% (i.e., 20 out of 197 participating teachers, by using cross-table analysis) of teachers who reported that they did not implement the standards in their daily math practice may have actually altered their practice. To question 6, "Do you implement the standards in your daily practice of mathematics?" 12.2% teachers responded "no," they did not implement the standards in their daily practice of mathematics. To question 7, "Have you altered your methods of practice since the adoption of the CCSS?" 2.5% teachers responded "no," they had not altered their methods of practice since the adoption of the CCSS.

The next area of inquiry is represented by question (f): "Do experienced teachers receive adequate resources to implement fully the CCSS?" (question 4 of the overall survey questions). The findings were not statistically significant (p-value=0.14) in that 44.7% of teachers felt they had received adequate resources to implement the reform fully, and at the same time, 55.3% of the experienced teachers surveyed responded that they felt that they did not. Ironically, novice teachers had very similar results: 49.6% of novice teachers believed they had adequate resources to implement the CCSS. The implications of these findings indicate great concern that such a large percentage of teachers do not feel like they have adequate resources to implement the reform fully.

Next, question (g) asked, "How do experienced teachers respond to whether they receive support?" (question 5 of the overall survey questions). The findings were strongly significant (p-value<0.01), because 86.3% of teachers felt they received support, and 13.7% believed they did not. When asked who they received support from, the breakdown was as follows: 71.1% from

the same grade level teachers, 44.2 % from their administrators, 32.5% from their teaching coach, 31.5% from teachers at different grade levels, and 14.2% from others, which will be discussed later in this chapter. Compared to novice teachers, the results were once again rather similar. Novice teachers reported overall that 84.3% felt that they received support. However, the results of from whom they received the support varied. 77.7% of the support novice teachers received was from teachers at the same grade level versus 71.1% of what experienced teachers received from them. 53.7% of support was received from administrators, versus the 44.2% for the experienced teachers. 31.4% of novice teachers reported the support coming from the teaching coach, and there were remarkably nearly identical results for experienced teachers, at 32.5%. 6.6% of novice teachers stated they received support from others; while 14.2% of experienced teachers stated they their support was received from others. The most significant difference between from whom novice and experienced teachers received their support was from the administrators.

The next question, question (h), was "How do experienced teachers respond to whether the reform meets their student's abilities?" (question 6 of the overall survey questions). The findings were strongly significant (p-value<0.01); 23.4% of teachers responded that the CCSS did meet their students' academic abilities, while 69.5% responded that the standards "somewhat" met their students' abilities, and 7.1% responded that the new standards did not at all meet their abilities.

The final question, question (f), asked "How do experienced teachers respond to whether the CCSS will be replaced?" (question 7 of the overall survey questions). The findings were once again strongly significant (p-value<0.01); 67% of experienced teachers responded that they believe the reform will be replaced in the near future. 33% did not believe the CCSS will be

replaced in the near future. Novice teachers were more optimistic, with 53.7% expecting the policy to change. Experienced teachers have experienced several reform turnovers and were likely concerned that once again policymakers and reformers will re-adjust the mandates for something they deem to be better for the students. Novice teachers, on the other hand, had not experienced such events, but were often warned by their surrounding environment.

Many novice teachers are overwhelmed by their new environment, the rules and regulations that accompany teaching in today's classrooms, and the teaching duties themselves. As a result, novice teachers may be more likely to follow carefully the text or workbooks provided as a sense of security. The fear of being evaluated, based on his/her students' academic abilities through standardized tests, is most likely the central concern. Unfortunately, the CCSS has failed in its intention to align standardized tests and resource materials prior to or during the first round of implementation for teachers. Therefore, some novice teachers would rather have a stable curriculum through the resources already provided, and would rather teach the standards based on the tested material, rather than a reform that has yet to have assessments and resources that align.

Experienced teachers, on the other hand, have experienced several policy changes based on their district and years of experience. They may have grown rather tired of adapting new standards based on new recommendations and political changes. However, they are more equipped, due to their past experiences, to cope with the new reforms. Experienced teachers are well-versed in their curriculum, lesson plans, materials, etc., and they are therefore more confident in their practice. Therefore, the conclusion that experienced teachers are less inclined to participate in a new reform movement, may actually hold true with this sample of teachers.

Grade level of instruction comparison

402 Kindergarten to 5th grade teachers were selected for this study. The reason I selected elementary teachers was due to the interest of studying multi-subject teachers versus single subject teachers. It is my theory that multi-subject teachers favor one subject matter over the other. This subject is usually not mathematics. After conducting several non-related interviews, I found that most elementary teachers prefer to teach social sciences over mathematics and physical sciences. Further, I am more familiar with the content standards pertaining to these grade levels, and thus I could have greater understanding of my results.

I have separated the grades into two levels: (1) kindergarten to second grade, with 197 participants; and (2) third grade to fifth grade, with 205 participants. Fortunately, this created a relatively even split of participants, which is further confirmed in Figure 12. All other charts are provided in the Appendix E section of this dissertation.

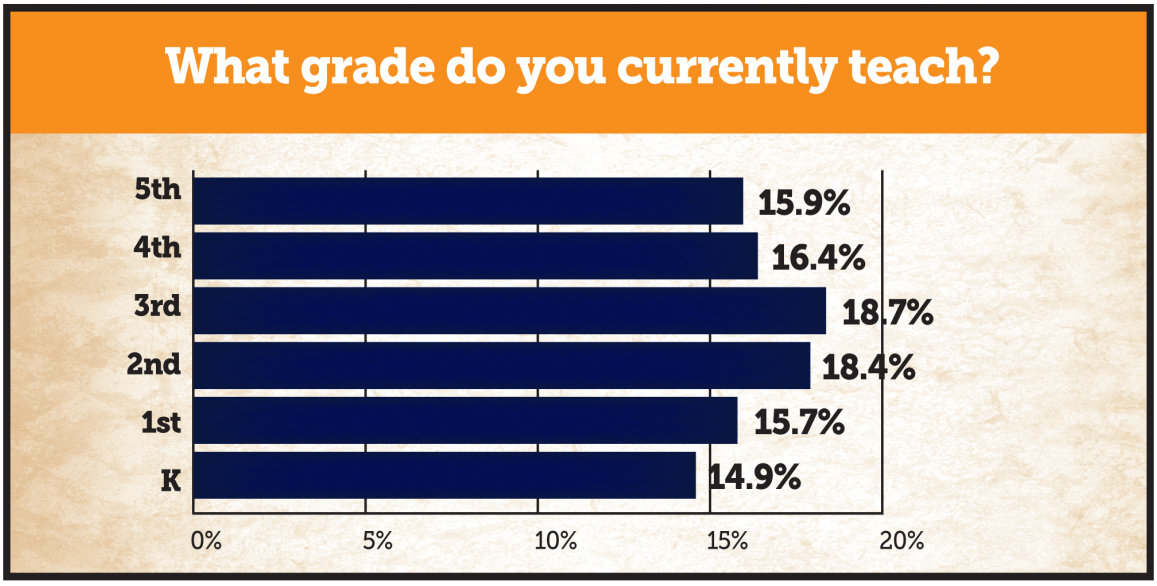

Figure 12: Teachers Response to Grade Level of Instruction

The surveyed key questions of the reform implementation and participating teachers both remained the same as the previous two sections. However, no statically significant differences

existed between the two groups. The following are the descriptive results (in terms of frequency and percentages) for each of the CCSS key questions by the two grade-level groups.

For the second question, whether teachers implemented the standards in their daily practice of mathematics (question 2 of the overall survey questions), the results indicated that 89.3% (n= 176) of K to 2nd grade teachers responded "yes" and 85.9% (n=176) of 3rd to 5th grade teachers stated "yes"; Coincidently, the number of both responses of "yes" was equal, but the response difference between the two grade level groups is not statistically significant (p-value=0.29).

For the third question, whether teachers had altered their method of practice of mathematics since the adoption of the CCSS (question 3 of the overall survey questions), the results indicated that 44.7% of K to 2nd grade teachers (n=88) stated "yes," while 50.8% (n=100) stated "somewhat," for a total of 95.5% of positive responses (including "yes" and "somewhat"; n=188). In comparison, 37.6% of 3rd to 5th grade teachers (n=77) stated "yes," while 55.1% (n=113) stated "somewhat," for a total of 92.7% of positive responses (including both "yes" and "somewhat"; n=190). There was not a statistically significant difference (p-value=0.25) between the two grade levels.

For the fourth question, whether teachers felt they are receiving adequate resources to fully implement the CCSS (question 4 of the overall survey questions), 49.2% of K to 2nd grade teachers (n=162) stated "yes," they did believe they had adequate resources, while 42.4% of 3rd to 5th grade teachers stated "yes."

For the fifth question, whether teachers believed they receive support through implementation (question 5 of the overall survey questions), 82.2% of K to 2nd grade teachers

(n=162) stated they did feel they receive support, while 84.9% of 3rd to 5th grade teachers (n=174) also felt the same. The difference between both groups is insignificant (p-value=0.48).

For the sixth question, whether the CCSS met students' academic abilities (question 6 of the overall questions), the results were as follows: 34% (n=67) stated "yes," and 58.9% (n=116) stated "somewhat," totaling 92.9% (n=183) of K to 2nd grade teachers who said the standards do meet their students' academic abilities. 3rd to 5th grade teachers also had relatively similar findings. They responded "yes" 26.3% (n=54), and 67.8% "somewhat" (n=139), totaling 94.1% of teachers (n=193) in 3rd to 5th grade who believed that the reform met their students' academic abilities. The difference between the groups again is not significant over the population of interest (p-value=0.61).

For seventh question, whether teachers believed the CCSS will be replaced with a new policy (question 7 of the overall survey questions), 57.9% of K to 2nd grade teachers (n=114) thought the CCSS would be replaced in the near future. 65.4% of 3rd to 5th grade teachers (n=134) also agreed. The discrepancy of the responses between the two groups is insignificant (p-value=0.12).

A grade level comparison allows for the unveiling of a different perspective. The two-level design of grade levels, K to 2nd grade and 3rd to 5th grade, had results that indicated minimal differences in responses between the two groups. The most significant difference was in the last question, as to whether teachers believed the CCSS would change in the near future. By a difference of 7.5%, leading with 65.4%, 3rd to 5th grade teachers believed the policy will be replaced in the near future, compared to 57.9% of K to 2nd grade teachers who believed it will change. This may imply that grade level (regarding Kindergarten to 5th grade) is not a factor to

affect and predict the teacher's perceptions of the CCSS implementation. The reason for this difference is unknown in this study, but could pose as an interesting future study.

Final Remarks

The quantitative portion of this study was remarkably valuable. Using a large data set of 402 teachers allowed me the flexibility to analyze several different situations and answer several research questions. I created my survey instrument based on themes in the literature review and in the qualitative portion. The goal was to answer the research question: How do teachers prioritize reform looking at the CCSS? In order even to begin to understand the intricacies of the CCSS and the motive behind which teachers would or would not implement it, I had to understand first the process by which teachers prioritize reform as a whole.

The first part of the Phase II study, sought to understand how teachers processed and prioritized seven categories present in the literature and the qualitative portion of this study. These seven categories are beliefs, values, relatability, support, motivation, achievability, and ease of understanding. These categories were presented in the form of a question to teachers, while asking them to categorize by least to most important. The results showed whether a teacher believed in a reform dictated whether or not they implemented the reform.

After understanding how teachers prioritize the reform categories, the second part of the study introduced the current reform of the CCSS. The goal was to see if the CCSS actually met the trend presented in Part I, and it did. While using several key CCSS survey questions, teachers still used whether or not they believed in the reform to illustrate how they felt about the reform.

The third part of Phase II of my study looked strictly at three demographic groups, to discuss differences and similarities among responses. These groups were state comparisons,

years of experience teaching, and grade level. Besides a small significance among states, the other demographic groups did not illustrate any significant results.

Chapter VI: Policy Discussion and Concluding Remarks

Our nation struggles with large achievement gaps between low-income students and high-income students, between students with gifted abilities and students with disabilities, and among students from a variety of cultures, ethnicities, genders, and many other characteristics. Our students come from a variety of backgrounds, and thus many struggle to adapt to our current traditional education system. Throughout our nation's history, the stakeholders in our school system have attempted to close this gap and fix our failing schools by implementing new reform policies.

These reforms have been presented through a variety of approaches, and they have often been marketed with great enthusiasm as the "one" reform that can solve the nation's educational dilemmas. Unfortunately, the education reformers' attempts to reform our school system positively have been unsuccessful. These failures have occurred for a variety reasons. One reason is the lack of communication and understanding between the implementers of the reforms, teachers, and the reformers themselves. This disconnect was demonstrated through the difficult interpretation of our last federally mandated reform, NCLB, which was implemented under President George W. Bush. This reform lacked clarity and provided little actionable guidance for teachers. It failed to address the key question of how we can gain buy-in of the key players - implementers.

In order to encourage teachers' buy-in to a new reform policy, and to encourage implementation in the classroom, all stakeholders must consider the way in which teachers think and process information. In any form of marketing, the sales people must understand what the client's needs and wants are. The same is true of education reforms. Policymakers must understand what teachers look for and consider when deciding whether or not to implement the

new reform. Therefore, it is important for stakeholders to discover how teachers prioritize reform.

This dissertation has focused on addressing two research questions pertaining to how teachers prioritize reform. It used a mixed methods study of both qualitative - teacher interviews and quantitative - teacher surveys. In order to understand further how their views played out in practice, the study used the current reform of the Common Core State Standards (CCSS), specifically in mathematics.

The qualitative portion of the study involved interviews of all fourth grade teachers in all four elementary schools within a single district in Michigan. All interviews were conducted during the academic year of 2012 to 2013. Additional interviews were conducted with four Indiana and Illinois fourth grade teachers, and a final interview was conducted with the same Michigan district's Instructional Coach, to help clarify the teacher responses.

The quantitative portion of the study surveyed 402 kindergarten to fifth grade teachers in three Midwestern states: Illinois, Indiana, and Michigan. These surveys were all administered during the academic year of 2012 to 2013. Although all states had fully adopted the CCSS during this time, Michigan was the only state that had fully implemented the CCSS.

The literature on this topic helped mold the theme of my research, both qualitatively and quantitatively. Two main ideas must be present in order to begin considering how teachers prioritize reform. Teachers must have knowledge of the reform's intentions; in other words, they must know of its existence and accurately understand its message. Second, which is the overarching framework of this study, they need to make sense of the reform ideals. They must internalize the reform information, process it, and make sense of it on their own terms.

The literature also presented seven key categories (see Appendix C – Figure 5) that teachers deem important when considering whether or not to implement a reform. These categories are (a) how a teacher values a reform, (b) whether it aligns with their beliefs, (c) whether they are able to relate to the reform ideas, (d) whether they see the reform as achievable, (e) whether the motivating factors of the reform outweigh the non-motivating factors, and (f) whether the teacher receives the support necessary from the various stakeholders. In the literature review, one category did not outweigh the other; however, the qualitative and quantitative studies did find two different ways in which teachers described the alignment of these six categories in terms of their importance when making decisions about prioritizing reform in the classroom.

Phase I

After conducting 16 teacher interviews, 12 specifically in one district in Michigan, the following patterns (see Appendix D – Figure 9) were identified. Teachers who possess knowledge to understand the reform ideas and to make sense of the intentions seek the assistance and evaluate their environment prior to deciding whether or not to buy-in to the new reform. *Ashford* and *Carlton* teachers, although mostly experienced, did not possess knowledge or understand the reform ideals; therefore, the teachers in these schools were unable positively to support one another through the implementation, and thus they failed to implement the CCSS.

However, if teachers do have the knowledge, understand the reform ideals, and are supported through the change by various stakeholders including but not limited to same grade level teachers, they begin to successfully conceptualize the change in their classroom. The teachers at *Davis*, *Teacher 10E* and *11E*, did possess all the qualities above, but they were waiting to see how other teachers applied the reform to their classrooms, and whether their

students could relate to the reform material. However, within the same school, *Teacher 12E* believed it to be achievable and relatable to her students. Therefore she was motivated to re-evaluate her beliefs and values and alter her method of practice. The same was true of *Brookfield* teachers, who also possessed all the qualities of *Teacher 12E* at Davis. Teachers in Indiana and Illinois further confirmed this trend through their responses of either their positive or negative responses to the CCSS. Based on the qualitative research findings, a formula was created. This formula can be found in Appendix X.

The Instructional Coach further confirmed this trend, while providing a deeper understanding of why all four schools in one district are vastly different from one another. Further, her insight provided confirmation that this particular district lacked knowledge of and support for the CCSS, and thus was unable to make sense of or correctly implement the standards. The teachers who supported the reform change and had been implementing it in their classroom had taken a more hands-on approach to professional development, seeking the assistance of not only the district, but also outside academic influences, such as the surrounding district's professional development and private workshops sponsored by higher education institutions and non-profit organizations.

Phase II

After conducting 402 surveys with kindergarten to fifth grade teachers in Illinois, Indiana, and Michigan (during the academic year of 2012-2013), the findings varied from the deeper study in Phase I. In order for policymakers and other stakeholders to understand what adjustments to make to ensure the implementation of their reform, this portion of the study sought to understand (I) how teachers prioritize reform as a whole (using the seven themed categories cited in the literature and the qualitative portion of this study), without the

consideration of one specific reform; (II) how teachers prioritize the new reform of the CCSS in their daily practice of mathematics; and (III) whether their responses to the overall question of reform coincided with their specific views of the CCSS.

Quantitative Results

Part I (see Appendix D) of Phase II of the study found that when teachers were asked to rank the seven categories (beliefs, values, achievability, relatability, motivation, support, and ease of understanding), what the literature deems as being the process by which teachers decide whether or not to implement a reform suggests that the most important influences are whether they believe in the reform and whether they value the reform. The least important category teachers consider when prioritizing reform is whether teachers can relate to the reform's intentions. In essence, can they relate to the material, have they perhaps seen it before, and does it work with this group of students? This implies that when they truly believe in the reform and its goals, they are less concerned with whether they can relate to the reform's intentions, because they can seek additional professional development to aid them in understanding and relating the new reform goals to their practice.

Part II of Phase II of the study used the CCSS and the practice of mathematics as an example of a current reform. The CCSS key questions (see Appendix B) also pertained to the same themes. Four questions were selected:

(a) Question 6 (Do you implement the standards in your daily practice of mathematics?),

(b) Question 7 (Have you altered your methods of practice since the adoption of the CCSS?),

(c) Question 12 (Does the CCSS meet your students' academic abilities?), and

(d) Question 14 (Do you think the CCSS will be replaced by a new policy in the near future?).

After conducting a General Linear Model Analysis, the study found that 87.8% of teachers stated that they do implement the standards in their daily practice of mathematics. This is exceptionally positive for a reform that has just begun its implementation process. If such a large number of teachers believe that they are implementing the standards in their daily practice, it is possible that many of them believe in the reform and its intention. Being that there are no evaluation standards placed on these teachers to determine whether they implement reform, their enthusiasm may be due to their honest belief that the reform is not just a fad, but will remain.

While many teachers stated that they'd implemented the standards in their daily practice of mathematics, there is a difference between that statement and actually making the adjustment from their old mathematics practice to the new one—another hurdle reformers must face. Combining the responses of "yes" and "somewhat", 94% of teachers stated they altered their method of practice since the adoption of the CCSS, which is positive in the sense that teachers actually recognize a change needs to be made in their classroom instruction and then are actively making the adjustments. However, if those same teachers stated they did not alter their method of practice, they are indicating that they do not notice a difference between their past instruction and the current reform change. It may also be that the additional percentage of teachers who'd indicated that they had changed their instruction compared to those who had indicated that they'd implemented the standards could possibly be due to some teachers partially implementing the standards but not fully integrating them in their practice.

Many teachers do not fully understand the intentions of the CCSS. Many critics of the CCSS perceive these standards to be a curriculum when in fact they are only a set of standards

that teachers are asked to reach. These standards are merely goals, and therefore, they can be taught in any fashion. Whether the student is struggling academically or gifted, it is up to the teacher to adjust his or her teaching style based on the CCSS expectations. When teachers were asked whether the CCSS met their students' academic abilities, with a combined score of "yes" and "somewhat", 93.5% teachers believed the CCSS met their student's abilities. This indicates that many teachers understand that the CCSS is merely a set of goals that they need to reach through a variety of teaching methods.

One of the greatest concerns about a new reform is its longevity. When teachers were asked if they thought the CCSS would be replaced in the near future, 61.7% stated "yes", leaving 38.3% to believe in the longevity of this reform. In comparison to the above three responses, this is a rather low number of believers in the staying power of the CCSS. The idea of entirely changing one's practice to meet the intentions of a reform that will slowly fade is troublesome. If teachers continue to believe that the CCSS will be replaced, they are less likely to fully implement the standards. The doubt they harbor will alter their motivation and practice. It is therefore important for reformers and stakeholders who support the CCSS to address this issue and rectify it by financially securing its position in the political arena.

In order to understand how the CCSS played a role in how teachers prioritize reform as a whole, Part I and Part II of the study were combined, thus creating a third section.

Part III Phase II of the study compared the seven themed categories along with the selected CCSS specific questions (question 6, 7, 12, and 14) to determine any correlations among the variables (see Appendix B). The results found that all four questions presented the same findings. When teachers were asked if they implemented the standards in their daily practice of mathematics, whether they have altered their method of practice since the adoption of the CCSS,

whether the CCSS meets their students' academic abilities, and whether they believed the CCSS will be replaced by a new reform in the near future (question 6, 7, 12, and 14 of the overall survey questions), their beliefs played a leading role in their response. What was the least significant element was whether they could relate to the reform intentions, meaning the results mirrored those of Part I. Teachers must believe in the reform to even begin introducing it into their classroom. They must believe that the reform has positive intentions for their students' learning and achievement. However, whether they can relate to the reform is not something they consider when implementing. Teachers have been known to adopt standards and practices that they have no previous experience with as long as they feel they contribute to their students' success. Policymakers thus have the task of encouraging teachers to truly believe in their message and believe that the reform is capable of increasing their students' academic achievement—and, most importantly, teachers must be able to trust that the CCSS will stay as a mandated statewide standard for several years to come.

Overall Summary

The Common School Movement was the first and most successful reform in our country's history. Following this movement, no other reform has illustrated such longevity and security for our students, thus leaving many of our teachers pessimistic and hopeless about reform change. In order to better understand how teachers process reform and how they prioritize their thoughts, I conducted this study.

The goal of this study was to understand how teachers prioritized reform as a whole, while using a current reform, the CCSS, and a single subject, mathematics, in one region, the Midwest, to better understand the school culture and climate surrounding these changes. This study found that teachers must first understand the reform and make sense of it if the reform is to

be implemented successfully. On one hand, the qualitative portion of the study indicates that if those two categories are successfully achieved that the teachers must then be supported through implementation and find the new ideals relatable and achievable in order to begin to believe in and value the reform. On the other hand, in multiple ways, the quantitative portion of the study indicated that beliefs play a significant role in the implementation process. When teachers believe in a reform, they are better able to adjust all other categories to either accept or dismiss the new change.

Policy Implications

One contribution from this study is its demonstration of how teachers in one district (further confirmed by two teachers in Illinois and two teachers in Indiana) processed and prioritized reform. Based on the research findings, the study found a specific formula that may be used in other districts across the county (see Appendix C).

These findings provide a deeper understanding of the environment in one particular district. Additionally, based on the results of the Illinois and Indiana teachers, the findings can possibly be considered in a variety of districts. The research findings allow all stakeholders involved in the reform process to understand how teachers prioritize reform. Note that this does not only relate to the CCSS in mathematics, but also to reform universally, because the interview results did not strictly specify that the CCSS was the only reform affected.

First and foremost, reformers must provide adequate knowledge and professional development for teachers to grasp the very idea of the reform. Professional development must be provided by knowledgeable individuals, who are well versed in the reform's intentions, not by individuals who are only implementing the standards in their classroom for the first time. While it is important for teachers to understand the reform ideals, it is just as important for them to be a

part of the processes. This study found that those teachers who were part of creating the professional development tools for their colleagues and joined the implementation discussion were more inclined to adjust their practice and beliefs.

It is difficult to provide stakeholders with a concrete strategy to guarantee the success of a new reform, but this formula has held true for this particular district and the other teachers interviewed in the Midwest.

In relation to the quantitative portion of this study, teachers were found to have strong beliefs and values. Policymakers must consider these beliefs and values when encouraging implementation. Reformers have two choices: the first of which is to understand the teacher's beliefs, which can be difficult to overcome due to the natural variation of personalities and individuals – making the second option, which is using teachers as aids to create new reforms, and using their expertise and opinions to create and adjust to these new policies.

Limitations of the Study

The limitations of both the qualitative and quantitative aspects of this study pertain to the research design. One similarity exists between the two methods. Both methods used a convenient sample of teachers, either in Michigan or in the surrounding states. The drawbacks to such a sampling method is the risk of getting biased results. For that reason, I cannot make any definite conclusions, but I can state that there was a trend in this particular pool of respondents. Both methods are also limited not only due to their convenient sampling geographically, but also due to the selected grade level. Interviewing and surveying other grade levels could have also provided a different perspective. For example, selecting high school grade levels, where teachers are better versed in their subject matter, or lower-grade levels, where teachers provide students

with the basic skills, could have provided different results. However, due to the cost and time of this dissertation, I carefully selected my sample.

Qualitative Methods Limitations

The qualitative portion of this study is also limited because interviewee's self-disclosure may be intentionally or unintentionally holding back information. For example, teachers can forget to mention a significant detail of their story, or they may assume the interviewer is already privy to the information. They may also be uncomfortable sharing privileged information. However, three of these teachers were very candid in their responses, because they were due to retire that academic year and did not fear that their responses would create any negative ramifications. However, other respondents may not feel encouraged to provide accurate, honest answers, or they may not feel comfortable providing answers that present them in an unfavorable manner. In order to overcome this barrier, I asked the questions in several different ways. There was however, one instance where a teacher was not providing a clear answer and was veering away from the question, and thus I documented that question as "unanswered." All teachers and the Instructional Coach were asked the same questions, to provide greater understanding of the environment and the meaning behind other teachers' responses. Clarifying questions were also asked of the Instructional Coach.

My dissertation proposal discussed a potential risk of non-response error. Fortunately, I was able to overcome this issue, because I aimed to interview 100% of fourth grade teachers in this district, in hopes of obtaining 75%, and I successfully met the 100% target.

Quantitative Methods Limitations

The quantitative portion of this study is also limited in its research design. Similar to the qualitative methods section, the potential risk of non-response error was also a concern.

Therefore, I selected a large pool of one thousand teachers with a 20% response rate acceptance, as proposed in my dissertation proposal. However, I successfully received over a 40% response rate, and these surveys were viable.

An additional limitation to my study was the types of questions posed. Close-ended questions often are limiting. In order to remedy this issue, I included open-ended questions to enhance clarity and provide a broader understanding of the answers.

In terms of the statistical limitations, there were several uncontrolled factors, such as environmental and policy changes, that were difficult, if not exceptionally difficult, to consider in this type of study. During the survey period, several states had policy changes to the CCSS that affected their funding and implementation. After considering these changes, I compared the pre-survey results with the post-survey results, and I found no significant difference.

Questions for Further Study

This study was conducted during the beginning phase of the implementation of the CCSS. It would be interesting to conduct a replica study, because looking at teachers' responses two to three years after implementation of the CCSS would evaluate the formula described in the qualitative portion of this study. It would further assess whether teachers' responses to the CCSS key questions alter over time. This question could either support or contradict my study.

Also, looking at a different region of the United States would also be an interesting question. Additional questions could be asked, such as more content-specific questions about the similarities and differences between the classroom instruction under CCSS and teachers' previous practice methods to assess if their changes are actually reflecting the reform intentions or if their changes are missing the mark.

Further, this study also collected questions pertaining to support by various sources and stakeholders. A further study could be conducted looking at the data from this study pertaining to determine how teachers perceive support from the CCSS, or how particular support factors can play a significant role in the implementation process.

While writing this dissertation, I used a part of my data to write a journal article on how teachers perceive principals in school reform. The data was taken from both the qualitative and quantitative portion of my study, focusing its attention on the questions pertaining to reform support.

APPENDICES

APPENDIX A

Interview Consent Forms

Dear Mathematics Teacher:

You are being asked to participate in a research study on the implementation of the Common Core State Standards in Mathematics by answering questions regarding reform policies and the implementation process. This participation is voluntary. You have the right to decline. You may change your mind at any time and withdraw. You may choose not to answer specific questions or stop participating at any time. If you choose to participate in the 45 to 50 minute interview, you will receive $30 to Amazon. If you have any questions regarding this study, please contact Honey Ghods ghodshon@msu.edu (949) 295-3442.

Please indicate your voluntary agreement to participate in the implementation of the Common Core State Standards in Mathematics by signing below.

_____ _____

Signature Date

Please complete the information below so that your payment can be issued

First name _____

Last name _____

Home address including city, state and zip code

_____

_____

_____

(Please no P.O. Box)

Sincerely,
Honey Ghods

Interview Questions

Name of Teacher
Code for Teacher
Date
Grade

1. Could you describe your teaching background, your current teaching position, and how long you've been teaching at your current school?

2. Have any mathematics reform changes occurred since you began teaching?
   (Probe: If there have been changes, how have they impacted your teaching practice?)

3. Do you feel confortable changing/revising your math practice when policies in your district/state change?

4. Do you feel confident changing/revising your math practice when policies in your district/state change?

5. How would you describe the different between your past and current teaching practices?

Key Common Core Questions

6. Are you familiar with the CCSS?
   (Probe: If so, do you utilize the CCSS in your daily practice of mathematics? If so, how? What would facilitate an easier transition to implement the CCSS?)

7. (Whether you're familiar or not with the CCSS) What's your process of implementing district/state policies into your practice?

8. Do you think the mandated standards/policies you are asked to implement enhance or improve your approach to teaching?

9. Do the policies take into account differentiated learning abilities of students in mathematics?

10. Do your students have a hard time adapting to policy change?
    (Probe: why or why not?)

11. Have your teacher colleagues at your current school influenced how you have learned about and responded to mandated standards/policies?
    (Probe: If so, how have these colleagues influenced you?)

Key Professional Development and Support Questions

12. Does your district facilitate your capacity to implement policy reform? What could they do better?

Please select all that apply

- ❑ Teacher meetings
- ❑ Professional development
- ❑ Review of textbooks/workbooks
- ❑ Review of supplemental materials
- ❑ Discussion of the impact of standardized testing
- ❑ Other_____

13. Why did you choose the above assistance programs?
Please write your answer in the space provided below.

14. If you were in charge of developing a core standard, such as the CCSS how would you ensure your teachers participate in the reform?

APPENDIX B

Survey Consent Form

Dear Mathematics Teacher:

You are being asked to participate in a research study on the implementation of the Common Core State Standards in Mathematics by answering questions regarding reform policies and the implementation process. This participation is voluntary. You have the right to decline. You may change your mind at any time and withdraw. You may choose not to answer specific questions or stop participating at any time. If you choose to participate in the 14 question online survey, you will receive $10 to Amazon. If you have any questions regarding this study, please contact Honey Ghods ghodshon@msu.edu (949) 295-3442.

Please indicate your voluntary agreement to participate in the implementation of the Common Core State Standards in Mathematics by signing below.

_____ _____

Signature Date

Please complete the information below so that your payment can be

issued First name _____

Last name _____

Home address including city, state and zip code

_____

_____

_____

(Please no P.O. Box)

Sincerely,
Honey Ghods

Dissertation Survey Questions

Background demographic questions:

1. How many years have you been a teacher?
    - 1 year
    - 2 to 6 years
    - 7 to 11 years
    - 12 to 16 years
    - 17 to 21 years
    - 22+years
2. Please indicate the state where you currently teach
    - Indiana
    - Illinois
    - Michigan
3. Is your district located in an urban, suburban, or rural area?
    - Urban
    - Suburban
    - Rural
    - Other
4. What grade do you currently teach?
    - Kindergarten
    - 1st
    - 2nd
    - 3rd
    - 4th
    - 5th

Main reform questions:

5. Have you heard of the Common Core State Standards (CCSS)
    - Yes
    - No
6. Do you implement the standards in your daily practice of mathematics?
    - Yes, it motivates me to do so by _____
    - No, but it would further motivate me to so by ____
7. Have you altered your methods of practice since the adoption of the CCSS?
8. Are there adequate resources for you to fully implement the CCSS? Such as: professional development, aligned text material, etc.
    - Yes
    - No
9. What additional resources would be most beneficial to your implementation of the CCSS?
    - Aligned textbooks/workbooks
    - Professional Development
    - Teacher meetings
    - Review of supplemental material
    - Alignment of standardize testing
    - Other _____

10. Do you receive support from others though the implementation process?
    - Yes
    - No
11. if so, by whom?
    - Administrator
    - Other teachers within the same grade level
    - Other teachers in different grade levels
    - Teaching coach
    - Other _____
12. Does the CCSS meet your students' academic abilities?
    - Yes, it meets all my students' needs
    - Somewhat
    - Not at all
13. In what order do you prioritize the following when implementing a reform? (1 being the most important and 7 being the least important)
    - Do I value the reform?
    - Do I believe in the reform?
    - Are there motivating factors to implementing the reform?
    - Is the reform easily understood?
    - Is the reform achievable?
    - Can I relate to the reform intentions?
    - Do I receive support to implement the reform?
14. Do you think the CCSS will be replaced by a new policy in the near future?
    - Yes
    - No

APPENDIX C

Knowledge

Q #	Question	Ashford 1E	Ashford 2E	Ashford 3M	Brookfield 4E	Brookfield 5E	Brookfield 6E	Carlton 7E	Carlton 8E	Carlton 9N	Davis 10E	Davis 11E	Davis 12E
		Experienced Teacher Response	Experienced Teacher Response	Moderate	Experienced Teacher Response	Experienced Teacher Response	Experienced Teacher Response	Experienced Teacher Response	Experienced Teacher Response	Novice	Experienced Teacher Response	Experienced Teacher Response	Experienced Teacher Response
2	**Have any mathematics reform changes occurred since you began teaching?**	**YES** "several times."	**YES** "Somewhat, yea, I guess I would say so"	**YES** "but I've only seen the previous curriculum to the CCSS. Its really a lot more deletion to our curriculum. They haven't really added anything."	**YES** "we've had the state standards a while back then the Glics and now the CCSS."	**YES** "The Common Core is a mile deep and inch wide that's very different than the Glics, that was a spiral curriculum."	**YES** "you know even technology has changed our practice."	**YES** "but whether or not they've gotten better that's another thing. We are responsible for so many more activities and there is so much extra work."	**YES** "higher expectations, there are more demands. More language for our students. Its really a lot more thinking."	**YES** "I have only been teaching for 5 years, but I do see a change from our last mandate to this one.	**YES** "I'm learning a new curriculum. The approaches are different."	**YES** "We notice them especially with the assesment changes."	**YES** "Absolutely math reforms have changed. They've become more demanding. These kids need to think more and process the information."
5	**How would you describe the different between your past and current teaching practices?**	"My past practice isn'y much different. At least I don't think so."	"since before the common core? Oh it's the same."	"I haven't really thought about changing my practice yet."	"Its more specialized and specific now.It was a lot broader before."	"I'm a believer in the CCSS and I'm implementing it, but I haven't altered the way I teach the material just took some of the pages out of the Everyday Math textbook that I didn't think aligned with the standards"	"I've adjusted a couple of things to meet the requirements. Its really not that different from what we were already doing."	" I would say its less of a change for expectation, but more variance in content. Its way too heavy in factions and decimals."	"They seem like mini lessons. There is a graduaal release of responsibility. "	"Its not much different. My students don't get it so nothing has really changed."	"I'm not too sure if its changed. I havn't chanegd the way I teach in so long. I don't appreciate how we have to talk more rather than just teach."	"I'm implementing the CCSS, but why should I change my practice? It's the same thing."	"There's more flexibility now where there wasn't before. As a teacher I can grow and expand the thought processes."
6	**Are you familiar with the CCSS?**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
10	**Do your students have a hard time adpating to policy change?**	**NO** "They don't know what's going on."	**NO**	**NO**	**NO** "These kids don't notice a change. Its not like we are using different books. Maybe that's a good thing"	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Figure 13: Qualitative Responses Chart 1

Sensemaking Questions

Q #	Question	Ashford 1E	Ashford 2E	Ashford 3M	Brookfield 4E	Brookfield 5E	Brookfield 6E	Carlton 7E	Carlton 8E	Carlton 9N	Davis 10E	Davis 11E	Davis 12E
		Experienced Teacher Response	Experienced Teacher Response	Moderate	Experienced Teacher Response	Experienced Teacher Response	Experienced Teacher Response	Experienced Teacher Response	Experienced Teacher Response	Novice	Experienced Teacher Response	Experienced Teacher Response	Experienced Teacher Response
11	**Have your teacher colleagues at your current school influenced how you have learned about and responded to mandated standards/policies?**	"I mean we get together and talk about it. We trade e-mails. But its really not something we pay much attention to. It's not on our radar."	"**YES,** they have. But, I wouldn't want help from others. Oh I don't want help from my principal. Imagine him now evaluating us on some reform that doesn't have any alignment to the textbook or assessments."	"Its something that we talk about.I would say that teacher 1E has greatly influenced how we understand the intentions behind the CCSS."	"They may not necessarily influence how I learn about the CCSS, but they do provide good insight. We work together to figure things out. It's actually really helpful."	"Absolutely, especially the teachers I work with in this gradel. We exchange lesson plans and things we find on the Internet. It's hard to do this all alone."	"Our instructional coach gave us a guide of what pages we should be using from our textbook. It was really helpful. We stopped wasting time on things that were not in CCSS."	"We don't really work together on stuff like this. I mean we do get e-mails from the superindent or our unions about the new mandated stadnards, but nothing else."	"Yeah I mean they tell us its probably not the best thing for us. They should know we are all in the same school."	"Although the other teachers in the grade level have been doing this for a while, it would be nice to get some feedback or support from our principal. He's not really hands on when it comes to things like this, but I don't want to be evaluated on it…I just want to know I can go to him if I had questions about the material."	"Well we support each other through, but they don't influence any decisions its mainly about the understanding of the core."	"I don't think they influence how we learn about it. We all kind of learn it together the same way."	" I actually attend out of school PD and look for additional resources to help me figure it all out."
14	**If you were in charge of developing a core standard, such as the CCSS how would you ensure your teachers participate in the reform?**	"Well first I would ask the teachers to step in and help write the policy. It's important to hear what thy have to say. They are th ones that this hurts the most."	" I wish people would ask us that more often and actually take our responses into consideration. I would start with evidence to show teachers how it impacts student achievement. I would have a program that aligns with everything and is ready to go. Something that has already been tested. Oh, and PD is a must. good PD."	"Maybe it should first be presented to teachers for feedback. What's wrong with having our opnion? They just expect us to be followers. That's not really something I feel confortable with"	"Asking teachers is the key to this. I would ask teachers opinions and work with them to understand what we need to know to make the new change. I know a lot of teachers are wondering why we are not asked."	" I would provide hands on PD. Then I would do follow ups to make sure teachers actually get it. Materials are necessary. Consistent materials, things that align."	" I would recommend asking teachers and kids to pilot it. I would also let's take the politics out. Its really not doing anyone any favors."	" I would begin by training teachers and including their opinions .And, having textbooks and materials that align. Its nearly impossible for us to implement the CCSS."	"There needs to be focus groups. These need to include teachers and they need to pilot the reform. Then that group needs to present it to the bigger group of teachers and so on. They need to see what works and establish some sort of credibility."	"I would encourage lots of PD and discussion. How to support the new policy change. Time to develop the curriculum. Observations other teachers can learn from. Give us grade level examples. Its really hard to relate to when its not in the same grade."	"It's important to consider the people it affects the most.	"No one asks us how we feel our students will cope with the change. The teachers and policymakers should create multiple drafts and go back and forth with ideas."	"Include the teachers voice. Ask us to be part of the change. For us to understand it we need to be part of it."

Figure 14: Qualitative Responses Chart 2

Support/Professional Development

Q #	Question	Ashford 1E	Ashford 2E	Ashford 3M	Brookfield 4E	Brookfield 5E	Brookfield 6E	Carlton 7E	Carlton 8E	Carlton 9N	Davis 10E	Davis 11E	Davis 12E
		Experienced Teacher Response	Experienced Teacher Response	Moderate	Experienced Teacher Response	Experienced Teacher Response	Experienced Teacher Response	Experienced Teacher Response	Experienced Teacher Response	Novice	Experienced Teacher Response	Experienced Teacher Response	Experienced Teacher Response
12 & 13	**12: Does your district facilitate your capicity to implement policy reform? What could they do better? 13: Why did you choose the above assistance programs?**	"Does the district help me implement the Core? I don't think so. They could provide more PD, but that hasn't been helpful before. It actually just waste's our time."	"They could provide more teacher meetings, more PD, aligned textbooks, and help us understand the new assessments. They need to have a more handson approach when giving us this information."	"It tries to, but it has not been successful. They could provide us with PD- benificial PD. They could also trust us more."	"We work together. If one of us has a problem we just Google it…I know it's sometimes a gamble."	"We had some good PD this year. Last year was a disaster though. They could provide us with more PD though. It never hurts to have too much."	" Having more postive ISD e-mails go out for PD and sessions. PD is really important to our understanding and growth."	"Our biggest issue isn't so much that we lack support by the district its more the issue of time alocations. We have all these new mandates for both Math and English and its just had to make that much time in a day.I had to cut my math time by 20 minutes per lesson."	"Give us more PD. Let us work with students in the same grade level, but district wide teachers. Also letting us put together presentations as well. We can teach each other better in the long run."	"I would recommend on going teacher meetings and PD. We have a lot of anxiety because the assments and textbooks do not align with one another. It just seems like I'm being pushed and pulled."	"I need some examples that talk about 4th grade math."	"PD was provided by our district a couple of times, but non of it was helpful. It wasn't about my grade, so I don't think it was relevant…let alone be about the CCSS. I just don't think our school knows enough about it to make any decisions about how this hurts or helps our students...I'm just not sure it's smart to fully implemet till they know it sticks."	"None from the list provided, but more from the number of people implementing it who are strong believers it will succeed. We need more staff members who can teach the others."

Figure 15: Qualitative Responses Chart 3

APPENDIX D

In what order do you prioritize the following when implementing a reform? (1 - the least important ; 7 - the most important)	Do I value the reform?	Do I believe in the reform?	Are there motivating factors to implementing the reform?	Is the reform easily understood?	Is the reform achievable?	Can I relate to the reform intentions?	Do I receive support to implement the reform?
1	9.7%	4.7%	23.1%	7.5%	4.5%	26.9%	23.6%
2	8.5%	10.9%	15.4%	14.2%	10.0%	27.6%	13.4%
3	13.9%	9.5%	12.9%	16.4%	21.1%	12.9%	13.2%
4	9.5%	12.4%	14.4%	21.6%	16.2%	13.7%	12.2%
5	11.7%	10.2%	19.7%	14.4%	20.4%	9.7%	13.9%
6	25.1%	25.9%	6.2%	15.7%	9.7%	5.7%	11.7%
7	21.6%	26.4%	8.2%	10.2%	18.2%	3.5%	11.9%

Table 17: 7 Categorical Comparison Percentages

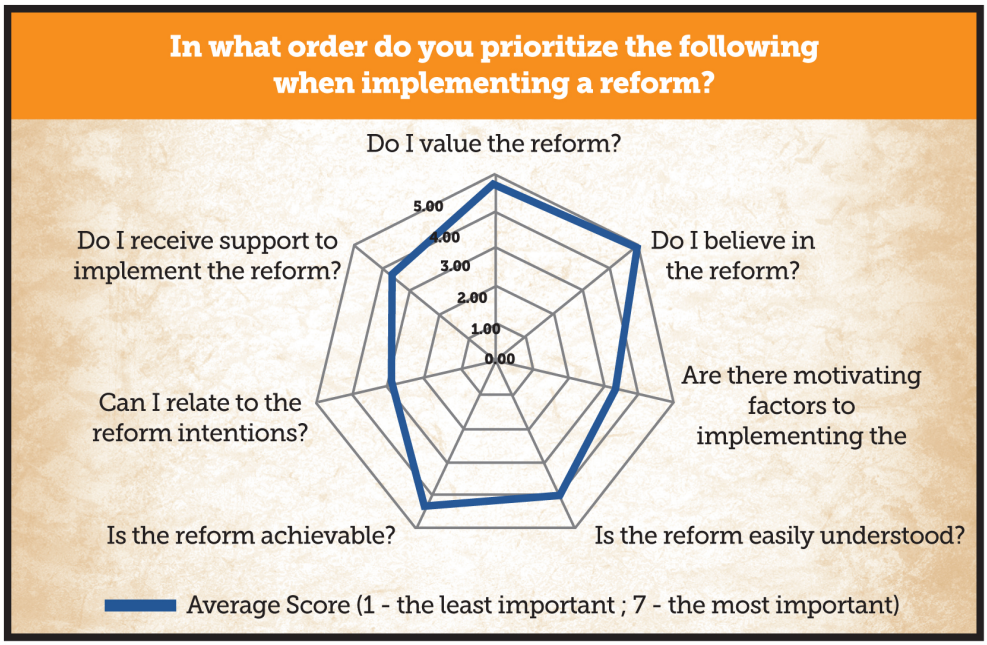

Figure 16: 7 Categorical Mean Comparisons

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.480	6	.080	.719	.634[b]
	Residual	44.066	396	.111		
	Total	44.546	402			

a. Dependent Variable: Do you implement the standards in your daily practice of mathematics?

b. Predictors: (Constant), In what order do you prioritize the following when implementing a reform? (1 being the most important...-Do I receive support to implement the reform?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Can I relate to the reform intentions?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Is the reform achievable?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Is the reform easily understood?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Are there motivating factors to implementing the reform?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Do I believe in the reform?

Table 18: Implementation of Standards in Daily Practice

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.749	6	.292	.837	.542[b]
	Residual	137.918	396	.3448		
	Total	139.667	402			

a. Dependent Variable: Have you altered your methods of practice since the adoption of the CCSS?

b. Predictors: (Constant), In what order do you prioritize the following when implementing a reform? (1 being the most important...-Do I receive support to implement the reform?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Can I relate to the reform intentions?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Is the reform achievable?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Is the reform easily understood?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Are there motivating factors to implementing the reform?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Do I believe in the reform?

Table 19: Alteration of Practice Methods Since CCSS

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.794	6	.132	.423	.863[b]
	Residual	123.811	396	.313		
	Total	124.605	402			

a. Dependent Variable: Does the CCSS meet your students' academic abilities?

b. Predictors: (Constant), In what order do you prioritize the following when implementing a reform? (1 being the most important...-Do I receive support to implement the reform?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Can I relate to the reform intentions?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Is the reform achievable?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Is the reform easily understood?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Are there motivating factors to implementing the reform?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Do I believe in the reform?

Table 20: Students Academic Ability

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.405	6	.068	.282	.945[b]
	Residual	94.746	396	.239		
	Total	95.151	402			

a. Dependent Variable: Do you think the CCSS will be replaced by a new policy in the near future?

b. Predictors: (Constant), In what order do you prioritize the following when implementing a reform? (1 being the most important...-Do I receive support to implement the reform?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Can I relate to the reform intentions?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Is the reform achievable?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Is the reform easily understood?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Are there motivating factors to implementing the reform?, In what order do you prioritize the following when implementing a reform? (1 being the most important...-Do I believe in the reform?

Table 21: Replacing the CCSS

Figure 17: Years of Teacher Experience Chart

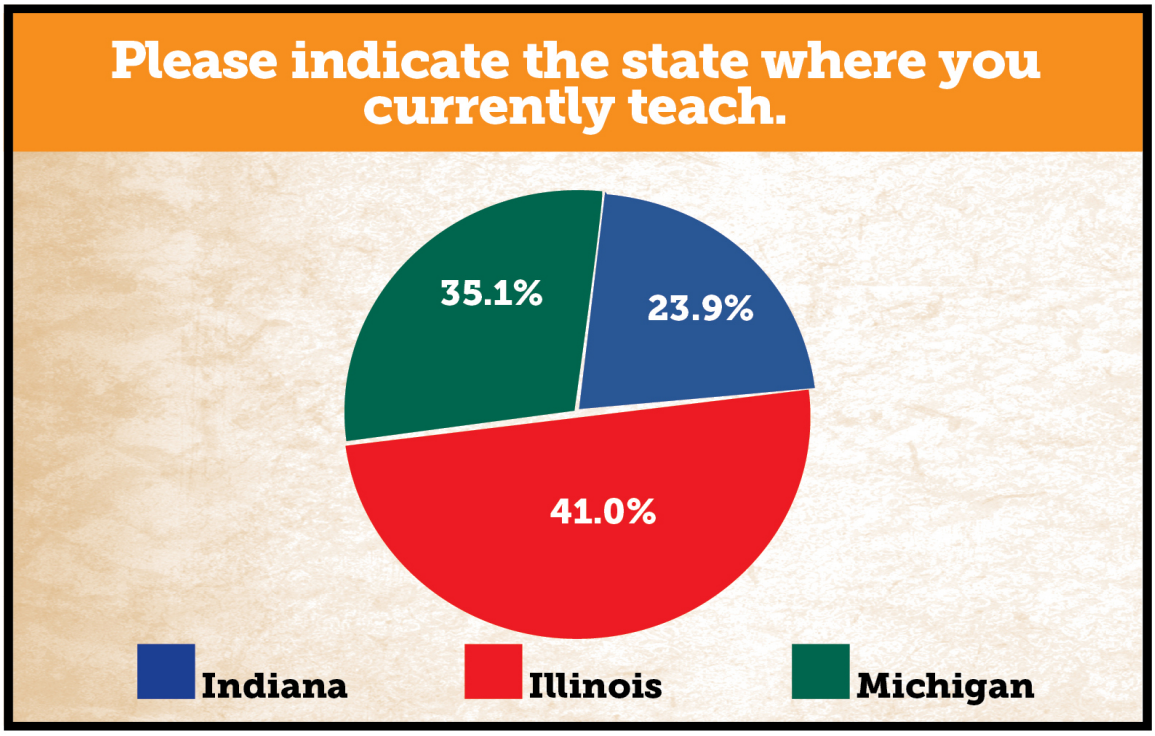

Figure 18: Teacher State Locations

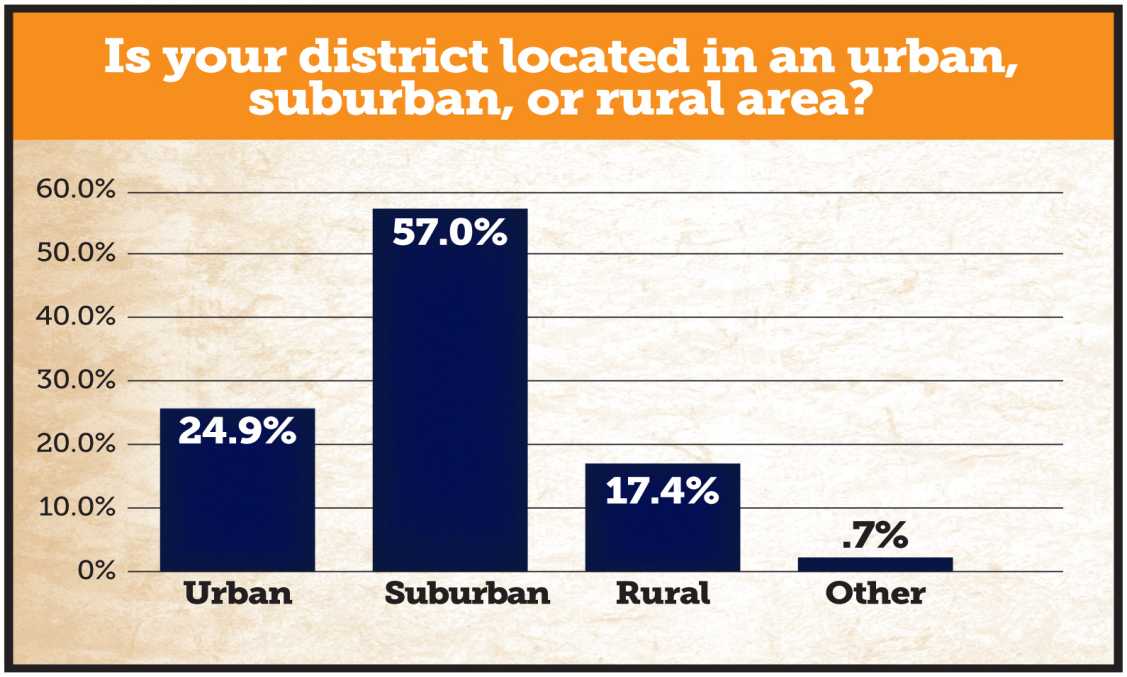

Figure 19: Geographical District Teacher Responses

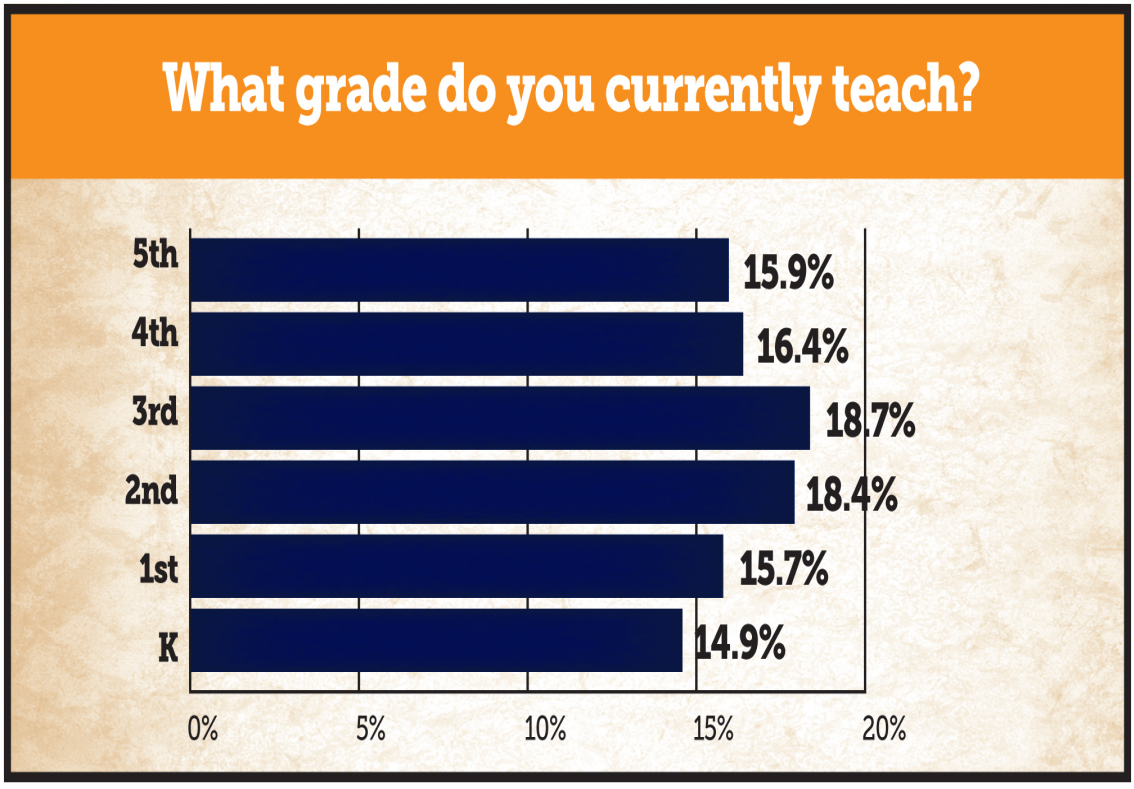

Figure 20: Teachers' Grade Level of Instruction

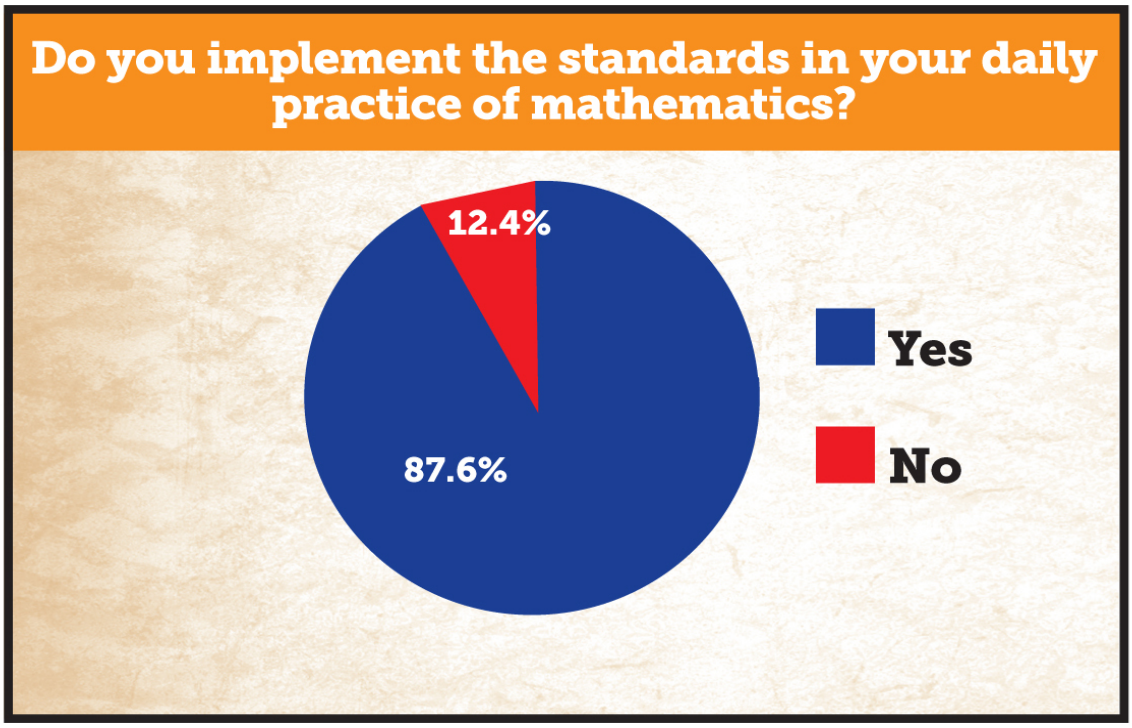

Figure 21: Overall Response to Question 6

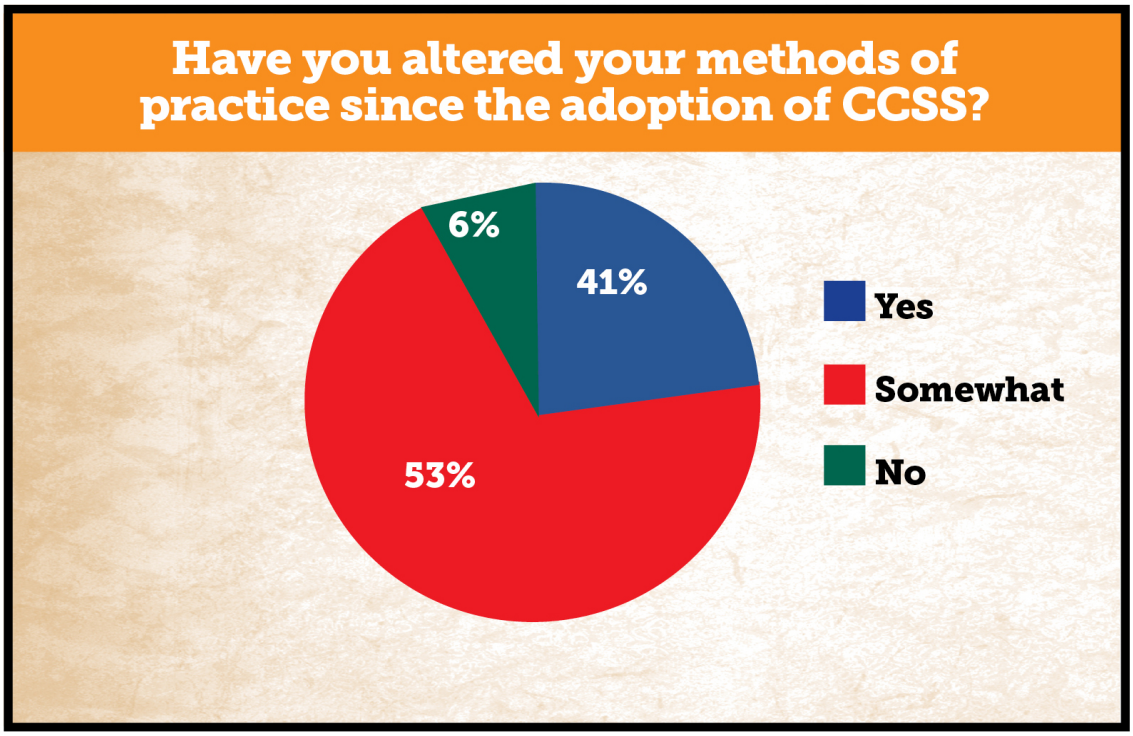

Figure 22: Overall Response to Question 7

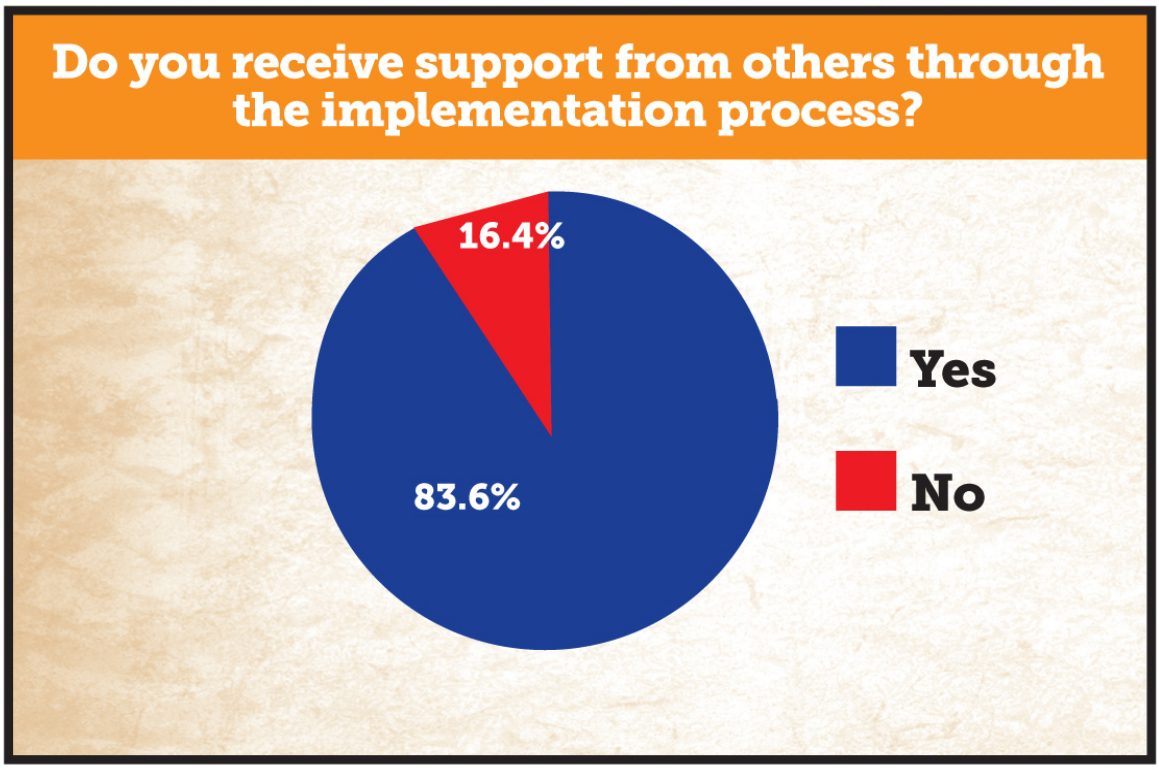

Figure 23: Overall Response to Question 10

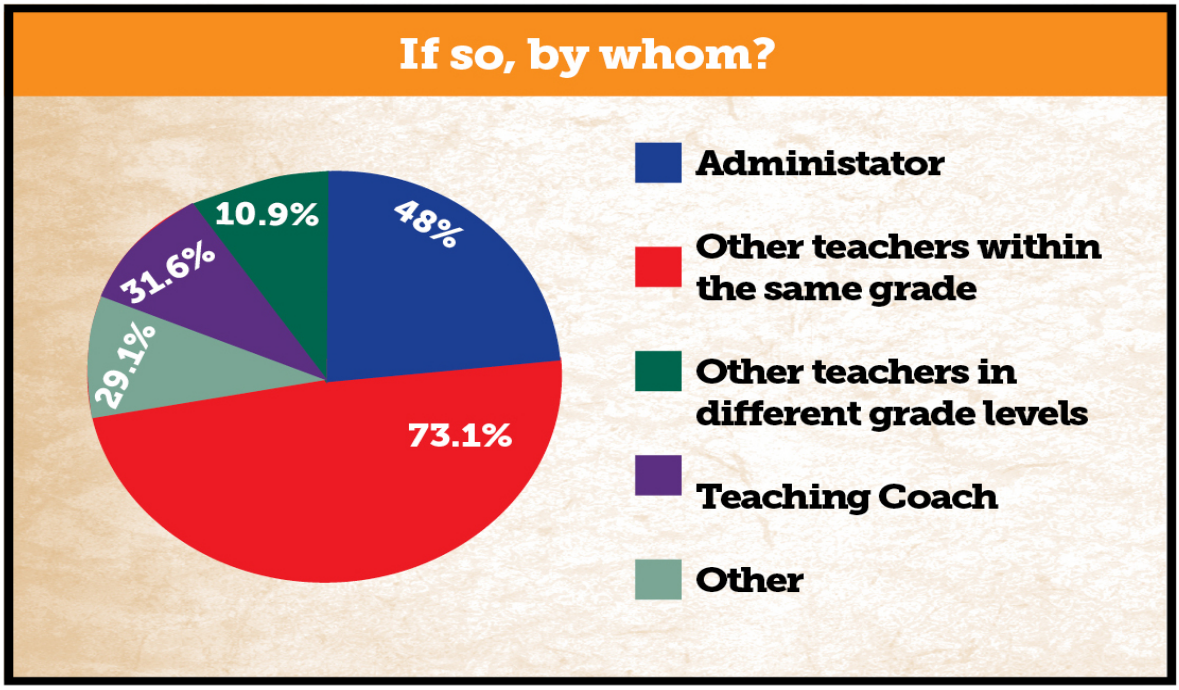

Figure 24: Overall Response to Question 11

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Q5	Between Groups	.000	1	.000	.	.
	Within Groups	.000	316	.000		
	Total	.000	317			
Q6	Between Groups	.026	1	.026	.231	.631
	Within Groups	35.688	316	.113		
	Total	35.714	317			
Q7	Between Groups	.457	1	.457	1.370	.243
	Within Groups	105.492	316	.334		
	Total	105.950	317			
Q8	Between Groups	.181	1	.181	.725	.395
	Within Groups	78.938	316	.250		
	Total	79.119	317			
Q10	Between Groups	.030	1	.030	.240	.624
	Within Groups	39.316	316	.124		
	Total	39.346	317			
Q12	Between Groups	2.119	1	2.119	7.007	.009
	Within Groups	95.579	316	.302		
	Total	97.698	317			
Q14	Between Groups	1.323	1	1.323	5.678	.018
	Within Groups	73.636	316	.233		
	Total	74.959	317			

Note.

Q5 Have you heard of the Common Core State Standards (CCSS)?

Q6 Do you implement the standards in your daily practice of mathematics?

Q7 Have you altered your methods of practice since the adoption of the CCSS?

Q8 Are there adequate resources for you to fully implement the CCSS? Such as: professional development,...

Q10 Do you receive support from others through the implementation process?

Q12 Does the CCSS meet your students' academic abilities?

Q14 Do you think the CCSS will be replaced by a new policy in the near future?

Table 22: Comparisons of Teaching Experiences

APPENDIX F

Seven Categories	Do you implement the standards in your daily practice of mathemtics?			
	Yes/or Somewhat		Not At All	
	Mean	SE	Mean	SE
Values	4.66	0.11	4.76	0.28
Beliefs	4.92	0.10	5.18	0.26
Motivation	3.41	0.10	3.60	0.30
Easily Understood	4.07	0.10	4.24	0.22
Achievable	4.45	0.09	4.02	0.24
Relatable	2.84	0.09	2.72	0.24
Support	3.64	0.11	3.48	0.30

Note. A rating of 1 indicates least important: 7 indicates the most important

Table 23: Comparison Table of 7 Categories in Relation to Question 6

Seven Categories	Have you altered your methods of practice since the adoption of the CCSS?			
	Yes		No	
	Mean	SE	Mean	SE
Values	4.68	0.10	4.54	0.37
Beliefs	4.95	0.10	5.00	0.43
Motivation	3.47	0.10	2.88	0.39
Easily Understood	4.08	0.09	4.21	0.31
Achievable	4.39	0.09	4.50	0.43
Relatable	2.82	0.09	3.00	0.35
Support	3.61	0.11	3.88	0.42

Note. A rating of 1 indicates least important: 7 indicates the most important

Table 24: Comparison Table of 7 Categories in Relation to Question 7

Seven Categories	Does the CCSS meet your students' academic abilities?			
	Yes/or Somewhat		Not At All	
	Mean	SE	Mean	SE
Values	4.69	0.10	4.31	0.42
Beliefs	4.99	0.10	4.46	0.38
Motivation	3.46	0.10	3.04	0.34
Easily Understood	4.05	0.09	4.77	0.35
Achievable	4.36	0.09	4.92	0.33
Relatable	2.82	0.09	2.92	0.33
Support	3.63	0.11	3.58	0.42

Note. A rating of 1 indicates least important: 7 indicates the most important

Table 25: Comparison Table of 7 Categories in Relation to Question 12

Seven Categories	Do you think the CCSS will be replaced by a new policy in the near future?			
	Yes		No	
	Mean	SE	Mean	SE
Values	4.65	0.13	4.69	0.16
Beliefs	4.92	0.12	5.01	0.16
Motivation	3.41	0.12	3.47	0.16
Easily Understood	4.17	0.11	3.97	0.14
Achievable	4.39	0.11	4.42	0.14
Relatable	2.79	0.11	2.82	0.14
Support	3.67	0.13	3.55	0.17

Note. A rating of 1 indicates least important: 7 indicates the most important

Table 26: Comparison Table of 7 Categories in Relation to Question 14

APPENDIX G

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Q5	Between Groups	.000	2	.000	.	.
	Within Groups	.000	399	.000		
	Total	.000	401			
Q6	Between Groups	1.179	2	.589	5.521	.004
	Within Groups	42.602	399	.107		
	Total	43.781	401			
Q7	Between Groups	2.743	2	1.372	4.001	.019
	Within Groups	136.801	399	.343		
	Total	139.545	401			
Q8	Between Groups	1.391	2	.695	2.820	.061
	Within Groups	98.390	399	.247		
	Total	99.781	401			
Q10	Between Groups	1.071	2	.535	3.949	.020
	Within Groups	54.093	399	.136		
	Total	55.164	401			
Q12	Between Groups	2.779	2	1.390	4.553	.011
	Within Groups	121.770	399	.305		
	Total	124.550	401			
Q14	Between Groups	1.242	2	.621	2.642	.072
	Within Groups	93.763	399	.235		
	Total	95.005	401			

Note.

Q5 Have you heard of the Common Core State Standards (CCSS)?

Q6 Do you implement the standards in your daily practice of mathematics?

Q7 Have you altered your methods of practice since the adoption of the CCSS?

Q8 Are there adequate resources for you to fully implement the CCSS? Such as: professional development,...

Q10 Do you receive support from others through the implementation process?

Q12 Does the CCSS meet your students' academic abilities?

Q14 Do you think the CCSS will be replaced by a new policy in the near future?

Table 27: State Comparisons

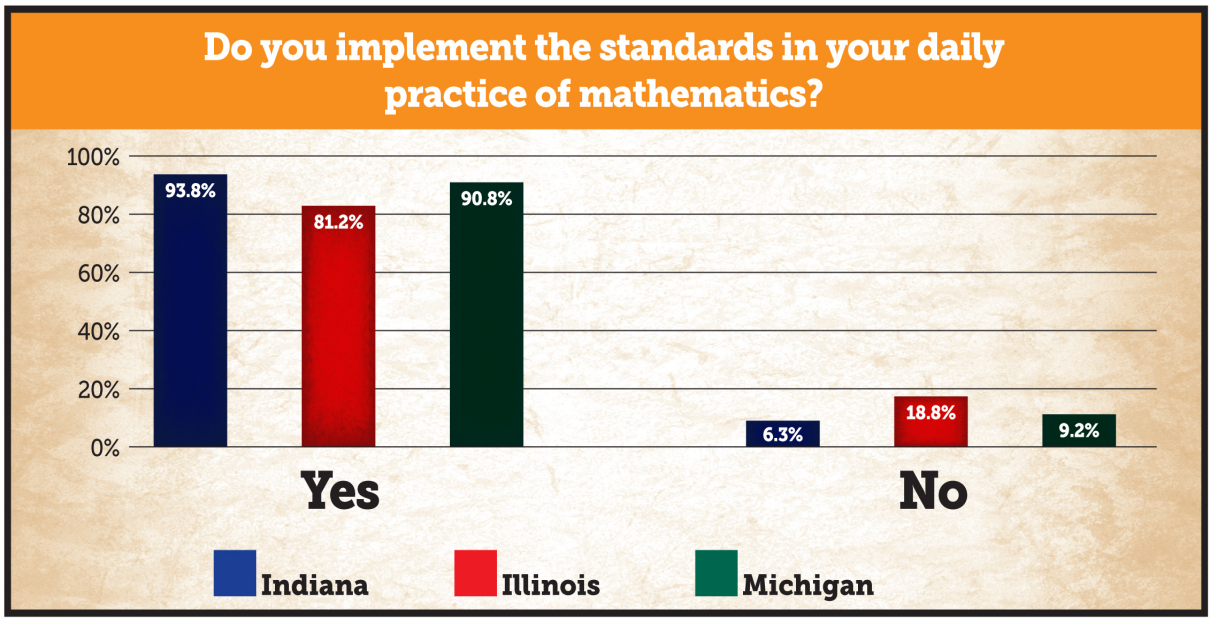

Figure 25: State Comparison of Question 6

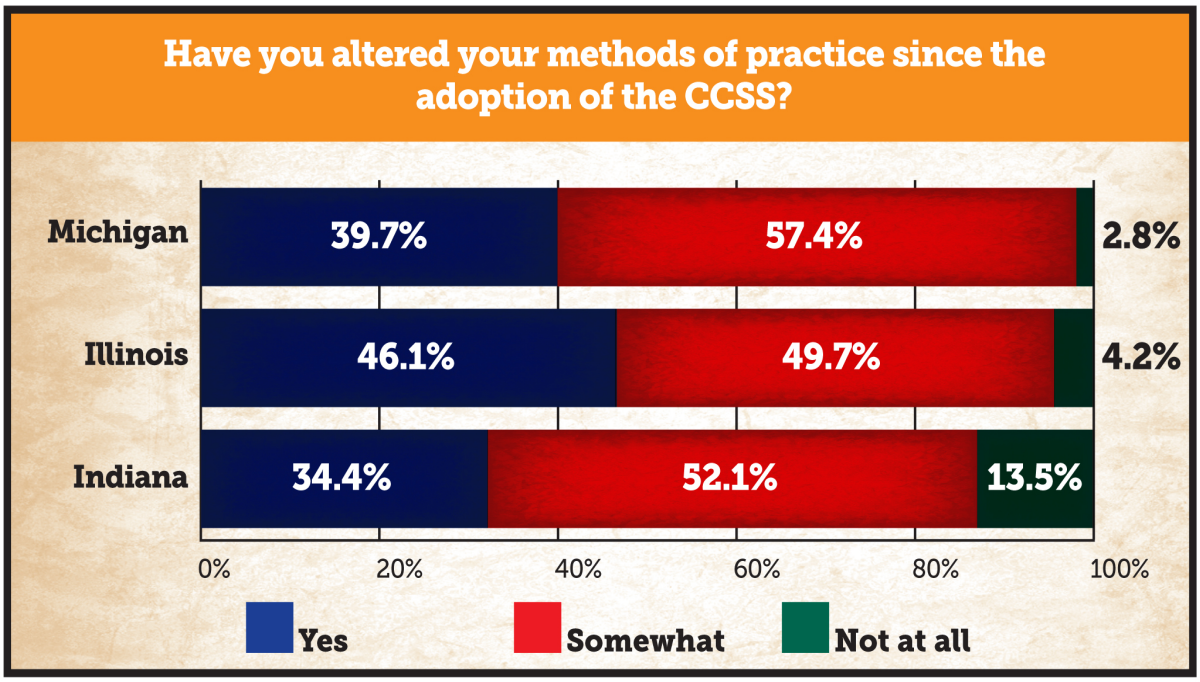

Figure 26: State Comparison of Question 7

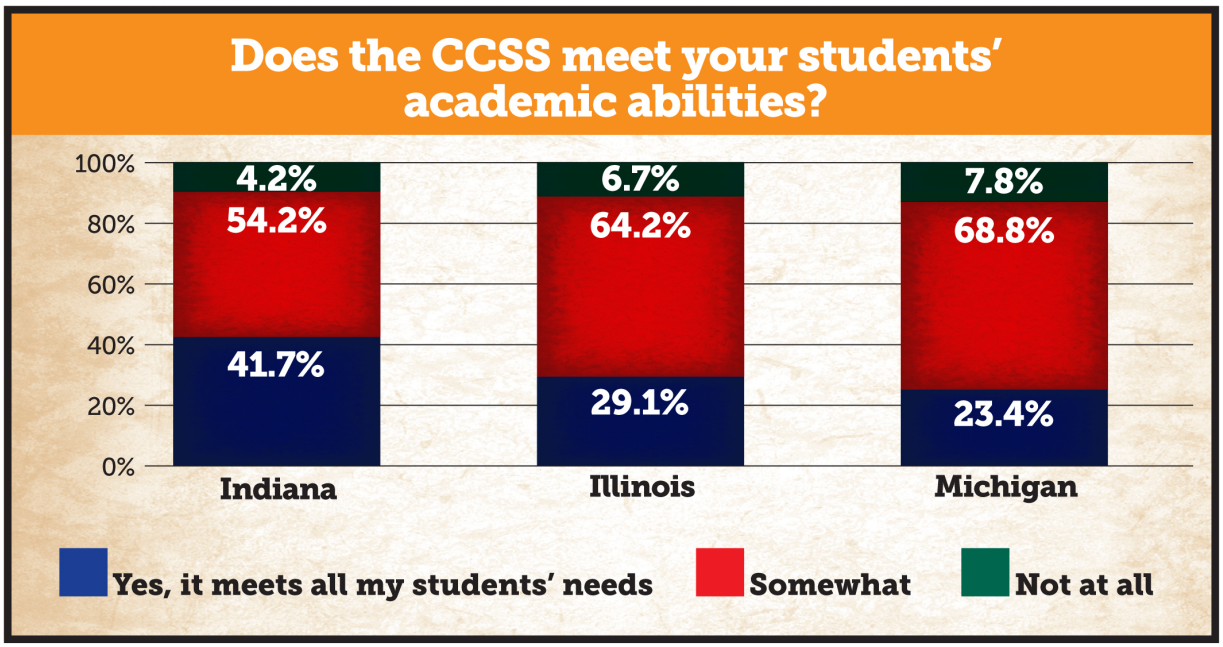

Figure 27: State Comparison of Question 12

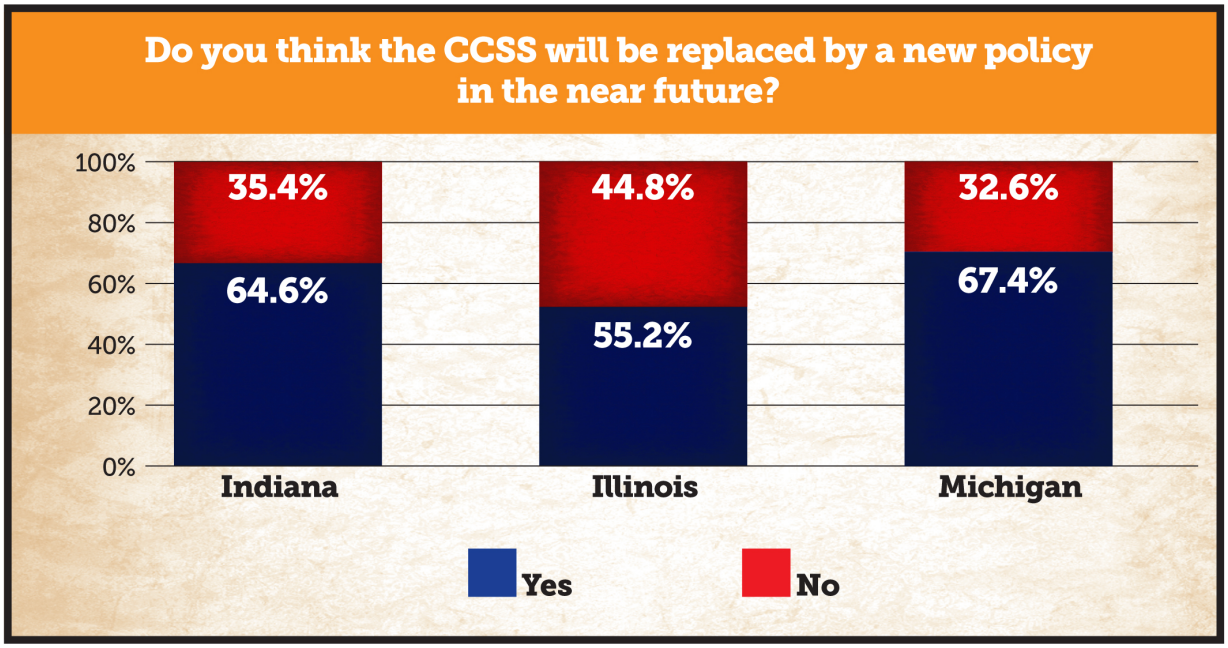

Figure 28: State Comparison of Question 14

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Q5	Between Groups	.000	1	.000	.	.
	Within Groups	.000	400	.000		
	Total	.000	401			
Q6	Between Groups	.122	1	.122	1.119	.291
	Within Groups	43.659	400	.109		
	Total	43.781	401			
Q7	Between Groups	.976	1	.976	2.818	.094
	Within Groups	138.569	400	.346		
	Total	139.545	401			
Q8	Between Groups	.464	1	.464	1.871	.172
	Within Groups	99.317	400	.248		
	Total	99.781	401			
Q10	Between Groups	.070	1	.070	.510	.476
	Within Groups	55.094	400	.138		
	Total	55.164	401			
Q12	Between Groups	.414	1	.414	1.332	.249
	Within Groups	124.136	400	.310		
	Total	124.550	401			
Q14	Between Groups	.565	1	.565	2.392	.123
	Within Groups	94.440	400	.236		
	Total	95.005	401			

Note.

Q5 Have you heard of the Common Core State Standards (CCSS)?

Q6 Do you implement the standards in your daily practice of mathematics?

Q7 Have you altered your methods of practice since the adoption of the CCSS?

Q8 Are there adequate resources for you to fully implement the CCSS? Such as: professional development,...

Q10 Do you receive support from others through the implementation process?

Q12 Does the CCSS meet your students' academic abilities?

Q14 Do you think the CCSS will be replaced by a new policy in the near future?

Table 28: Comparisons of Grade Level

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