5-1-2014

Teachers' Beliefs and Practices Regarding Homework: An Examination of the Cognitive Domain Embedded in Third Grade Mathematics Homework

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TEACHERS' BELIEFS AND PRACTICES REGARDING HOMEWORK: AN EXAMINATION OF THE COGNITIVE DOMAIN EMBEDDED IN THIRD GRADE MATHEMATICS HOMEWORK

by

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A Dissertation Submitted in

Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

in Urban Education

at

The University of Wisconsin-Milwaukee

May 2014

ABSTRACT
TEACHERS' BELIEFS AND PRACTICES REGARDING HOMEWORK: AN EXAMINATION OF THE COGNITIVE DOMAIN EMBEDDED IN THIRD GRADE MATHEMATICS HOMEWORK

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The University of Wisconsin –Milwaukee, 2014
Under the Supervision of Professor DeAnn Huinker

The purpose of this phenomenological study was to gain a better understanding of third grade math teachers' beliefs and practices regarding homework, to explain how teachers' beliefs and practices regarding homework aligned to the framework of the Revised Bloom's Taxonomy Cognitive Domain, and to determine the administrative influences on homework practices. The data were collected during October and November 2013. Six third grade math teachers (primary unit of analysis) and four principals (secondary unit of analysis) were interviewed from Dell School District. Each participant (teacher and principal) was interviewed for approximately one hour. A second meeting was set at a later time with the teachers. This second meeting was arranged in order to ask additional questions based on the interviewees' responses from the initial interview and also to collect homework samples. The follow-up meetings varied between 10 to 15 minutes. The interview transcripts were then transcribed. The data were analyzed to determine the themes: teachers' beliefs and practices of homework, alignment of homework items to the Revised Bloom's Taxonomy, and administrative influences on homework.

Three major themes emerged regarding teachers' beliefs about homework—extra repetition of practice, connection between home and school, and building responsibility. Four major themes related to teachers' homework practices were found— quantity of homework, type of homework, source of homework, and differentiation of homework. Overall, the majority of homework items, across all cognitive domain levels, were aligned to a low category (*remembering,* 68%); however, there were some variations among the distributions of homework. In comparing what teachers espoused about homework practices and what was actually assigned, the majority were aligned. Four major themes emerged from the principals' comments—school-wide expectations for homework, complaints about homework, principals' beliefs and value about homework, and cognitive domain of homework. The four major findings of the study included: homework was used primarily for low-level practice, more so than high-level thinking; teachers' homework practices were not part of the principals' leadership agenda, because principals took a "hands-off approach" to homework; teachers assigned low-level homework with little attention to Bloom's Taxonomy cognitive domain, because this allowed students to be successful and responsible for completing their homework and; homework was a lost art, because principals did not utilize the opportunity to talk with teachers about using homework more effectively to promote students' learning; therefore, teachers continued implementing their same homework practices from the past.

DEDICATION

This work is dedicated to my Lord and Savior Jesus Christ! I also dedicate my accomplishment to my parents (Mary and Mason Bullock), family, and friends. They have encouraged and motivated me to stay the course and complete this major milestone in my life. I hope to inspire my nieces, nephews, cousins, sisters, brothers, friends, and colleagues to embrace the LOVE for LEARNING!

With God, all things are possible!

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ACKNOWLEDGMENTS

I would like to thank my Committee Members Dr. DeAnn Huinker, Dr. Latish Reed, Dr. Raji Swaminathan, Dr. Leigh E. Wallace, and Dr. Larry G. Martin for believing in me and guiding me through this amazing journey. I would like to thank my former professor, Dr. Gail Schneider, for teaching me to press on during difficult times in my life, and inspiring me to accomplish an important achievement within my career. Thanks to my lovely parents, Mary and Mason Bullock, for always believing in me and having faith that God will grant me favor with the completion of my Ph.D. study. Thanks to my family, friends, and colleagues for encouraging me not to give up! Sincere thanks to my dearest friend, Dr. Seelpa Keshvala for being my "study buddy" during my undergraduate, masters, and doctoral studies. Thanks to Reginald L. Lawrence II for offering words of wisdom and motivating me to stay focused and complete my work. Thanks to JMAC for always calling me Dr. Bedford before the completion of my Ph.D. study. Thanks to Dr. Bridget Araujo and Patrice Ball for agreeing to meet with me on the weekends to support me with writing my paper. Thanks to Felicia Thomas-Lynn for taking time out of her busy schedule to edit my paper. Thanks to Stella Miranda for making final edits to my paper.

I read this scripture several times a day as I worked on my dissertation.

Practice and cultivate and meditate upon these duties; throw yourself wholly into them (as your ministry), so that your progress may be evident to everybody.

(1 Timothy 4:15)

Chapter 1
Introduction to the Study

Homework consists of assignments teachers intend students to complete outside of the classroom (Cooper, 1989). Based on Astleitner (2007), homework can be regarded as a set of tasks or problems that are supposed to support learning (e.g., by activating prior knowledge, intensifying comprehension, or applying knowledge to new tasks or problems). High homework quality thus requires the careful selection and preparation of appropriate and, to some extent, interesting tasks that reinforce classroom learning (Trautwein & Ludtke, 2007). Teachers assign homework because they expect it to enhance learning and achievement, parental involvement, study skills, work habits, and motivational dispositions (Bempechat, 2004; see also Warton, 2001). Researchers have studied the academic effects of homework for some time. To date, empirical research on the level of cognitive domain (based on the Revised Bloom's Taxonomy) embedded in homework assignments has been sparse. Kelly (n.d.) stresses the importance of teachers assigning homework assignments that encompass Bloom's taxonomy:

> Elementary educators might assign a lot to complete at home, but they are usually assignments on the lower level of Bloom's taxonomy, meant to reinforce important concepts that were taught in class. On the other hand, high school educators should be covering material that challenges students to move up Bloom's taxonomy toward higher-order thinking. Therefore, the quantity of homework should be lessened, but the quality should be increased. Of course, there are some questions about whether the majority of teachers actually do this. (para 7)

The examination of the cognitive domain embedded in homework assignments based on the revised Bloom's Taxonomy had rarely been tested empirically, making this an important area for research. This research study analyzed and interpreted the collection of homework assignments that third grade math teachers routinely assigned to their students. This research study identified the level of cognitive domain(s) embedded in the homework assignments assigned by third grade math teachers.

To thoroughly explain the research study, included in this chapter are explanations of the statement of the problem, rationale and significance of the research study, research questions, length of the study, and definitions of key terms. The statement of the problem section explains the justification and reason for conducting the research study. The rationale and significance of the study section, offers information regarding the need to develop more information in relation to the level of cognitive domain (based on the revised Bloom's Taxonomy) embedded in homework assignments that teachers routinely assign to their students. The research questions section is the "…axis around which the whole research effort revolves" (Leedy & Ormrod, 2005, p. 43). Finally, the definitions of key terms section defines terms that are relevant to the research study.

Statement of the Problem

Homework is an inevitable part of every student's life. As educators consider the academic purpose of a particular homework task, it is imperative for them to focus less on the quantity of work they are assigning and more on the quality of the work (Jackson, 2007). In other words, teachers should keep in mind that quantity does not always equal

quality. Kohn (2007) contends that some assignments are not worth five minutes of a student's time. He further claims that too many first graders are forced to clip words from magazines that begin with a given letter of the alphabet. Too many fifth graders have to color in an endless list of factor pairs on graph paper. Too many eighth graders spend their evenings inching their way through dull, overstuffed, committee-written textbooks, one chapter at a time. Given these findings, the intent of this study is to explore and analyze the cognitive domain of homework assignments that teachers assign to third grade students through the framework of the Revised Bloom's Taxonomy.

Rationale and Significance of the Study

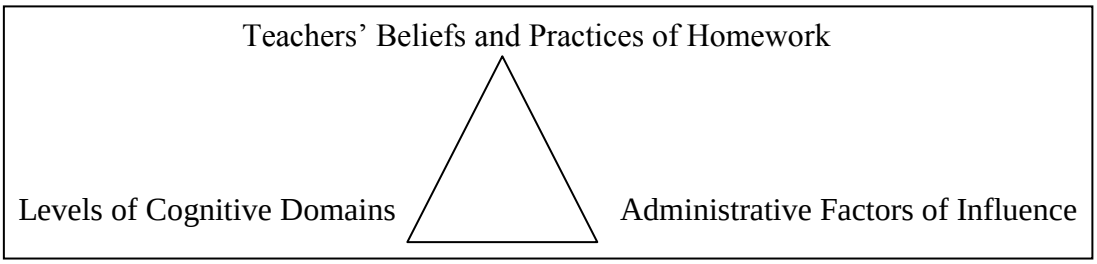
Marzano and Pickering (2007) assert that teachers should not abandon homework. Instead, they should improve its instructional quality. To date, there is much research regarding the quantity of homework; however, there is a gap in the knowledge-base regarding the level(s) of cognitive domain embedded in homework assignments. We do not know if the homework that teachers assign to students is in one cognitive domain (low/ high levels of thinking) or in multiple cognitive domains. To address this research deficit, this study examined the cognitive domain (based on the revised Bloom's Taxonomy) of homework routinely assigned by third grade math teachers.

Research Questions

The purpose of the study was to determine elementary math teachers' beliefs and practices regarding homework and examine the level(s) of cognitive domain (based on the Revised Bloom's Taxonomy) embedded in the homework assignments that were routinely assigned by third grade teachers. Figure 1 represents a diagraph that sets up

the research questions of the research study. The top of the triangle represents the focus of this research study. Lastly, the bottom of the triangle represents the role administrative factors play in influencing and supporting teachers' beliefs and practices of math homework.

Figure 1. An Examination of Homework Cognitive Domain



Listed below are the research questions that drove the work of this study. Creswell (2007) argues that qualitative research questions are open-ended, evolving, and non-directional; restate the purpose of the study in more specific terms; start with a word such as "what" or "how" rather than "why"; and are few in number (five to seven).

1. What are teachers' beliefs and practices regarding homework in mathematics?
2. What is the alignment of the cognitive domain level of the homework items that each teacher assigned to his or her students as it related to the Revised Bloom's Taxonomy?
3. What are administrative factors related to homework and how do these factors influence principal leadership of mathematics homework practices in a school?

Definitions and Terms

For the purpose of this study, the following definition of terms are referred to as follows:

1. **Homework** may be defined in simple terms as "tasks assigned to students by school teachers that are meant to be carried out during non-school hours" (Cooper, 1989, p. 70).
2. **Bloom's Taxonomy** is a classification system of educational objectives based on the level of student understanding necessary for achievement or mastery. The categorization of thinking skills are in six levels, from the most basic to the more complex levels of thinking (e.g., Knowledge; Comprehension; Application; Analysis; Synthesis; and Evaluation) (Bloom, 1956; Bloom, Hastings, & Madaus, 1971).
3. **Revised Bloom's Taxonomy** is the categorization of thinking skills into six levels, from the most basic to the more complex levels of thinking (e.g., Remembering; Understanding; Applying; Analyzing; Evaluating; and Creating) published in 2001 by a former student of Benjamin Bloom, Lorin Anderson (Pohl, 2000).
4. **Cognitive Domain** is the recall or recognition of specific facts, procedural patterns, and concepts that serve in the development of intellectual abilities and skills (Bloom, 1956).
5. **Common Core State Standards** show what students in Pre-K through 12th grade should know and be able to do in English language arts and mathematics. The standards support consistency in knowledge and skills that all students learn. The standards include changes, or "shifts," in how teachers teach to help children succeed in the topics and skills that matter most. The standards are designed to

help all young people be prepared for college and careers (Bridgeland, Dilulio, & Morison, 2006).

Chapter two highlighted the literature related to this study of homework. It examined the background of homework, purpose of homework, positive and negative effects of homework, effective use of homework, and homework quality. Literature that explores teachers' and administrators' beliefs and expectations about homework was discussed in the study. The theoretical framework of the Revised Bloom's Taxonomy that underpins the study was described in detail. The reasons behind the revision of Bloom's Taxonomy and the critics about the revised taxonomy were clarified. A highlight of how the revised taxonomy is being used and by whom, is shared in chapter 2. Finally, an explanation of how this study addressed research gaps about homework was provided.

Chapter 2

Review of the Literature

School administrators are responsible to ensure that their students are receiving an equitable education. In order for this to happen, students need to be exposed to rigorous teaching and learning. It is imperative for the learning process to be ongoing as well as extended outside of the classroom. Sagor (2008) states that homework tasks should be designed not only to support classroom learning but also to instill a sense of competence in the mind of the learner. In order for the learning to exceed the classroom environment, school administrators need to establish beliefs and expectations regarding a homework policy within their school building. Information regarding the homework policy should be shared with teachers in the school building in order to build a sense of consistency, collaboration, and accountability. Kohn (2006a) contends that typical homework policies shift power away from teachers, sacrificing at least some of their autonomy in order to have more consistency across classrooms. Kohn further claims that one pair of researchers warns that without an established homework policy, practices tend to be based on individual teachers' beliefs rather than consensually agreed upon or research-based best practices.

As part of classroom practice, teacher's work day consist of providing instruction to their students regarding specific contents. With the purpose to build and solidify conceptual understanding of the content, teachers provide an opportunity for their students to practice what they have learned in class by assigning homework. Teachers have various reasons for assigning homework to their students. Their reasons may be to

reinforce the learning from the classroom, practice a concept, follow the school's policy, etc. Pasi (2006) conveys that the most egregious homework practice is to assign busywork or tasks of dubious academic value that do not reinforce existing knowledge or demonstrate a mastery of knowledge. Vatterott (2009) says that sometimes homework tasks are well-intentioned attempts to have students do something fun or interesting, but the academic focus is not apparent. Due to this, one might speculate that homework assignments can be most helpful if they are carefully planned by teachers and have direct meaning to students. The level of rigor embedded in the assigned homework is very important.

In light of being consistent with assigning homework to students, a major issue to take into consideration is the quality of the homework that teachers are assigning to their students. Kohn (2006b) argues that students should be asked to take schoolwork home only when there is a reasonable likelihood that a particular assignment will be beneficial to most of them. Jackson (2007) affirms that as teachers consider the academic purpose of a particular homework task, they should focus less on the quantity of work they are expecting and more on the quality, keeping the focus on mastery of essential concepts and skills. Eisner (2002) believes that quality tasks allow students the freedom to work from their strengths and create presentations or products that express their unique personal signature.

This study provided third grade math teachers an opportunity to share their experiences regarding their beliefs and practices about homework. This study examined the level(s) of cognitive domain(s) (based on the Revised Bloom's Taxonomy) of

homework that third grade math teachers routinely assigned to their students. Finally, this study investigated the role administrators' played in influencing third grade math teachers' beliefs and practices about homework. Kohn (2007) states we ought to be asking whether each example of homework will help students to think deeply about questions that matter.

Homework: Review of Literature

In this literature review, four research strands relevant to the investigation of teachers' beliefs and practices regarding homework in mathematics were covered. First, the background, purpose, positive and negative effects, effective uses of homework, homework quality and types of homework tasks were reported. Second, literature that highlights teachers' and administrators' beliefs and views of homework was discussed. Third, the theoretical framework that underpins the research study, a review of the original Bloom's Taxonomy and Revised Bloom's Taxonomy, reasons behind the revision, critics about the original/revised taxonomy, and how the revised taxonomy is being used in the classroom were discussed. Finally, an explanation of how this study addressed research gaps about homework was provided.

History of Homework

In the early 1800s, the school year was short and homework was of little significance. In fact, there was little time for it, because children living on farms dedicated most of their time outside of school to completing chores. The formal learning, during that time, consisted of a classroom experience that entailed much memorization, drill, and recitation. Many people, however, believed that homework could cause

physical, emotional, or mental illness, since it kept children from fresh air and physical exercise (Vatterott, 2009).

Gill and Schlossman (2004) contended that at the end of the 19th century, the attendance rate of primary students in grades 1 through 4 was irregular because children had to work to provide for their family. During this time, most of the classrooms were multiage and teachers rarely assigned homework to primary students (Gill & Schlossman, 2004). In the primary grades, the academic focus was typically on reading, writing, and arithmetic. In grades five through 12, students studied geography, history, literature, and math. By the 5th grade, many students left school to obtain jobs, few continued on to high school (Kralovec & Buell, 2000). In fact, during this time, children played a critical role as workers in the household. Many families could not afford to have their children continuing schooling, given that children had to invest two to three hours of homework each night. In the early twentieth century, an anti-homework movement became the focus of the progressive platform. Vatterott (2009) states during this time, many doctors began to speak out about the effect of homework on the health and well-being of children. In fact, homework was blamed for nervous conditions in children, eyestrain, stress, lack of sleep, and other conditions.

On the other hand, progressive educators in the 1920s and 1930s, (i.e., John Dewey and Edward Thorndike), criticized homework as going against the student-centered orientation of the modern curriculum; similarly, Wheeler and McNutt (1983) insisted that homework should be addressed to the abilities of each student. By 1940, people complained that homework interfered with other home activities. The attitude and

trend during this period was against homework, because the completion of homework denied access to leisure time and family activities (Coulter, 1979). In the late 1950s, the launch of the *Sputnik* by the Soviets led to concern of the lack of rigor in the United State education system. To offset this trend, U.S. schools viewed more rigorous homework as a solution to the education problem. During the mid1960s, homework was viewed as a means for accelerating the pace of knowledge acquisition. The pendulum shifted again during this period and homework was seen as a symptom of too much pressure on students. Wildman (1968) contended that, "Whenever homework crowds out social experience, outdoor recreation, and whenever it usurps time devoted to sleep, it is not meeting the basic needs of children and adolescents" (p. 203).

Then, in the 1970s, America was dealing with the Vietnam War, anti-war protests, the sexual revolution, the women's movement, and civil rights. Our society was in flux, experiencing major upheavals and changes in thinking (Bennett & Kalish, 2007). They further claimed that just like back in the 1930s, these new attitudes and ideas were reflected in education reform and classroom practices. It was all about more freedom, less restrictions, and less homework.

By the 1980s, it was time to get serious again. Education was blamed for the economy, increased foreign imports, military challenges, youth violence…you name it. There was the familiar cry for higher standards, harder math and science, standardized tests, high-school exit exams, and more homework. In the 1980s, some learning theorists claimed that the use of homework could be a hazard to students' mental health (Louv, 2008; see also Ginsburg, 2007). In fact, the fear of failure can impact students' mental

and physical well-being (Galloway & Pope, 2007). Since then, the case for and against homework has continued to increase. In 1983, the study *A Nation at Risk* became a major report by the government which claimed that there was a sense of mediocrity in schools and that a movement for academic excellence was needed. A *Nation at Risk* planted the seed of the idea that school success was responsible for economic success (Gardner, Larsen, & Baker, 1983).

In the 1990s, the pro-homework trend became the scapegoat for the perceived inadequacies of public education. During this time, many parents shifted their attitude about homework, due to the fact that the American family had changed. For millions of Americans, there was not enough time or energy to devote hours and hours to homework, due to single-parent households, households where both parents worked outside the home, students with jobs, and children caring for their siblings and grandparents. Students and parents became stressed, and something had to give. Once again, homework was on the chopping block. As homework increased, especially for the young students, parents became overwhelmed (Vatterott, 2009).

Vatterott (2009) attested that by 2000, Piscataway, New Jersey received national attention for implementing a homework policy that limited the amount of homework and prohibited teachers from counting homework as a grade. She further argued that the debate for and against homework has continued with arguments similar to those first heard in the 1930s and 1960s. As of today, these arguments continue to stir intense emotions among parents, students, teachers, and administrators. Kohn (2006a) postulated that at the beginning of the twenty-first century, resources available to students who

needed additional support with their homework grew. Homework hotlines, special homework tutors, and tutorial programs were established in many learning centers. In addition, numerous Internet nodes offered homework support, and many schools organized after school programs specifically for students to work on their homework under supervision.

Purpose of Homework

The greatest distinction that can be made when discussing homework is its purpose. Cooper (1989) contends that homework can be assigned for *instructional* and *non-instructional* purposes. *Instructional* homework is generally assigned for one of four purposes:

1. Practice homework, the most common type, is assigned to reinforce material presented in the classroom and to help students master individual skills. In a study of teachers' use of homework in high schools, Murphy and Decker (1989) found that teachers most frequently assigned homework to reinforce class material (55 percent) and to master course objectives (23 percent).
2. Preparation homework is assigned to introduce students to material the teacher will present in the future.
3. Extension homework asks students to apply previously learned skills to different contexts.
4. Integration homework requires students to produce a product, such as a social studies project, by applying multiple skills.

Non-instructional homework is generally assigned for one of four purposes (Epstein & Van Voorhis, 2001):

1. Homework assigned for personal development is intended to help students improve behavioral skills, such as time management or self-confidence.
2. Homework assigned to improve communication between parents and their children is identified as parent-child relations homework, such as developing a family tree.
3. Peer interaction homework is assigned to more than one student in an effort to build and develop team-working skills.
4. Policy homework is often assigned to fulfill mandates from school or district administration, such as requirements for a specified amount of daily or weekly homework.

Teachers typically assign homework assignments for different instructional reasons. As outlined in the research, there are benefits and negative effects regarding homework. This information is further investigated.

Positive and Negative Effects of Homework

The positive and negative effects of homework have also been the focus of a number of studies in educational and popular literature. Evidence from research outlining the benefits of homework for students and their attitude toward learning includes:

1. Homework can impact positively on the retention and understanding of knowledge and can improve study skills, attitudes toward school, and demonstrate that learning can take place outside of formal schooling (Corno, 1996).
2. Students' writing scores, literacy outcomes and attitudes can improve when students engage in 'interactive homework' with family members (Epstein, 1988).
3. Students' attitude toward homework appears to be unrelated to students' ability or family and community factors but positively related to parents' attitudes toward homework (Cooper, 2007).

Burnham (as cited in Aloia, 2003) declared that the value of homework should be based on data not simply opinions and that differential benefits would depend on the different academic subjects being considered as well as student grade level.

On a nonacademic side, according to Iannelli (2003), benefits of homework include fostering independence and responsibility. Somoski (2002) declares that homework is a perfect way for children to continue their studies later in the day. Whether they do it right when they get home, or after dinner, or before they go to bed, homework is a part of life. Cooper, Lindsey, Nye, and Greathouse (1998) found in their study that homework can help to "…improve students' retention and understanding of the covered material" (p. 71). Cooper (1989) argues that above the elementary level, there are long-term academic benefits to homework. However, in elementary school, completing homework assignments has no measurable effect on standardized test scores. Cooper, Robinson, and Patall (2006) found in a meta-analysis study the same pattern of stronger relationships at the secondary level but also identified a number of studies at

grades 2, 3, and 4 demonstrating positive effects for homework. The research team concluded that the analysis also showed that too much homework can be counter-productive for students at all levels. Even for high school students, overloading them with homework is not associated with higher grades.

Marzano and Pickering (2007) contend that the most important advantage of homework is that it can enhance achievement by extending learning beyond the school day. They further believe that inappropriate homework may produce little or no benefit-it may even decrease student achievement. They feel that "schools should strengthen their policies to ensure that teachers use homework properly" (p.75). Most math teachers give students homework so that they can practice the skills learned in class. Marzano, Pickering, and Pollock (2001) state that practice is more effective when distributed in small doses over several days or weeks.

On the contrary, Vatterott (2009) asserts that because students can successfully complete the tasks immediately after instruction, the teacher assumes that the students understand the concept. However, when some students go home to continue their work, they realize that they did not fully comprehend how to do the tasks- and what the teacher thought was practice turns out to be *new learning*. Marzano and Pickering (2007) claim that teachers should not abandon homework; instead, they should improve its instructional quality.

Even though homework is strongly advocated for by school boards and professional organizations, it is not without its critics. The results of national and international exams raise further doubts. One of many examples is an analysis of 1994

and 1999 Trends in Mathematics and Science Study (TIMSS) data from 50 countries. Researchers Baker and Letendre (2005) proclaim that many of the countries with the highest scoring students on achievement tests, such as Japan, Denmark, and the Czech Republic, have teachers who assign little homework. It seems that the more homework a nation's teachers assign; the worse that nation's students do on the achievement tests. The researchers were not able to find any positive relationship; and the overall correlations between national average student achievement and national averages in amount of homework assigned were all *negative.* Kohn (2007) declares that there is no prefect assignment that will stimulate every student because one size simply does not fit all. Kohn (2006b) argues that there is research supporting the idea that homework is of little educational value, and that for young children (i.e., 14 and under), it may have a negative effect on learning. On the other hand, Marzano and Pickering (2007) oppose that if a district or school discards homework altogether, it will be throwing away a powerful instructional tool.

Many critics believe the use of homework may cause a sense of burden to the household and family life. Haddock (2006) postulates that "…homework robs children of childhood, play havoc with family life and asphyxiate their natural curiosity" (p.2). Haddock (2006) further claims that learning becomes a mind-numbing grind rather than an engaging adventure. Bok (1900) views the use of homework as an invasion of family time. Ginsburg (2007) warns about the excessive abuse of homework and its ill effects on health and vitality of students. Ginsburg (2007) further states that adding homework to a child's schedule can cause mental fatigue to children in a well-functioning home

environment. For children living in a difficult home environment, the additional stress of homework many cause extra pressure for struggling children. Aloia (2003) expresses concern that homework might lead to frustrations, stress, lack of family time, and reduced time to play and experience life as a child. An exception is an ethnographic study by Varenne and McDermott (as cited in Dudley-Marling, 2003) which suggest that the level of frustration from homework may force parents into unwanted roles that strain, at least temporarily, family relations. Other research concurs that homework may also trouble family relationships by reducing the time families have available for participating in leisure activities (Cooper, 1989; see also Kralovec & Buell, 2000).

Strother (1984) argues that some parents demand more homework for their children. On the other side, McDermott, Goldman, and Varenne (1984) claim that other parents view homework as a *curse put on parents*. Kohn (2007) declares that anyone who believes that homework is beneficial should be willing to test that assumption by investigating the consequences of its absence.

Effective Use of Homework

Christopher (2008) asserts that when homework is used correctly, it informs teachers where students are now and how to better direct them toward their learning goals. Homework is often used as a factor in determining grades at the end of each academic term and it is considered a basic part of education in general (Kralovec & Buell, 2000). Students who select their own performance goals make superior improvements in the number of homework assignments returned as compared to students who were given a specific goal by the classroom teacher (Olympia, Sheridan, Jenson, &

Andrews, 1994). Vatterott (2009) conveys that students learn more when they complete homework that is graded, commented on and discussed by their teachers. On the opposing side, students that struggle with completing their homework experience the "homework trap" Goldberg (as cited in Vatterott, 2009):

> Late work means points off, and work not done garners zeros. Their grades decline, setting into motion a number of actions by the parents and the school, with counteractions (usually inactions) by the children themselves. The problem is cumulative and colors the experiences these children have with school, affecting their attitudes and performance in later years (p.92).

Kralovec and Bruell (2000) argue that if homework is not used effectively to promote learning and understanding, children may develop undesirable character traits such as cheating on assignments. They further believe that homework teaches children to do the least amount of work, or to just get by. Cooper (1989) agrees that homework could accentuate existing inequities. However, Brookhart (2008) concurs that for homework truly to be effective, it must be checked, commented on, and returned to the students. Vatterott (2009) asserts that the goal of feedback on homework is to improve learning, to improve performance on summative assessments, to promote student ownership of learning, and to encourage self-assessment. Paschal, Weinstein, and Walberg (1984) declare that the results for homework returned with teacher feedback are generally superior to assignments returned with little or no comment. Therefore, Christopher (2008) suggests that when homework is used as a formative assessment, students have multiple opportunities to practice, get feedback from the teacher, and improve. On the same note, Brookhart (2008) stresses that good feedback on homework

requires back-and-forth dialogue between the teacher and the student, each asking questions of the other (orally or in writing).

Quality of Homework

It is imperative for students to receive quality homework that requires them to demonstrate multiple levels of understanding. This in turn would motivate students to complete the homework and to value the learning experience. Murphy (2011) believes that the quality of homework is as important as the amount. High quality homework helps to determine the educational value of the homework. According to Good and Brophy (1990), homework assignments must be of appropriate difficulty for students to perceive them as valuable. Assignments that are either too easy or too difficult may be perceived as a waste of time. Trautwein and Ludtke (2007) contend that high quality homework requires the careful selection and preparation of appropriate and, to some extent, interesting tasks that reinforce classroom learning. In addition, Weinert and Helmke (1995) convey that high quality homework entails carefully choosing appropriate tasks, continuously diagnosing each student's learning progress and learning difficulties, and providing effective help through remedial instruction. On the same note, Eisner (2002) asserts that quality tasks allow students the freedom to work from their strengths and create presentations or products that express their unique personal signature.

Lipowsky, Rakoczy, Klieme, Reusser, and Pauli (2004) analyzed the predictive power of homework assignments for mathematics achievement. They found that students in classes where homework was perceived to be cognitively demanding showed greater gains than their peers in other classes. High quality homework is likely to enhance

students' expectancy of success in their assignments (Trautwein, Ludtke, Schnyder, & Niggli, 2006). Good and Brophy (1990) suggest that only homework assignments perceived as adequately difficult elicit high value beliefs and high effort. A homework assignment should be a major event in student learning. In fact, Astleitner (2007) states that from the constructivist point of view, highly complex tasks can be expected to be effective for learning.

Types of Homework

Homework assignments provide practice, prepare for upcoming lessons, extend students' thinking about a subject, and draw on students' creative work in making connections among mathematical concepts and other subjects (Gilliland, 2002). On the other hand, Cooper (2007) argues that the amount and type of homework should vary according to the child's developmental level and home circumstances. He believes that homework for young students should be short, without any struggles, occasionally involve parents, and be of high interest for students. He further asserts that shorter and more frequent homework tasks may be more effective than longer but fewer assignments. Assignments that involve review and preparation are more effective than homework that focuses only on material covered in class on the day of the assignments. Romberg and Kaput (1999) suggest that rich tasks are not enough. They further stress that teachers should consider the following questions when selecting a task:

1. Do the tasks lead anywhere?
2. Do the tasks lead to model building?
3. Do the tasks lead to inquiry and justification?

4. Do the tasks involve flexible use of technologies?
5. Are the tasks relevant to the students?

A significant part of understanding mathematics comes from an analysis of the thinking that went into a solution. Clare and Aschbacher (2001) claim that an assignment with high cognitive challenge require students to synthesize ideas, analyze cause and effect, or analyze a problem and pose reasonable solutions using content area knowledge (e.g., comparing themes from different books). They further state that an assignment of low-level thinking require students to recall very basic, factual information (e.g., "How much is 10 + 5?") or to write on a topic requiring no academic content knowledge (e.g., a fan letter to a movie star). Likewise, Trautwein, Ludtke, Schnyder, and Niggli (2006) claim that homework assignments must be cognitively challenging but not overtaxing. They further state that homework assignments of low cognitive challenge simply require students to recall information, whereas challenging tasks require them to synthesize ideas or to combine strategies or knowledge areas. In contrast, Zimmermann and Kitsantas (2005) believe when homework is overly challenging, or, conversely, repetitive, uninteresting, and too lengthy, it can lead to frustration, impatience, low self-esteem, and low academic self-efficacy, especially among students struggling in school. Therefore, they believe that teachers may need to consider ways to adjust the level of difficulty and the type of homework based on students' demonstrated academic abilities.

There are numerous tips that teachers can implement when assigning homework to their students. The National Council of Teachers of Mathematics (2013) offers the

following helpful homework tips for teachers to consider when assigning homework to their students:

1. **Only assign what is necessary** to augment instruction. If you can get sufficient information by assigning only five problems, then do not assign fifty.
2. **Focus on practice and review**. Give students a chance to try new material, further practice skills they have recently learned, and review something they already know.
3. **Take students' age into consideration** when determining the amount of homework to assign. Recommendations from "Helping Your Students With Homework: A Guide for Teachers," published by the U. S. Department of Education (2003), lists the following:
    - Grades 1-3: up to 20 minutes a night
    - Grades 4-6: 20-40 minutes a night
    - Grades 7-9: up to 2 hours a night
    - Grades 10-12: 1½- 2½ hours per night

Remember, this is a cumulative amount. If you are only one of five teachers assigning homework, you should adjust accordingly.

Teachers' Beliefs and Views of Homework

In the search of looking for personal testimonies of teachers' beliefs and views of homework, the research was very sparse. However, the following are three studies that highlight teachers' practices and perspectives of homework. As with many other pedagogical decisions, teachers' ideas on homework are closely related to their personal

and innate theories of effective teaching and learning (Pratt, Collins, & Selinger, 2001). Sidhu and Fook (2010) set out to explore teachers' practices and perspectives on the organization of homework in Malaysian public primary schools. The study comprised 297 teachers from 17 primary schools located in Malaysia. The findings of the study revealed that teachers view homework favorably and see it as an important aspect in consolidating and extending upon classroom learning. Teachers claimed they distributed homework evenly but findings revealed that there was no concerted effort in planning homework for each level.

The following is another study that describes teachers' views of the purpose of homework, elements they consider in designing assignments and factors they believe help or challenge their students' homework experiences. Bang's (2012) study focused on the perspectives of teachers serving recently arrived immigrant adolescents. The findings of this study reveal that teachers' efficacy beliefs affect their instructional decisions (Soodak & Podell, 1996). Bang (2012) further claims that the school climate, school administration, interactions with colleagues and students play an important role in shaping teachers' beliefs about their teaching efficacy, which influences their decisions about homework. In this study, "specific accommodations that teachers offered involved adjusting expectations for individual students, adapting the ways of communicating assignments, and structuring the social context in which assignments could be completed" (Bang, 2012, p.12).

Fisher and Fry (2008) conducted a survey sponsored by MetLife. The survey revealed that homework is viewed as important or very important by 83% of teachers,

81% of parents, and 77% of students. These percentages do not indicate the effectiveness of homework, but rather how each party values homework. On the same note, Holler, Lovelace, and Callender (2001) contend that teachers believe that students do not make the effort required to do well on their homework. They further claim that teachers complain that students watch television rather than complete homework assignments and that most students put jobs, sports, activities, and friends as higher priorities than homework.

Administrators' Beliefs and Views of Homework

It is imperative for administrators to communicate to the staff guidelines and expectations of the school's homework policy. This in turn would help to establish a level of consistency within classrooms. Sleibowitz (2012) communicates in a blog best practices regarding homework to school administrators on the Connected Principal website. Information is shared that schools should not be evaluated by the type of homework being assigned; instead, the educational quality must be judged based on evidence of student learning. Sleibowitz (2012) further claims administration, teachers, and parents must establish a shared vision and understanding of the beliefs and expectations regarding homework policies and procedures. On the same note, Hattie (2012) synthesized more than 900 educational meta-analyses and found that the effects of homework are small, and close to zero in elementary school. Of 138 influences on learning included in Hattie's expansive study, homework scored 88th. Hattie urges teachers to utilize the finding on the minimal impact of homework as an invitation to try something new. He shares that many schools in New Zealand did not abandon

homework because too many parents judge the quality of a school by the mere presence of homework and get upset if there is none, but instead tried different approaches.

Fairbanks, Clark, and Barry (2005) describe Shrewsbury Public Schools' homework policy that was established from a two-year comprehensive study of homework practices. The homework policy considers the academic as well as the social and emotional needs of students. The homework policy defines the responsibilities of principals as follows:

1. Ensure that homework is consistent with the district educational goals.
2. Facilitate communication between classroom and specialist teachers concerning homework.
3. Monitor and support the teachers in the implementation of homework guidelines.
4. Encourage teachers to use homework as a tool to reinforce learning.
5. Be aware of the assignment of major projects and their impact on students' overall educational program.
6. Support the need for balance among the many learning activities besides homework in students' lives.
7. Facilitate the communication process between the school and home and help maintain the parent/school partnership as it relates to homework.

Theoretical Framework: Revised Bloom's Taxonomy

In this study, the revised Bloom's Taxonomy Cognitive Domain theory (Anderson, 1999) was applied to examine the thinking levels embedded in the collection

of homework assignments. This process helped to determine if homework assignments that teachers assigned to students were in one cognitive domain (low/high levels of thinking) or in multiple cognitive domains. In other words, the Revised Bloom's Taxonomy theory was used to analyze the level of cognitive thinking that students were required to demonstrate in completing their assigned homework. In relation to teachers' beliefs and practices about homework, the Revised Bloom's Taxonomy Cognitive Domain theory was used as a framework for interpreting participants' responses. The framework was used to determine the alignment of teachers' beliefs and practices of homework to the cognitive demand of the math homework items. In sum, this study also sought to determine the role administrators played in influencing (if any) teachers' beliefs and practices about homework.

Original Bloom's Taxonomy

The Bloom's Taxonomy framework was conceived as a means of facilitating the exchange of test items among faculty at various universities in order to create banks of items, each measuring the same educational objective. Benjamin S. Bloom initiated the idea of the framework in order to reduce the labor of preparing annual comprehensive examinations (Krathwohl, 2002).

In 1956, Dr. Benjamin S. Bloom and his colleagues published *Taxonomy of Educational Objectives: The Classification of Educational Goals. Handbook 1: Cognitive Domain* (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956). This work categorized instructional objectives into what is commonly known as original Bloom's Taxonomy. This work provided educators with a method of organizing instruction to

allow for more individualized learning, understanding higher order thinking skills, creating meaningful learning objectives and assessing students' mastery of those objectives (Krathwohl, 2002).

After a learning episode, the learner should have acquired new skills, knowledge, and/or attitudes. According to Anderson (1999), there are three overlapping categories, which can be thought of as domains in the taxonomy:

1. **Cognitive Learning**: mental skills (Knowledge)
2. **Affective Learning**: growth in feelings or emotional areas (Attitude)
3. **Psychomotor Learning**: manual or physical skills (Skills)

There are six major categories, which are listed in order below, starting from the simplest behavior to the most complex. The categories can be thought of as degrees of difficulties. That is, the first ones must normally be mastered before the next ones can take place. Bloom's Taxonomy of learning objectives is used to define how well a skill or competency is learned or mastered (Krathwohl, 2002).

Anderson (1999) attests that Bloom's basic premise was that not all learning has the same merit. Rather, there is a hierarchy that begins with memorization and proceeds to higher levels whereby learners can apply their knowledge in increasingly more sophisticated and, arguably more useful, ways. From lowest to highest, those six levels are as follows:

1. **Knowledge.** This is result of memorization and is sometimes referred to verbal knowledge. The outcomes can be described by verbs such as define, identify, list and state.

2. **Comprehension**. This is the understanding level. At this level learners are able to demonstrate their knowledge through actions such as discussing or explaining what has been learned.
3. **Application.** This is the first of four levels evidenced by a learner's ability to put knowledge to use. By remembering and understanding, the learner should be able to apply or transfer that knowledge to different situations, perhaps to solve a new problem.
4. **Analysis.** Think of this as the critical thinking level. Learners can examine what they have learned, and they are able to compare and contrast literature, processes, theories, concepts, events and the like.
5. **Synthesis**. This is the first level at which learners make creative use of their knowledge. For example, the learner can now compose a poem, design a bridge, make a ceramic bowl, paint a picture or repair an automobile.
6. **Evaluation**. At this level, learners display a degree of expertise. The art student can critique a painting, the chemistry student can predict the outcome of a reaction and the engineering student can select the best material for a new product.

Nickel (2010) postulates that Bloom's Taxonomy provides a guideline for creating assignments, discussion questions, and assessments that address the kinds of skills students must develop in order to become critical thinkers and learners.

Revision of Bloom's Taxonomy Cognitive Domain

Lorin Anderson, a former student of Dr. Benjamin S. Bloom, revisited the cognitive domain in the learning taxonomy in the mid-nineties and made some changes. The two most prominent changes are: 1) changing the names in the six categories from noun to verb forms, and 2) slightly rearranging them. This new taxonomy reflects a more active form of thinking and is perhaps more accurate (Anderson, Krathwohl, Airasian, Cruikshank, Mayer, Pintrich, Raths, & Wittrock, 2000; Pohl, 2000).

NEW verbiage associated with the long familiar Bloom's Taxonomy is represented in Figure 2. There is a change from *nouns* to *verbs* (e.g., Application to Applying) to describe the different levels of the taxonomy. The top two levels are essentially exchanged from the old to the new version. Evaluation moved from the top to evaluating in the second from the top and synthesis moved from second on top to the top as creating (Pohl, 2000).

Figure 2. Revised Bloom's Taxonomy Cognitive Domain Graphic

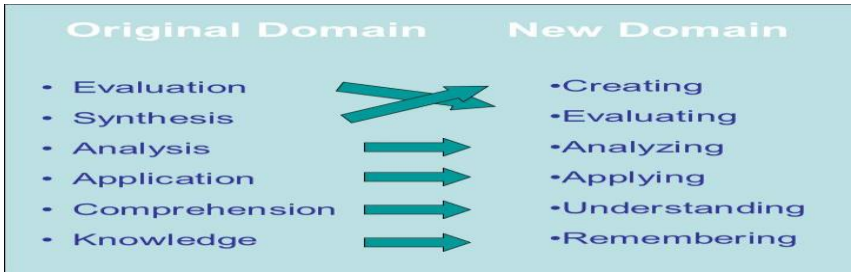


Figure 2. Graphic retrieved from: http://www.odu.edu/educ/roverbau/Bloom/bloomstaxonomy.htm

Anderson (1999) revised the original Bloom's Taxonomy by combining both the cognitive process and knowledge dimensions. The new terms are defined as follows:

1. **Remembering**: Retrieving, recognizing, and recalling relevant knowledge from long-term memory.
2. **Understanding**: Constructing meaning from oral, written, and graphic messages through interpreting, exemplifying, classifying, summarizing, inferring, comparing, and explaining.
3. **Applying**: Carrying out or using a procedure through executing, or implementing.
4. **Analyzing**: Breaking material into constituent parts, determining how the parts relate to one another and to an overall structure or purpose through differentiating, organizing, and attributing.
5. **Evaluating**: Making judgments based on criteria and standards through checking and critiquing.
6. **Creating**: Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing.

Reasons for the Revision

Amer (2006) reports a group of cognitive psychologists, curriculum and instructional researchers, and testing and assessment specialists revised the original Bloom's Taxonomy. The revised taxonomy incorporates several theories and approaches to learning which make students more knowledgeable of and responsible for their own learning (e.g., *constructivism, metacognition, self-regulated learning*). All these theories and approaches see learning as a proactive activity, requiring self-initiated motivational

and behavioral processes as well as metacognitive ones (Zimmermann, 1990). According to Pohl (2000), the subcategories of the six major categories of the Revised Bloom's Taxonomy were changed from *noun* to verb forms. The knowledge category was renamed. Knowledge is an outcome of thinking instead of a form of thinking. The word knowledge was inappropriate to describe a category of thinking and was replaced with the word *remembering* instead. The words comprehension and synthesis were renamed to *understanding* and *creating* in order to better reflect the nature of the thinking defined in each category.

Bloom (1956) recognized that the taxonomy was being "unexpectedly" used by countless groups. He never considered an audience for the original publication. The revised version of the taxonomy is intended for a much broader audience. Emphasis is placed upon its use as a "more authentic tool for curriculum planning, instructional delivery and assessment (Anderson, 1999; see also Krathwohl, 2002).

Bloom's Taxonomy and Revised Bloom's Critics

Hess, Jones, Carlock, and Walkup (2009) claim that the Revised Bloom's Taxonomy suffers limitations when selecting test items and formulating questioning strategies because it uses verbs to differentiate taxonomy levels-many verbs appear at multiple levels and do not clearly articulate the intended complexity implied by the taxonomy. They further contend that the new model, Cognitive Rigor Matrix, fills this void. The Cognitive Rigor Matrix is a combination of Bloom's Taxonomy, depth of knowledge, and cognitive rigor. Hess, Jones, Carlock, and Walkup (2009) argue that the Cognitive Rigor Matrix is a comprehensive structure for defining rigor. The intent of the

Cognitive Rigor Matrix is for analyzing instruction and enhancing teacher lesson planning and posing a wide range of uses at all levels of curriculum development and delivery.

Bloom's Taxonomy in the Classroom

Bloom's Taxonomy can be implemented specifically by constructing questions that promote higher-level thinking. Questioning strategies can be used to prompt student thinking and to check for student understanding. Knight (2007) conducted a study of the kinds of questions teachers ask during instruction in typical classrooms. Instructional coaches went into classrooms and observed teachers, writing down each question teachers asked. In total, the instructional coaches gathered more than 1,000 questions. When they categorized those questions, using the *Taxonomy of Educational Objectives* developed by Benjamin Bloom and his colleagues (1956), they found that 75% of the questions teachers asked were lowest-level, knowledge-related questions. If teachers do not ask higher-level questions that prompt students to apply or synthesize their new knowledge, they cannot be sure that their students are fully internalizing what they are learning (Knight, 2007, p. 165). Increasing the awareness and use of Bloom's Taxonomy in homework will provide students with the opportunity to think deeply about concepts as well as learn information at a higher level. Bissell and Lemons (2006) state the use of Bloom's Taxonomy has been shown to enhance student mastery of skills and concepts and critical thinking. The challenge has been developing homework tasks to increase student learning and critical thinking within the six stages of the taxonomy.

Research Gaps

This study focused on elementary third grade math teachers' beliefs and practices regarding homework and the level(s) of cognitive domain(s), based on the Revised Bloom's Taxonomy, embedded in homework assignments. Additional studies regarding the alignment of Bloom's Taxonomy to classroom assessments, results of statewide assessments, and classroom discussion questions, need to be further investigated. Krathwohl (2002) contends that severe misalignment of assessment, objectives, and instruction can cause numerous difficulties. If instruction is not aligned with assessment, even the highest quality instruction will likely not lead to high student performance on the assessment. Since Bloom's Taxonomy focuses on student thinking and learning rather than student performance, it emphasizes the need to focus on cognitive processes and types of knowledge required to achieve the standards, rather than the types of items included on the statewide assessments (Krathwohl, 2002). While some studies (Bezuidenhout & Alt, 2011; Eber & Parker, 2007; Jideani & Jideani, 2012) have explored the relationship between Bloom's and student assessments, no studies have examined the Revised Bloom's Taxonomy Cognitive domain embedded in homework assignments.

Chapter 3

Methods

The purpose of this study was to examine third grade teachers' beliefs and practices regarding homework in mathematics, to determine the alignment of teachers' beliefs about homework to their practices as it related to the Cognitive Domain of the Revised Bloom's Taxonomy, and to describe how administrative factors related to homework influenced principal leadership of mathematics homework practices in a school. Data were collected via interviews with six teachers and four principals in Dell School District. Interviews were audio recorded, transcribed, and then analyzed to determine the themes that emerged and to ultimately describe the essence of the experience (Moustakas, 1994). The six teachers were given a folder to store their collection of homework assignments that they assigned to their students throughout a unit of instruction.

The methodology used to investigate the research questions was a qualitative research design through a phenomenological approach. This chapter includes a description of the process for participant selection, collecting data, developing the interview protocol, data analysis, trustworthiness, and subjectivity and bias, and addresses limitations and length of the study.

Research Questions

This study explored teachers' beliefs and practices about homework, examined the alignment of teachers' beliefs about homework to their practices (based on Revised

Bloom's Taxonomy), and described teachers' and administrators' attitudes and beliefs about homework. This study was guided by the following research questions:

1. What are teachers' beliefs and practices regarding homework in mathematics?
2. How do teachers' beliefs about homework align to their practices as it relates to the Cognitive Domain of the Revised Bloom's Taxonomy?
3. What are administrative factors related to homework and how do these factors influence principal leadership of mathematics homework practices in a school?

Qualitative Research Design

This study was based on a qualitative research design to gain a better understanding of third grade math teachers' beliefs and practices regarding homework, as well as, how these beliefs and practices aligned to the framework of the Revised Bloom's Taxonomy Cognitive Domain. By using qualitative methods, the study provided a richer depiction of third grade math teachers' beliefs and practices regarding homework, allowed for a detailed analysis of the cognitive domain levels of the homework assignments that teachers routinely assigned to their students, and described how administrative factors related to homework influenced principal leadership of mathematics homework practices.

This qualitative design involved an interpretive, naturalist approach to the study. The researcher studied subjects in their natural setting, attempting to make sense of, or interpret, phenomena and the meaning people bring to them (Denzin & Lincoln, 2003). Creswell (2007) conveyed that qualitative research is conducted when a need exists to

gain a *complex,* detailed understanding of an issue. This detail can only be established by talking directly with people, going to their homes or places of work, and allowing them to tell their stories unencumbered by what we expect to find or what we have read in the literature. On the same note, Leedy and Ormrod (2005) asserted that qualitative research is typically used to answer questions about the complex nature of phenomena, often with the purpose of describing and understanding the phenomena from the participants' point of view.

A phenomenological approach was selected in order to focus more on a description of the experiences of participants. Leedy and Ormrod (2005) contended that a phenomenological study attempts to understand people's perceptions, perspectives, and understandings of a particular situation. In other words, a phenomenological study tries to answer the question: What is it like to encounter a particular experience? According to Husserl (2012), pure phenomenological research seeks essentially to describe rather than explain. It starts from a perspective free from hypotheses or preconceptions. He further argued that a person's experience can be rigorously and systematically studied on the basis of how it appears to consciousness.

Using phenomenological approach gave the participants an opportunity to tell their own stories and reflect on their day-to-day experiences related to homework. Such stories and reflections were used as qualitative data for this study. A phenomenological study enabled the researcher to gain access to the participants' world of experience.

Participants

Participants were selected from Dell School District. Participants for this study included teachers and principals. The participants that were involved in the study were from four different schools.

Dell School District

Dell School District had a diverse population of 78,502 students enrolled during the 2013-14 school year. The demographic population of students consisted of 55.8% African American, 24.1% Hispanic, 13.6% White, 5.7% Asian, and 0.08% Native American. Further breakdown of the demographic consisted of 20.5% special education, 9.0% English language learners, and 79.7% free or reduced lunch. Dell School District, among the 40 largest in the nation, had 165 schools with a mix of traditional, language immersion, arts, International Baccalaureate, Montessori, Early Childhood, and Head Start programs. The overall math achievement of the district was 19% of students being proficient or advanced on the Wisconsin Knowledge and Concepts Examination state test in November 2012.

Dell School District was divided into five regions: northwest, southwest, east, central, and an innovation zone. Each region had a cohort of about 33 schools. Dell School District had five Math Leaders to support the teaching and learning of mathematics at schools. Each district Math Leader was assigned to a specific region.

Schools

This study included four schools from Dell School District. The selection of the schools was based on a first come, first served agreement for participation. The eligible

schools included either kindergarten through sixth grade schools or, kindergarten through eighth grade schools, and the use of Houghton Mifflin Harcourt Math Expressions program (hereafter, Math Expressions). The researcher decided to focus on third grade due to prior knowledge, practice, and teaching experience in third grade. The researcher wanted to work with schools that used the Math Expressions program because of the program's rigorous mathematical content and problem solving standards. In Dell School District, third grade students were required to take the Wisconsin Knowledge and Concepts Examination (WKCE) test at the beginning of third grade. The literature stated that often homework was viewed as preparation for a standardized test (Vatterott, 2009). The researcher was interested in analyzing the collection of homework that third grade teachers routinely assigned to their students in mathematics. In Dell School District, two of the schools (Macy Elementary School and Hilltop School) were located in the north area of the district and two schools (Boston School and Hope School) were located in the south area of the district.

The following is a summary of the demographics of each school involved in this study. Each school is given an Overall Accountability Score by the state of Wisconsin Department of Public Instruction. The Overall Accountability Score is an average of Priority Area Scores (e.g., Student Achievement, Student Growth, Closing Gaps, On-Task and Postsecondary Readiness), minus Student Engagement Indicator (e.g., Test Participation Rate, Absenteeism Rate, Dropout Rate) deductions. The average is weighted differently for schools that cannot be measured with all Priority Area Scores, to ensure that the Overall Accountability Score can be compared fairly for all schools.

Details can be found at http://acct.dpi.wi.gov/acct accountability. For example, the Overall Accountability Ratings and Score consisted of: Significantly Exceeds Expectations (83-100), Exceeds Expectations (73-82.9), Meets Expectations (63-72.9), Meets Few Expectations (53-62.9), and Fails to Meet Expectations (0-52.9).

Macy Elementary School. Macy Elementary School served 504 students from three-year-old kindergarten through eighth grade. According to the school's (2012-13) report card, the demographic student population consisted of 0.2% American Indian or Alaska Native, 0.0% Asian or Pacific Islander, 96.4% Black not Hispanic, 1.6% Hispanic, and 1.8% White not Hispanic. This school had a 24.6% Student with Disabilities population, 96.4% Economically Disadvantaged population, and 0.0% Limited English Proficient population. The Overall Accountability Score was 45.8 which equates to failure to meet expectations. According to the (2012-13) WKCE data for Macy Elementary School, 0.0% of third grade students were proficient in mathematics. Dell School District proficiency percentage for the (2012-13) third grade WKCE mathematics test was 26.8%.

Hilltop School. Hilltop School served 378 students from three-year-old kindergarten through eighth grade. According to the school's (2012-13) report card, the demographic student population consisted of 96.3% Black not Hispanic, 2.1% Hispanic, and 1.6% White not Hispanic. This school had a 30.4% Student with Disabilities population, 98.4% Economically Disadvantaged population, and 0.5% Limited English Proficient population. The Overall Accountability Score was 54.1 which equates to

meets few expectations. According to the (2012-13) WKCE data for Hilltop School, 23.1% of third grade students were proficient in mathematics.

Boston Street School. Boston Street School served 662 students from three-year-old kindergarten through eighth grade. According to the school's (2012-13) report card, the demographic student population consisted of 1.2% American Indian or Alaska Native, 4.8% Asian or Pacific Islander, 9.8% Black not Hispanic, 23.6% Hispanic, and 60.6% White not Hispanic. This school had a 13.0% Student with Disabilities population, 49.1% Economically Disadvantaged population, and 2.6% Limited English Proficient population. The Overall Accountability Score was 69.6 which equates to meets expectations. According to the (2012-13) WKCE data for Boston Street School, 36.4% of third grade students were proficient in mathematics.

Hope Avenue School. Hope Avenue School served 597 students from three-year-old kindergarten through eighth grade. According to the school's (2012-13) report card, the demographic student population consisted of 0.8% American Indian or Alaska Native, 30.8% Asian or Pacific Islander, 8.5% Black not Hispanic, 22.8% Hispanic, and 37.0% White not Hispanic. This school had an 11.4% Student with Disabilities population, 68.2% Economically Disadvantaged population, and 30.7% Limited English Proficient population. The Overall Accountability Score was 69.6 which equates to meets expectations. According to the (2012-13) WKCE data for Hope Avenue School, 52.0% of third grade students were proficient in mathematics.

Principals

Four principals participated in this study. Two of the principals (Strong and Cummings) were recently reassigned and were new to their school as the principal during the 2012-13 school year. The other two principals (Harris and Sims) worked in their current position within their school between 3 to 12 years. All of the principals worked in Dell School District between 16 and 30 years.

Teachers

Six teachers participated in this study. Two schools each had two third-grade teachers. For example, Allen and Young worked at Macy Elementary School and Williams and Yates worked at Boston Street School. The other two schools each had only one-third grade teacher. Mapp worked at Hilltop School and Garrison worked at Hope Avenue School. All of the teachers worked between 10 to 25 years within Dell School District.

Recruitment of Participants

The willing participants, principals and teachers, must have worked at the same school in order to be included in the study. The principals and third-grade math teachers from the same school, had to both complete a letter of consent to participate in the study.

Principal Recruitment

The principals were selected from Dell School District. The selection criteria included: being an elementary principal in a building that used the Math Expressions at the third grade level and having a teacher that taught third grade. Principals were not the primary unit of analysis. Instead, it was determined what role principals played in

influencing third grade math teachers' beliefs and practices regarding homework in mathematics.

Principals were selected using the purposeful sampling method. Creswell (2007) claimed that the concept of purposeful sampling means that the inquirer selects individuals and sites because they can purposefully inform an understanding of the research problem and central phenomenon in the study. Principals were emailed in order to solicit their support in the study. Principals were informed of my planned visit to their school (within the same week of the email) to briefly share with them the purpose of the research study. See Appendix A for a copy of the content of the solicitation email to principals.

During the initial brief conversation with the school principal, an overview of the research study was shared in order to solicit their support for the study. See Appendix B for a copy of a brief overview of the study for the principal. If the principals agreed to participate in the study, then they were asked to sign the letter of consent. The principals received a copy of the signed consent letter. After the researcher had received confirmation from the third grade math teacher to participate in the study, an interview was scheduled. After the teacher's initial interview, the school's principal was contacted for an interview at a later time. This process occurred in order to ensure that the principal did not preempt what the teacher may say during the interview.

Teachers Recruitment

The unit of analysis for the study was third grade math teachers with the school's administrator as influential to the practice. Since the research study focused on the type

of homework assignments that teachers assigned, students were not part of this research study. The selection criteria included: being a third grade math teacher using the Math Expressions program within Dell School District. The teachers selected for the study were those who best shed light on the phenomenon under investigation. Creswell (1998) stated that participants selected in a phenomenological study must be individuals who have experienced the phenomenon being explored and can articulate their lived experiences. Polkinghorne (1989) recommended that researchers interview from 5 to 25 individuals who have all experienced the phenomenon. However, Dukes (1984) had seen the number of participants in a phenomenology ranging from 1 up to 325. The participation number was based on the willing number of third grade teacher participants who taught Math Expressions and willing principal participants.

After the principals were selected, the elements of snowball sampling occurred in an effort to obtain the teacher sample. Each school's principal introduced the third grade math teacher(s) in their building to the researcher. During the initial conversation with the teacher(s), an overview of the research project was shared. See Appendix C for a copy of a brief overview of the study for the teacher. Creswell (2002) contended that snowball sampling is when participants already in the study recommend other persons to be invited to participate. Glesne (1999) described snowball sampling as obtaining knowledge of potential cases from people who know others who meet research interests. Through the process of purposeful and snowball sampling, teachers, who taught third grade mathematics, were referred by their principals.

After getting the names of the third grade teachers who used the Math Expressions program, the teachers were emailed in order to solicit their participation in the study. See Appendix D for a copy of the content of the solicitation email to teachers. Teachers were asked to respond by email to note their interest in participating in the study. Arrangements were made, outside of the school workday, to interview teachers interested in participating in the study.

At the initial interview session, information was shared with the teacher(s) regarding the central purpose of the study and the procedures for data collection. Creswell (2007) shared that in a phenomenological study in which the sample includes individuals who have experienced the phenomenon, it is important to obtain participants' written permission to be studied. In addition, Glesne (1999) suggested three reasons to secure informed consent from study participants. First, participants need to be aware that their participation is not mandatory. Second, they need to know if anything could adversely impact them. Lastly, participants must understand if they so choose, they can withdraw their participation in the study at any time.

Once consent was received from the school principal and third grade math teacher(s) of the same school, an initial interview was scheduled. See Appendix E and Appendix F for a copy of the letters of consent for the principal and teacher(s) of each school. Each principal and teacher received a copy of the signed consent letter. The interview consisted of questions that capture general information regarding years of teaching experience, beliefs about homework policy and practice, and the process for

assigning homework. Creswell (2007) suggested that for a phenomenological study, the process of collecting information involves primarily in-depth interviews.

Procedures

Procedures were determined for contacting the teachers and principals for an interview(s). The researcher met individually with each teacher and principal during the initial interview session. A follow-up interview was conducted on an individual basis with only the teachers. An outline of this process is explained below in detail.

Interviews

The third grade math teachers were contacted by email in order to request the time of day for a future face-to-face interview. Leedy and Ormrod (2005) suggested that face-to-face interviews have the distinct advantage of enabling the researcher to establish rapport with potential participants and therefore gain their cooperation; thus, such interviews yield the highest response rates from the percentages of people agreeing to participate in survey research. The reason for conducting an initial face-to-face interview with the third grade math teachers (individually) was to provide them with an opportunity to shed light on their perceptions, perspectives, and understanding of homework practices. See Appendix G for a copy of the teacher interview protocol that was used during the initial interview. A second, follow-up interview was arranged at a later time with the teachers. The follow-up interview provided a chance to ask additional questions based on the interviewees' responses from the initial interview.

The interview with the school principal took place after the initial interview with the third grade math teacher(s). See Appendix H for a copy of the principal interview

protocol that was used while conducting the initial interview. The reason for interviewing the teacher before the school principal was to eliminate any unforeseen influences from the principal toward the teacher's homework practices. The face-to-face interview with the principals provided them with an opportunity to shed light on their leadership expectations in the school regarding homework policy and best practices.

The structure of the interview sessions was in-depth, semi-structured and open-ended. Leedy and Ormrod (2005) contended that interviews in a qualitative study are rarely as structured as the interviews conducted in a quantitative study. Instead, they are either open-ended or semi-structured, in the latter case revolving around a few central questions. Each interview was digitally-recorded and conducted at the convenience of each participant at the suggested location of their choice. Kvale (1996) described the purpose of an interview as "obtaining qualitative descriptions of the life world of the subject with respect to interpretation of their meaning" (p. 435). Digital recorders were used during the interview process to record the conversations and later used to transcribe the interview sessions.

Collection of Homework

Toward the end of the initial interview, teachers were given a homework log to record the date, list the page number(s) and problem number(s) of the assigned homework, and provide a description of the homework assignment (see Appendix I for a copy of the Homework Log). Third grade math teachers were asked to complete the homework log every time they assigned math homework to their students. They were asked to place a blank copy of each homework assignment in sequential order (the order in which the

homework was assigned throughout the entire math unit), along with the Homework Log, in a designated folder. During the initial interview session, each teacher was provided with a purple folder that included the Homework Log.

Figure 3 outlines a picture representation of the Homework Log that the teachers were asked to complete in relation to homework. An example of how the Homework Log should be completed was provided.

Figure 3. Homework Log

Date	List page number(s) and problem number(s)	Description of the assigned homework
9/10/13	Page 9, problems 13 and 14	Students had to interpret a bar graph in order to answer two questions.

Interview Protocol

An interview protocol was incorporated within the study to use as a procedural guide while conducting interviews with teachers and principals. Jacob and Furgerson (2012) pointed out that an interview protocol is more than a list of interview questions; it extends to the procedural level of interviewing and includes a script of what to say before the interview, at the conclusion of the interview, and prompts for the interviewer to collect informed consent. It includes prompts to remind the interviewer of the information that she or he is interested in collecting. As previously stated, the reason for conducting an interview with the principals was to provide them with an opportunity to shed light on their leadership expectations in the school as it relates to homework policy and practice. The interview with the teachers (who signed the consent letter) provided an

opportunity to gain insight into the lived experiences regarding the phenomena of study.

Some researchers have made suggestions for developing and facilitating an interview protocol (Jacob & Furgerson, 2012). Many of those suggestions from researchers were incorporated into the design of the interview protocol. Open-ended questions were used during the interview process, as suggested by Jacob and Furgerson, because this technique helped uncover as much as possible about the participants and their situations. Basic questions were used at the beginning of the interviews in order to build a sense of trust (Jacob & Furgerson, 2012). The phrase, "tell me about…" was used as part of the research questions in an effort to invite participants to share more information about their life experiences regarding homework practices. This style of questioning guides participants to take each research question in several directions which yields valuable information to the data.

Prompts were used as suggested by Jacob and Furgerson, while conducting interviews in order to be reminded of the questions that needed to be asked, and at the same time, allow for unexpected data to emerge. The research questions were pilot tested with someone who provided feedback that was used to revise the interview protocol (Jacob & Furgerson, 2012). Yin (2003) recommended a pilot test to refine data collection plans and develop relevant lines of questions.

The study was cleared by the Institutional Research Board (IRB) at the researcher's university. A good interview protocol was essential to getting the best information from the participants in the study. Creswell (2007) argued that the interview

protocol enables a person to take notes during the interview about the responses of the interviewee. It helps a researcher organize thoughts on items such as headings, information about starting the interview, concluding ideas, information on ending the interview, and thanking the respondent.

The same interview procedure was chosen for both the teachers and principals because the format and process of the guide allowed the gathering of useful data regarding the perspectives and experiences of the participants of the research study. However, the questions on the protocol varied based on either principal participant or teacher participant (see Appendix G and Appendix H, respectively).

Data Sources

Data sources included-interview transcriptions, homework assignments, homework log, documentation of text from e-mail correspondence, and field notes. This section describes the data sources and collection methods for organizing and reporting textual information from the participants.

Interview Transcriptions

The researcher used a digital recorder during all interview sessions with teachers and principals. The software called Sound Organizer was installed on the researcher's computer in order to convert each interview conversation into text form. The researcher installed another software called Dragon Naturally Speaking. This software was compatible with Sound Organizer. It performed voice recognition for a file and converted the voice to text. The researcher was able to listen to the recording while verifying the accuracy of the interview conversation (voice recognition) to the text.

Homework Assignments

The Homework Log and homework assignments were collected at the end of the unit (see Appendix I for a copy of the Homework Log). This study was not designed to analyze student understanding of the homework assignments. Therefore, the homework assignments were collected before they were completed by students. This allowed all of the homework assignments to be analyzed in a semi-objective way. A written analysis was provided of the cognitive domain level(s) embedded in the assigned homework assignments. The collection of homework gathered from each teacher was from a complete unit of study. The homework was from the beginning of a unit of instruction to the end of the unit. The teachers contacted the researcher with the date and time to come to their school to pick up the homework collection folder. The collection of homework varied between two or three weeks of homework assignments among the teachers.

Homework Log

At the end of each teacher's interview session, the researcher asked each teacher to complete a Homework Log every time they assigned math homework to their students. Teachers were asked to attach a blank copy of each homework assignment to the homework log in sequential order (the order in which the homework was assigned throughout the entire math unit). Teachers were asked to indicate on the Homework Log if no homework was given on a particular day. All documents (e.g., homework log and homework assignments) were kept in the designated purple folder for the researcher to pick up from each teacher.

Documentation of Text from E-mail Messages

A tracking system was established to collect the documentation of text from e-mail correspondence from the participants (see Appendix J for a copy of the documentation of text from e-mail messages form). Creswell (2002) attested that in recent years, new forms of data have emerged, such as journaling in narrative story writing, using text from e-mail messages, and observing through examining videotapes and photographs. This method of tracking e-mail messages is an innovative data collection for individuals designing qualitative projects (Creswell, 2007).

Field Notes

A form was used to keep track of field notes from the interviews and any other important details (see Appendix K for a copy of the field notes form). Key words or phrases of important quotes were recorded for later recall. Copious, detailed notes were taken during each interview session. For each interview question, the participant's response was summarized. In the left margin, notes were made about methodological concerns and emergent themes. The field notes were both analytic and descriptive, and nonjudgmental. Babbie (1992) called the field journal (notes) the basic tool of field research. He claimed that field notes should include both empirical observations and an individual's interpretations. What you "know" has happened and what you "think" has happened should be recorded as part of the field notes, according to Babbie. Furthermore, Babbie asserted that the researcher should identify what types of notes (observation vs. interpretation) they are taking.

Data Analysis

After the interviews were conducted and transcribed, the use of Creswell's data analysis spiral, interpretative analysis method, content analysis method, and constant comparative method were used to evaluate the data. The details for incorporating these methods in the study are explained.

Creswell's Data Analysis Spiral

Below is an outline of Creswell's data analysis spiral (as cited in Leedy & Ormrod, 2005) that was used in order to organize and interpret the qualitative data. The data were sifted through several times, as follows:

1. Organized and broke down large bodies of text into smaller units.
2. Perused the entire data set several times to get a sense of what it contained as a whole.
3. Identified general categories or themes and then classified each piece of data accordingly.
4. Integrated and summarized the data (pp. 150-151).

Creswell's data analysis spiral was incorporated into the study in an effort to sift through, saturate, and interpret the data. The researcher began with transcription of the data through the use of a Sony IC Recorder. The recording of the interview sessions were imported as individual files on the researcher's computer for storage. The recorded files were then imported into Sound Organizer software. The voice recognition software, Dragon Naturally Speaking, was used to perform voice recognition for the files and convert the voice to text. The files were organized on the researcher's computer into

designated folders by individual school names with supported participants (principal and teacher(s)) within each school. The researcher listened to each recording in order to verify the accuracy of the texts. The transcripts were read in their entirety several times by the researcher. Notes were written (e.g., short phrases and words) in the margin of the transcripts and field notes as the researcher explored the data. This process helped the researcher get a sense of the interview as a whole before breaking it into parts (Agar, 1980). Sentences and paragraphs were highlighted in specific colors so that the researcher could identify, classify, categorize, interpret, and compare and contrast emerging themes in the data in relation to the research questions. Tables and figures were generated as a visual representation to illustrate significant statements, meanings, and theme clusters of the raw data.

Interpretative Analysis

An interpretative analysis of the data was conducted to interpret the data in order to represent the information. This involved analyzing the interview responses and field notes in order to bring to the surface emerging themes, theories, and beliefs of the participants in the study. Creswell (2007) asserted that an interpretative analysis method recognizes the self-reflective nature of qualitative research and emphasizes the role of the researcher as an interpreter of the data and an individual who represents information. Leedy and Ormrod (2005) conveyed that the researcher begins with a large body of information and must, through inductive reasoning, sort and categorize it and gradually boil it down to a small set of abstract, underlying themes. Patton (1980) said, "Inductive analysis means that the patterns, themes, and categories of analysis come from the data;

they emerge out of the data rather than being imposed on them prior to data collection and analysis" (p. 306). The analysis of interview transcripts and field notes was conducted through an inductive approach in order to identify patterns in the data by means of thematic codes.

Content Analysis

A content analysis was to systematically examine the collection of homework assignments given by the teachers through the lens of the Revised Bloom's Taxonomy. The content analysis was used for the purpose of identifying patterns, themes, or biases within the homework assignments (Leedy & Ormrod, 2005). A Bloom's Taxonomy homework chart was created that allowed the collection of homework assignments from the teachers to be analyzed to determine the cognitive levels of the homework items. Next, a grand total of the Revised Bloom's Taxonomy cognitive domain levels that were embedded across all the homework assignments was tabulated. One crucial step in content analysis is to tabulate the frequency of each characteristic found in the material being studied (Leedy & Ormrod, 2005). This method helped determine if teachers were assigning low, moderate, and/or high levels of homework items.

A recording method was created to calculate the cognitive domain level of each math item (see Appendix L for a copy of the Revised Bloom's Taxonomy Homework Chart). The Revised Bloom's Taxonomy Homework Chart incorporated the Revised Bloom's Taxonomy levels of categories from simplest to most complex degrees of cognitive learning (Anderson, 1999). Figure 4 represents a shortened version of the Revised Bloom's Taxonomy Homework Chart.

Figure 4. Revised Bloom's Taxonomy Homework Chart

Category of Cognitive Domain Levels	Number of question(s) in each category/Total number of question(s)	Percentage of Cognitive Domain Level
Remembering		
Understanding		
Applying		
Analyzing		
Evaluating		
Creating		

Each category has a brief description of the development of intellectual abilities and skills (see Appendix L, respectively). The cognitive domain of each item on each homework assignment was determined and then tallied across all assignments.

Constant Comparison Analysis

The constant comparison analysis method was used in order to make a comparison between what was said in the interviews and what was revealed in the collection of homework. This method allowed thematic code comparisons in order to find consistencies and differences emerging from the data (e.g., interviews and field notes). Strauss and Corbin (1990) postulated that a category saturates when no new codes related to it are formed. Eventually, certain categories become more central focus-axial categories and perhaps even a core category.

The constant comparison analysis method underpinned the study. The interview data and field notes were used in order to group statements into meaning units that reflect

the various aspect "meaning" of the phenomenon as it was experienced. This process opened the opportunity to compare and contrast the third grade math teachers' beliefs and practices of homework, the alignment of the assigned homework to teachers' beliefs and practices, and the alignment of the teachers' beliefs and practices to the framework of the Revised Bloom's Taxonomy Cognitive Domain. In addition, the constant comparison analysis method was used to compare and contrast the influence and support of administrative factors to teachers' practices regarding homework and the Revised Bloom's Taxonomy.

The constant comparison analysis method was implemented because it helped identify common themes in people's descriptions of their experiences (Barritt, 1986). Through the use of the constant comparison analysis method, interview data regarding teachers' beliefs and practices of homework was divided into two parts (beliefs and practices) in order to focus on one element at a time. The researcher repeatedly read the interview transcripts and then created a chart to identify teachers' beliefs and practices of homework. The chart was used as a visual model for sorting codes into potential themes. Particular words or phrases were highlighted on the chart and then narrowed down to identify major themes that occurred numerous times in the data. The next phase of the analysis was directed toward finding connections among themes that reflected similar views of the teachers' beliefs and practices regarding homework.

Tables were created to identify and compare and contrast the Cognitive Domain Levels of the math questions embedded in each teacher's collection of homework assignments. Notes were written in the margin of the interview transcript of each teacher

in order to compare and contrast the alignment of teachers' beliefs and practices to the framework of the Revised Bloom's Taxonomy Cognitive Domain. A graphic organizer was used to break the data into small segments and to find consistencies and differences regarding the role that administrators play in influencing third grade math teachers' beliefs and practices.

Trustworthiness

Qualitative researchers, who frame their studies in an interpretive paradigm, think in terms of trustworthiness as opposed to the conventional, positivistic criteria of internal and external validity, reliability, and objectivity (Denzin & Lincoln, 1994; Lincoln & Guba, 1985). Denzin and Lincoln (1994) suggested that four factors be considered in establishing the trustworthiness of findings from qualitative research: credibility, transferability, dependability, and confirm-ability. This study focused on establishing trustworthiness of the findings through the use of obtaining credibility. Credibility, which refers to the confidence one can have in the truth of the research study, can be established by various methods. In this study, an attempt was made to establish credibility by way of using member checking. The support of the participants involved in the research study was solicited in order to review parts of the polished product (transcribed scripts) and determine if the data revealed an accurate account of their day-to-day experiences. Merriam (1998) attested that in member checking, the researcher solicits participants' view of the credibility of the findings and interpretations. This technique is considered by Lincoln and Guba (1985) to be the most critical technique for establishing credibility.

Cross Checking

The method of cross checking was incorporated in the research study in order to maintain reflexivity and to encourage self-awareness and self-correction. Cross checking is the process of checking transcripts to ensure that they do not contain obvious mistakes made during transcription. The transcribed interviews were analyzed along with observational field notes and documents collected from the participants involved in the research study, in order to increase trust in the validity of the study's conclusions (Creswell, 2007). This information was further shared during the second interview in the follow-up session with the teacher(s) of the identified school(s), in order to establish a level of validity and consistency regarding the accuracy of the research findings. Creswell and Miller (2000) wrote that validity is one of the strengths of qualitative research, and it is based on determining whether the findings are accurate from the standpoint of the researcher, the participants, or the readers of an account.

During the interview process with the participants of the study, the researcher developed a professional rapport with each participant (Kvale, 1996), reviewed the consent letter with the participant prior to conducting the interview (Creswell, 2007), and shared a brief description of the study and its procedures, full identification of the researcher's identity, an assurance that participation is voluntary and that the participant has the right to withdraw at any time without penalty, an assurance of confidentiality (Creswell, 2007). In addition, the researcher asked questions involving personal history of teaching experience, specific events (such as, length of teaching experience), and other events to spark conversation and build the relationship (Patton, 1987). The open-ended

questions during the interview were used in order to allow the participant to elaborate and provide details about experiences and beliefs (Patton, 1987). The interview for all participants (teachers and principals) lasted one hour. Creswell (2007) contended that for one-on-one interviewing, the researcher needs to have individuals who are not hesitant to speak and share ideas, and needs to determine a setting in which this is possible.

Power Relations

While conducting this study, the researcher was sensitive to vulnerable populations, imbalanced power relations, and placing participants at risk (Hatch, 2002). The researcher arranged to conduct interview sessions with the participants at their choice of location and time for the meeting. The researcher wanted to create a welcoming, nonthreatening environment for the participants to feel comfortable while sharing their personal experiences about the phenomena under investigation. Principals were selected using the purposeful sampling method. Their willingness to participate in the study was based on a first come, first served agreement. After the principals were selected, elements of snowball sampling occurred in an effort to obtain the teacher sample. Each school's principal introduced the third grade math teacher(s) in their building to the researcher. Both parties, principals and third grade math teachers, signed a letter of consent to participate in the study. The researcher respected the privacy and right of the principals and teachers to withdrawal from the study. The principals and teachers were given an overview of the study in order to develop a sense of rapport and respect between participants and researcher. The researcher contacted the teachers via email to confirm

the researcher's understanding of the information collected and to accurately report what the teachers said.

Inter-rater Reliability

After the data collection and analysis of the homework assignments were completed, the researcher met with a former Math Teacher Leader to establish inter-rater reliability regarding the alignment of the Cognitive Domain Level of the Revised Bloom's Taxonomy embedded in the collection of the math homework assignment items collected from participating teachers in the study. To protect the anonymity of the schools and participants, names of schools and participants were masked by assigning pseudonyms.

The process used to establish inter-rater reliability agreement began by first clarifying a common understanding of the six categories of cognitive domain levels. The categories were thought of as degrees of cognitive difficulties, from lowest to highest forms of thinking. The researcher and math teacher leader separately scored all of the math homework assignment items and then flagged the homework assignment items that they scored at a different cognitive domain level. The researcher and math teacher leader discussed their differences of cognitive domain level scores for each math homework assignment item until agreement was reached on all items.

The researcher and math teacher leader had some differences in cognitive domain scores of the homework assignment items. Of the 898 homework items, different cognitive domain levels (e.g., *understanding*, *applying*, *analyzing*, *evaluating*, and *creating*) were assigned to 66 items. For example, the researcher identified 108 items out

of 898 at the *understanding* cognitive domain level. The math teacher leader identified 105 items out of 898 as being at the *understanding* cognitive domain level. The difference in scoring of the *understanding* cognitive domain level between the researcher and math teacher leader was three math homework assignment items.

The researcher identified 116 items out of 898 at the *applying* cognitive domain level and the math teacher leader identified 148 items out of 898 as being at the *applying* cognitive domain level. The difference in scoring of the *applying* cognitive domain level between the researcher and math teacher leader was 32 math homework assignment items.

The researcher identified 39 items out of 898 at the *analyzing* cognitive domain level and the math teacher leader identified 10 out of 898 at the *analyzing* cognitive domain level. The difference in scoring of the *analyzing* cognitive domain level between the researcher and math teacher leader was 29 math homework assignment items.

The researcher identified 12 items out of 898 at the *evaluating* cognitive domain level and the math teacher leader identified 13 items out of 898 at the *evaluating* cognitive domain level. The difference in scoring of the *evaluating* cognitive domain level between the researcher and math teacher leader was one math homework assignment item.

The researcher identified 14 items out of 898 at the *creating* cognitive domain level and the math teacher leader identified 13 items out of 898 at the *creating* cognitive domain level. The difference in scoring of the *creating* cognitive domain level between the researcher and math teacher leader was one math homework assignment item. The

researcher and math teacher leader both identified 609 items out of 898 at the *remembering* cognitive domain level within the total collection of homework assignment items. This was 100% agreement in identification of items at the *remembering* cognitive domain level between the researcher and math teacher leader.

Most of the differences of agreement were in relation to the *understanding* and *applying* cognitive domain levels. Through rigorous discourse, the researcher and math the leader discussed the differences and came to consensus regarding the alignment of the cognitive domain level of all of the math homework assignment items.

Subjectivity and Bias

The necessary precautions were taken to avoid imposing personal beliefs and biases on the data. As a former teacher, Math Teaching Specialist, Regional Coordinator of Curriculum and Instruction and school administrator, the researcher has had personal experience related to the phenomenon in question and wanted to gain a better understanding of the experiences of others. Since bias is an inevitable part of the study of human beings, it was dealt with by attempting to become aware of personal preconceptions and biases before beginning the study and while the study was occurring, and then "bracketing" or suspending them so as to be as open as possible to what the participants wanted to share. With extensive knowledge of third grade mathematical content, Bloom's Taxonomy Cognitive Domain Levels, and research-based instructional best practices, the researcher made a conscious effort to set aside prior experiences in order to take a fresh perspective toward the phenomenon under examination (Husserl, 2012). The principals and teachers were informed that the researcher's goal for the study

was to commit to balanced and fair reporting, holding true to complexities and multiple perspectives as they emerged (Patton, 2002).

Limitations of the Study

One limitation to this research study was the nature of the sample itself. The sample size consisted of third grade teachers and school administrators within a large urban school district (Dell School District). The schools used the Houghton Mifflin Harcourt Math Expressions curriculum. This small sample size limited the generalizability of the study results to other populations. Pinnegar and Daynes (2006) affirmed that the intent in qualitative research is not to generalize the information (except in some forms of case study research), but to elucidate the particular and specific. In other words, the findings of the research study cannot be generalized to the larger population. Dukes (1984) recommended studying 3 to 10 subjects in a phenomenological study. Creswell (2007) claimed that one general guideline in qualitative research is not only to study a few sites or individuals but also to collect extensive detail about each site or individual studied.

Second, as the investigator, the researcher, who served as an assistant principal for the school district, connected personally with the study. The researcher also formerly served in the role of Regional Coordinator of Curriculum and Instruction within the same district. With this said, it is possible that this professional position may affect some of the principals' and teachers' responses during the interview sessions. It is imperative to note that the researcher brought prior knowledge of the district's curriculum and instruction initiatives. This in turn may influence the interpretation of the data. As an

Assistant Principal of Curriculum and Instruction, the researcher was knowledgeable of the math curriculum and well qualified to articulate the mathematical key ideas embedded in a math unit and assess the cognitive domain of the homework assignments. This potential limitation was mitigated by way of not discussing the math content of the unit lesson with the teachers and/or principals. The participants were told that the study was not intended as a teachers' critique of understanding of mathematics content. Instead, the study provided teachers with the opportunity to share their experiences of how they assign homework to their students. Corbin and Morse (2003) attested that a frequent reason cited by persons for consenting or requesting to participate in a study is the hope that telling their story will help others.

Length of the Study

The study occurred during the 2013-14 school year. The researcher was on a five month sabbatical in fall 2013 which allowed time for the researcher to contact principals, select schools, contact third grade math teachers, organize interview sessions with teachers and principals, arrange follow-up meeting with teachers, and collect homework package from teachers. The researcher contacted the principals of the schools that met the selection criteria in order to solicit their support in the research in October 2013. The researcher met with the selected principals and teachers to share an overview of the research study and to obtain their consent for participation in October 2013.

The interviews with principals and teachers took place from October 2013 to November 2013. The interview with the school principal took place after the initial interview with the third grade math teacher(s). The reason for interviewing the teacher

before the school principal was to eliminate any unforeseen influences from the principal toward the teacher's homework practices. Interview sessions were held at the end of the work day for one hour. A second, follow-up interview was arranged at a later time with the teachers (Mid October 2013 and early November 2013). This provided teachers with an opportunity to elaborate more on questions that they had previously provided a brief response to during the first interview. The researcher collected the teachers' collection of homework items during the second, follow-up interview.

Chapter 4

Findings: Teachers' Beliefs and Practices

Interviews were conducted with six third-grade teachers to determine their beliefs and practices related to homework in mathematics. This chapter begins with an introduction of each teacher's educational journey and a snapshot of his or her students. The findings are then presented related to the teachers' beliefs about homework and practices regarding homework. Three major themes emerged regarding teachers' beliefs about homework—extra repetition of practice, connection between home and school, and building responsibility. Four major themes related to teachers' homework practices were found— quantity of homework, type of homework, source of homework, and differentiation of homework.

Participants

The unit of analysis for the study was six third grade math teachers. The teachers were selected from Dell School District (DSD), a large, urban school district that served a diverse population. This research study included four schools. Two of the schools were located in the north area and the other two schools were located in the south area of DSD. Two of the selected schools had two third grade teachers in each. The other two selected schools had only one-third grade teacher in each. To protect the anonymity of the participants and schools, their names have been masked by assigning pseudonyms to represent the participants and schools.

Ms. Allen

Allen taught within the school district for 16 years. Allen, 56, received a Master of Science degree in Elementary Education. When Allen obtained a teaching position within the school district involved in the study, she worked as a kindergarten teacher for 14 years at one elementary school. This was Allen's first year teaching students in the third grade. Allen worked at Macy Elementary School, where Ms. Strong was the principal. Allen taught a class of eight girls and nine boys. All of the students were African-Americans. Allen had four students who received special education services. The remaining students received regular education.

Allen described her group of students as being very talkative, which she felt was a "good" thing. Allen did not mind that her students were very talkative in class just as long as they were respectful with their language to one another and the teacher. Allen shared that she developed great rapport with her students. Allen described her students as a group that worked "independently" and not "needy." Allen noted that her "special needs students were pretty needy and that was not too bad because it was about four of them." Allen claimed that her middle group [students that performed at/or below third grade level] was growing and her higher group [students that performed above third grade level] were very independent workers. Allen further articulated that being an African-American teacher herself, she really wanted her students to succeed academically.

Mrs. Young

Young worked as a teacher within her current school district for 10 years and worked as a teacher within a group home for 15 years. Young, 43, received a bachelor's degree in the field of social work and worked at a day treatment center as a case manager for a private agency through the mental health complex. Young helped mentally ill adults transition into living on their own in apartments. At one time, Young had a case load of 25 constituents and she soon became the lead case manager and supervisor of other case managers. Young was working at the group home and day treatment center during the same time. Eventually, Young left the group home and day treatment center because her day-to-day job and responsibilities became very dangerous for her. Young's supervisor at the group home inspired her to enroll in a teacher education program. From that program, Young obtained her teaching license from a local university. Young was hired as a teacher in the school district of this study.

After working at three different middle schools, Young obtaining a third grade teaching position at Macy Elementary School. In her current classroom, Young had 11 girls and seven boys. Young had eight students that required special education support. The ethnicity of all Young's students was African-American. Young revealed that she loved the kids who she taught and was more attached to them than they were to her. Her students exhibited a sense of "learned helplessness," she claimed. She felt that they could do the schoolwork on their own, but they had the tendency of waiting for her to help them before they attempted to do the work on their own.

Ms. Mapp

Mapp worked in the capacity of a teacher for 25 years. Mapp, 50, received a Bachelor of Science degree in the field of Education and a reading license from the local university and, after graduating from college, worked as a substitute teacher for the school district of this study for one year. Mapp was eventually hired within the district of this study as a fourth grade teacher. She worked as a fourth grade teacher for eight years and left the classroom for 13 years to work in various positions such as: computer resource, assessment coordinator, reading resource, and literacy coach. Mapp returned to the classroom as a third grade teacher at Hilltop School and has worked as a third grade teacher for three years.

Mapp worked at Hilltop School, where Mr. Cummings was the principal. Mapp had a total of 25 students (13 girls and 12 boys) in her third grade classroom. All of her students received free or reduced lunch. There were 24 African-American students and 1 bi-racial student in Mapp's class. She had seven male students that received special education services. Mapp noted that about one-third of the students rode the school bus to school and some were driven to school by their parents. About 11 to 12 students lived in the neighborhood of the school. At the end of the school day, about eight students participated in the afterschool program, Community Learning Center (CLC). Mapp described her students as functioning "on the lower end of academics." Mapp stated that if the Measures of Academic Progress (MAP) average score for third grade students in mathematics was 190, the majority of her students were "probably 15 to 20 points below

the average score." Mapp articulated that she had only two students functioning above the fall MAP score.

Mrs. Williams

Williams worked in her current school building for 24 years. Williams, 52, completed a double major and received a Bachelor of Science degree in Special Education and Elementary Education in grades 1 through 8 and a Master of Science degree in Reading and Language Arts. Williams worked one year in a foreign country as a first grade teacher. Then was hired in the school district of this study as a special education teacher. Williams started off as a special education teacher for 15 years of her career in education and later applied to work with younger students. Williams taught in first grade for two years, second grade for two years, and third grade for six years. She worked in the capacity of a teacher for 26 years.

Williams worked at Boston School where Mr. Sims was the principal. Williams had 24 students (10 girls and 14 boys) in her third grade classroom. The student demographic of the classroom was 17 White, 6 Latino/Hispanic and 1 African-American. Williams had one student that received special education services. Williams described her students as being very immature, adding that many of them pouted, were inattentive and did not act their age.

Ms. Yates

Yates worked as a classroom teacher for 14 years at the same school. Yates, 43, received a Bachelor of Science degree in Elementary Education and Master of Science degree in Reading and Language Arts. Yates applied to work in the school district of this

study upon graduating from college and was immediately hired as a fourth grade teacher. Yates taught fourth grade for nine years and third grade for the last five years. She has worked as a classroom teacher for 14 years at the same school.

Yates worked at Boston School as a third grade teacher. There were 27 students (10 girls and 16 boys) in her classroom. The ethnicity break down of students was 18 White, six Latino/Hispanic, and two African-American. Yates had one student who received special education services. This student was supported by a special education teacher during math instruction. Yates noted that she had a good group of students who were coming along quite well, despite their rough start at the beginning of the school year. Yates stated that her students were very playful and kept her laughing and on her toes all the time.

Mr. Garrison

Garrison worked as a teacher for 15 years. Garrison, 55, was accepted into a prestigious university, tuition free, because his father had been a professor there. His father, however, was deceased by the time he went to college. Garrison said he eventually dropped out of college because he felt out of place there. He did not reach out to any of his father's colleagues for help. Garrison enrolled at a different university and received a degree in geography. After he received his degree, he worked at a hospital as a security guard for 10 years. Garrison decided to go back to college to get a certification for teaching. He worked as a paraprofessional within the school district of this study. He also worked there as a science teacher for seven years. Garrison's science position was eliminated due to budget cuts. He was then reassigned into a team-teaching third grade

classroom with another teacher for two years and soon excessed out of that building. Garrison spent two years teaching at a foreign language school as a fourth grade teacher.

Garrison worked at Hope School where Mrs. Harris was the principal. Garrison had a total of twenty-nine students (13 girls and 16 boys) in his third grade classroom. The ethnicity break down of his classroom was 11 White, 11 Asian, 4 Latino/Hispanic, and 3 African American. More than half of his students were either first- or second-generation immigrants, who spoke English as a Second Language (ESL). Garrison had students who came from Eastern Africa and Southeast Asia. There were nine different languages (besides English) that were spoken among his foreign students. Garrison had three different students from Ethiopia who spoke three different languages. There were two students who received ESL services. There were six students who were achieving above third grade level expectations. Garrison had one student who received special education services.

Summary of Participants

All of the participants were experienced teachers with 10 to 25 years of experience in teaching students. Two teachers (Young and Garrison) received a Bachelor of Science degree. Four teachers (Allen, Mapp, Williams, and Yates) received a Master of Science degree. The age range of the teachers was between 43 and 56.

As identified in Table 1, two schools (Macy Elementary School and Hilltop School) scored below Dell School District's averaged proficiency goal (26.8%) in mathematics on the (2012-13) WKCE Grade 3 test. The other two schools (Boston Street School and Hope Avenue School) exceeded the district's averaged proficiency goal in

mathematics on the WKCE Grade 3 test. One school (Macy Elementary School) failed to meet expectations of the state's overall accountability score and rating. One school (Hilltop School) met few expectations and two schools (Boston School and Hope School) met expectations of the state's overall accountability score and rating (Wisconsin Department of Public Instruction, 2012-13).

Table 1 Summary of Teacher Demographics, School Accountability Score and Rating, and WKCE Grade 3 Proficiency Score for 2012-13

Teacher	Age	Race	Gender	Teaching Years	Education	School/ Principal	Overall Accountability Score and Rating 2012-13	WKCE Grade 3 Math Proficiency 2012-13
Allen	56	Afr. Am.	Female	16 years	M.S. Elem. Ed.	Macy Elem. School/ Strong	45.8 Fails to Meet Expectations	0.0%
Young	43	White	Female	10 years	B. S. Social Work and Elem. Ed.			0.0%
Mapp	50	White	Female	25 years	M. S. Elem. Ed. and Reading License	Hilltop School/ Cummings	54.1 Meets Few Expectations	23.1%
Williams	52	Latina	Female	25 years	B. S. Sp. Ed. and Elem. Ed. and M. S. Reading and Language Arts	Boston Street School/ Sims	69.6 Meets Expectations	36.4%
Yates	43	Afr. Am.	Female	14 years	B. S. Elem. Ed. and M. S. in Reading and Language Arts			36.4%
Garrison	55	White	Male	15 years	B. S. in Geography	Hope Avenue School/ Harris	69.6 Meets Expectations	52%

The north-side teachers (Allen, Young, and Mapp) serviced a larger population of students with special needs than the south-side teachers (Williams, Yates, and Garrison). In addition, the student demographics for teachers (Allen, Young, and Mapp) at the north-side schools consisted of African American students as opposed to the south-side which consisted of multiple ethnicity groups.

Four of the classrooms (Allen, Williams, Yates, and Garrison) had more boy than girl students as shown in Table 2. Allen and Young were both third grade teachers from the same school (Macy Elementary School). Williams and Yates were both third grade teachers from the same school (Boston School). Mapp and Garrison were the only third grade teacher in their school (Hilltop School and Hope School).

Table 2 Summary of Student Demographics in each Teacher's Classroom

Teacher	Girl	Boy	Special Education	Ethnicity
Allen	8	9	4	African American (14)
Young	11	7	8	African American (18)
Mapp	13	12	7	African American (24) Bi-racial (1)
Williams	10	14	1	White (17) Latino/Hispanic (6) African American (1)
Yates	10	16	1	White (18) Latino/Hispanic (6) African American (2)
Garrison	13	16	1	White (11) Asian (11) Latino/Hispanic (4) African American (3)

Teachers' Beliefs about Homework

Three themes emerged in the teachers' comments regarding their beliefs about homework. In general, the teachers believed that homework provided extra repetition of practice, a connection between home and school, and was important in building responsibility. All six teachers believed that students needed extra time to practice skills. All six teachers thought that parents should be informed of what students were learning in class through the assigned homework. Four teachers said that the use of homework helped to instill a sense of responsibility in students.

Extra Repetition of Practice

Extra repetition of practice was defined as students being able to review, practice, and apply concepts that were covered in class for homework. All six teachers shared that they assigned homework to their students so that they had more time to practice the skills that were covered in class. Within this theme, there appeared to be one sub-theme. One teacher (Young) expected parents to show students how to do their homework. This process was putting the responsibility on the parents to show the students how to accurately complete their homework.

Allen and Young believed that it was imperative that their students had multiple opportunities to practice what they learned in class for homework. Allen stated that extra practice helped her students to understand and apply the skills that they learned in class. She explained:

> I noticed as a third grade teacher and a former K5 teacher, there must be a need for extra practice. Although we go over and over the math concepts in the classroom, I see a need for extra practice.

Young stressed the need for her students to take their assignment home so that they could have a family member work with them on it. Young believed that the extra practice of what was taught in class helped the students to know the math content better. Young stated that parents could show their child how to complete their homework a different way. Young explained:

> I think homework is very important. The purpose of homework is for students to take what they learned here to bring it home so they will know how to do it better. It'll help them review from what I taught them in the classroom, as well as, their family can also help them. I think also just somebody showing them a different way of working out the problem instead of just me showing them. It helps them [students] know whatever I'm teaching them [students] better.

Mapp concurred with Allen and Young in regard to the essential need to provide students with extra time to practice on skills that they learned in class. She declared:

> One reason I assign homework is for my students to practice more on the skills that have been covered either that day, or through this whole unit, or in past studies to keep them going [learning].

Williams shared that it was imperative for her to assign homework to her students to practice what she taught them in class. She asserted that if she did not allow her students the opportunity to practice their skills, they would not be able to apply and extend what they learned to new information.

Yates believed that her third grade students needed to practice basic facts because it appeared that many of them were struggling with reciting basic number facts. She felt that extra practice time helped to keep her students' minds sharp on whatever math skills they learned in class. Yates shared:

> They need to practice those basic facts. A lot of the kids do not come to third grade knowing their basic facts. They also need to practice whatever skill we

> worked on in class. So if it is geometry, I like to give geometry homework just for them to practice and keep their mind sharp.

Garrison stressed that he regularly conducted classroom observations while his students were completing their in-class work in order to determine what to assign for math homework. Garrison shared his beliefs for assigning homework to his students. He said:

> A big reason for assigning homework is for students to practice the skills, especially the skills that we worked on in class or skills that I would like to move from basic understanding to foundational, so that students would know exactly what to do. In particular, something that we are now working on is ungrouping or regrouping. It's the same thing, tens to ones and hundreds to tens. So we have been working on being able to manipulate numbers with adding and subtracting. We have not moved on beyond that. That's a big one that we have been working on with homework lately and the students need more time to practice.

All six teachers believed that their students needed extra time to practice skills that they previously learned in class. They indicated that the extra practice helped students to recall and build understanding of what they learned in class.

Connection Between Home and School

All six teachers believed that homework served as a tool to inform parents of what students were learning in class. All teachers shared that someone at home should help students with their homework. Within this theme, three sub-themes were identified. One teacher (Allen) viewed homework as a way to educate parents about mathematics and another teacher (Williams) used homework as a vehicle to support parents to better assist their children with homework. One teacher (Garrison) extended math homework into the home environment.

Allen stated that she sent home a resource sheet to her students' parents in order to help them understand the math content that she taught in class so that they could help their children with homework. The resource sheet had an explanation of the math topic and a demonstration of how to solve the problem. Allen thought it was important to support parents with helping their child with his/her homework. Allen reflected back to her elementary school experience as a child when she had to complete her homework without support from her mother who died when she was in third grade. Allen shared that when students do not have that person [mother figure] to support and cheer them on, it would set students back in learning how to do different types of math experiences.

On a different note, Young stressed that students' families can help them with understanding math skills that they learned in class by way of helping with homework. She noted that this collaboration between parent and child was essential because this was an opportunity for "somebody at home to show them a different way of working out the math problem."

Mapp echoed the feelings of Young regarding parents playing a pivotal role in the success of their child's education. Mapp and Young encouraged their students "to do their best" on the assigned homework. Mapp often told her students to ask for help at home when they struggled with understanding their homework. Mapp noted that she preferred for parents to help their child with their work instead of completing the homework for their child and talked about a situation where a struggling reader was getting support from her mother with her homework. She shared:

> I got (sic) a girl named Ella who probably can't read this [math story problem]. If her mom is sitting with her reading, that's fine with me. I actually applaud the

> mom because she is sitting with her daughter and not just having her struggle and possibly helping Ella talking through her thinking. I'm liking to think that's really what's happening…that her mom is helping her with it. If they [students] are going to CLC [Community Learning Center], possibly they are getting opportunities to work together downstairs [in the school building at CLC] to explain their thoughts and reasoning with someone about these story problems.

Unlike Young and Mapp, Williams wanted to provide some level of support for parents to better assist their children with homework. Williams explained her reasons for wanting to develop a session for parents. She said:

> It is not so much the children. I would like to do a parenting class to show parents what is needed from a parent to help their child to succeed in school. It's not to tell them [parents talking to their child] oh that's too hard and that's ok, but more [parents saying this to their child] 'come on let's do this together and let's go talk with Ms. Williams.' I tell the parents that I am here to help you teach your child to get ready for fourth grade. So when they get to fourth grade it is easy [for the student]. They can't go up to fourth grade and say oh this is too hard. To me, third grade is a transitional year, but it's not a hard year.

Unlike Young and Mapp who preferred for parents to assist their child with homework, Yates liked for her students to be prepared when they go home with their homework so that they "would not have to use mom and dad so much as a resource." She preferred for her students to be their own resource. Yates stated that her students had a "math journal to write notes in and to take home and use as a guide when they go home" to do their homework. She commented that she saw several students taking their math journals home today.

Garrison, on the other hand, networked with his students' parents to allow their child to watch Cyber Chase on television at home. Garrison implied that this program allowed his students to work on math skills while they were at home. He further claimed that Cyber Chase was "so much less threatening, especially for kids who can't sit at a

table and do an hour worth of math. Cyber Chase showed kids that math was everywhere and everyone can be good at it!"

All six teachers believed that it was imperative for the lines of communication between home and school to be open in order to establish a sense of consistency in relation to homework expectation and completion. This type of partnership between parent(s) and teacher(s) was helpful to instill a sense of responsibility within their students.

Building Responsibility

Building responsibility was defined as students establishing a sense of ownership for their own educational journey. Four teachers (Allen, Mapp, Yates, and Williams) claimed that the use of homework helped to promote a sense of responsibility for students. These teachers believed that students demonstrated being responsible by taking their homework home and then bringing the completed work back to school the next day.

Mapp noted that she wanted to prepare her students for the future. She made sure that the homework that she assigned to her students was not overwhelming for them. She did not want to turn her students off from completing their homework as they got older. She expressed:

> I don't want homework in third grade to affect the future [of the students] because they are going to have to balance the future with being responsible and more independent as they get older. So it [the homework] can't be so stressful right now that they [students] get turned off from doing it [homework].

Yates agreed with Allen and Mapp that the use of homework taught students a lot about being responsible. She said the expectations for homework gave students "a personal purpose for their education."

Williams provided opportunities for her students to "practice being responsible." Williams described her belief about how the use of homework helped her students to grow and be responsible students. She said:

> It's never been a question of just giving them something to do. It's more like, I want to see what you know. Show me what you know. Let's be responsible and be able to dialogue over homework. So they want the feedback and I want to see the results. And that's the reason that I do this [assign homework]. The value of it [homework] is totally for them to grow as students. It has nothing to do with me. It has nothing to do with record-keeping. It is not busy work because I don't give busy work. The purpose of the homework is for structural purposes for the student to grow and be responsible and for me to understand what I need to do for my students.

Young and Garrison did not indicate that the use of homework would help to instill a sense of responsibility with the students. Assigning homework to students was a common formality that they followed within their schools.

As outlined in Table 3, all of the teachers shared that they assigned homework to their students in order to provide them more time to practice math skills and to inform parents of what students were learning in class. Some teachers (Allen, Mapp, Williams and Yates) noted that they used homework to promote a sense of responsibility within their students. The information in Table 3 provides a summary of teachers' beliefs about homework.

Table 3 Summary of Teachers' Beliefs about Homework

	Summary of Teachers' Beliefs about Homework
Allen	Provided students with multiple opportunities to **practice**, severed as a tool to **inform parents**, viewed homework as a way to educate parents, helped to **promote a sense of responsibility.**
Young	Provided students with multiple opportunities to **practice**, family member showed students a different way of working out the problem, severed as a tool to **inform parents**.
Mapp	Provided extra time to **practice** on skills, severed as a tool to **inform parents**, preferred for parents to assist their child with homework, helped to **promote a sense of responsibility**.
Williams	Provided extra **practice** of what was taught in class, severed as a tool to **inform parents**, used homework as a vehicle to support parents to better assist their children with homework, helped **to promote a sense of responsibility**.
Yates	Provided extra **practice** on basic facts, severed as a tool to **inform parents**, helped **to promote a sense of responsibility.**
Garrison	Provided extra **practice** on basic facts, severed as a tool to **inform parents**, extended math homework into the home environment.

Teachers' Homework Practices

Four themes emerged about teachers' homework practices: quantity of homework, type of homework, source of homework, and differentiation of homework. All six teachers noted that they assigned homework to their students every week, assigned different types of homework to their students, utilized the district adopted curriculum to select homework for their students, and differentiated the math homework assignments for students that struggled in understanding mathematical concepts.

Quantity of Homework

The quantity of homework was defined as how often (i.e., number of days) homework was assigned and how long (i.e., amount of time expected for completion of homework) it took students to complete the assigned homework. Students were assigned

work to complete at home related to the math topics that were taught in class. All six teachers assigned between one or two worksheet(s) for homework to their students.

Allen noted that she assigned one math worksheet per day, Monday through Friday, for her students to complete for homework. She based her selection of homework on how her students performed in the classroom during instruction. Allen shared that her students spent between 20-30 minutes to complete their homework each night.

Young stated that she assigned homework to her students every Tuesday. Young expected her students to take about 45 minutes to complete their assigned homework at home. Young expected her students to demonstrate their thinking of their solutions to the math problem by way of words, pictures, and/or numbers.

Mapp shared that she assigned math, reading, and spelling homework to her students every Monday through Thursday. Mapp explained the breakdown of her students' homework. She said:

> They get 30 minutes between math and spelling and then they have 30 minutes in independent reading because we do a reading log too. So I would expect my spelling, which is pretty basic, to take them 10 minutes and I would probably expect them to spend 20 minutes of math thinking.

Williams articulated that she gave her students math homework every day, Monday through Thursday. She said her students were expected to spend 15 minutes on their math homework and 20 minutes on their reading assignments. She believed that it was her responsibility, as the teacher, to address any misconceptions that her students experienced in mathematics.

Yates described her homework schedule and amount of time allocated for her students to complete their homework. She shared:

> I would like to think that I don't give them a lot of homework. If I look at tonight's homework, hopefully it will not take them more than 40 minutes. I like to assign a math and a reading [homework assignments], and science and social studies [homework assignments] are usually done in class. I feel very strongly that they need to practice something [homework]. Sometimes I may not give anything. I may say read [read at home], it just depends, but normally in a typical week, they do have something [homework] to be responsible for Monday through Thursday.

Garrison stated that he assigned paper and pencil math homework to his students twice a week, Tuesday and Thursday. He informed his students' parents that their child should never take more than 30 or 35 minutes to complete their homework. Garrison motivated his students to engage in math by way of working in the kitchen with their parent, watching Cyber Case, or playing on some kind of math game on the website or Odyssey. Garrison told his students that "math is like reading, you do it every day."

All six teachers established a weekly schedule and time allotment regarding their classroom's homework practice for their students. Young assigned math homework *only* one day a week, as summarized in Table 4. Other teachers (Allen, Mapp, Williams, Yates, and Garrison) assigned homework for a couple of days within a week. Williams allocated 15 minutes for her students to complete their math homework. Other teachers (Allen, Young, Mapp, Yates, and Garrison) allocated more than 15 minutes for their students to complete their homework. The information in Table 4 provides a summary of the designated days and amount of time the teachers allocated for math homework.

Table 4 Summary of Weekly Schedule and Time Allotment for Math Homework

Teacher	Weekly Schedule	Time Allotment
Allen	Monday-Friday	20-30 minutes
Young	Tuesday	45 minutes
Mapp	Monday-Thursday	20 minutes
Williams	Monday-Thursday	15 minutes
Yates	Monday-Thursday	40 minutes
Garrison	Tuesday-Thursday	30-35 minutes

Type of Homework

When referring to the type of homework, the teachers indicated that they were comprised of, for example, true or false statements, multiple choice, constructed response, or fill-in the blank. All six teachers assigned math homework that required their students to determine an answer. Within this theme, there appeared to be three sub-themes (e.g., story problems as homework, computational worksheets as homework, and connecting math skills in the home environment as homework). Three teachers (Allen, Williams, and Mapp) shared that they typically assigned story problems for homework so that their students could solve, explain and justify their thinking. Five teachers (Young, Mapp, Williams, Yates, and Garrison) regularly assigned computation skills worksheets to their students for homework. One teacher (Garrison) required students to apply what they learned in math class into the home environment for homework. For example,

Garrison believed that his students should see math when using water bottles when finding the volume. He said as a homework assignment, he encouraged his students to look around in their kitchen to find more volume examples for math homework.

Allen said that she typically assigned homework that focused on one concept at a time. Allen explained that she instructed her students to "do the sheet [homework assignment] and put the answers [write down your answers]." Some of the homework that Allen assigned to her students required them to record their answers to the math activities (e.g., measure each line segment to the nearest centimeter and record your answer, find the perimeter of each figure to the nearest centimeter and record your answer, use mental math to add or subtract and write the answer). Allen noted that the assigned homework required students to "explain how they got to their answers as they solved word problems."

Young shared that if her students were working on memorizing their multiplication facts, she assigned a two-sided multiplication worksheet for her students to write the correct answer for the multiplication equations for homework. Young provided a description of the type of homework she assigned to her students. She said:

> If we were focusing on times [multiplication] then I will run a copy of just the times [multiplication] on both sides, instead of just a few questions [instead of assigning a few math questions]. I'll just focus on one thing that's part of the common core [Common Core State Standards for Mathematics].

Mapp assigned homework assignments that required her students to write equations to solve story problems, read story problems to determine answers, add and

subtract basic computations and fill-in the blank math assignments. Mapp described the type of homework that she assigned to her students. She said:

> Typically it is basic computation of addition and subtraction, multi-digit more so. That's where we are right now. It'll [homework] get different later. There would probably be during the course of the week [some homework that requires students to] writing (sic) story problems. Students will either have to solve or write story problems.

Williams announced that she assigned homework assignments that required her students to compute addition and subtract equations, draw geometric shapes, and solve story problems by explaining and justifying their answers. Williams described the homework assignment for one particular day. She shared:

> For tonight's homework, the back [one side of the homework assignment] is a lot of addition and subtraction [equations] and there is two story problems [on the other side of the worksheet] that the students have to read, solve, and show their thinking.

Echoing Young's homework practice, Yates shared that she typically assigned "daily skills worksheets" to her students for homework. Yates explained that the worksheets consisted of 30 addition or subtraction equations. Yates said she assigned the first two rows of the worksheet for her students to complete for homework one night, and then she assigned the next two rows for the next day for homework, and then the last two rows for another day for homework. Yates shared her purpose for using daily skills worksheets for homework. She stated:

> So I just use your typical worksheet. Nothing fancy. I like to give those [basic facts worksheets] out a lot because I think that their [students'] parents know what to do with them [know how to compute the equations correctly] and they [parents] and the kids recognize them [basic computation equations] and it's really that drill and skill that I wanted them [students] to just learn those facts.

Similar to Young and Yates' homework practice, Garrison assigned a lot of basic addition and subtraction worksheets for his students to complete for homework. In addition, Garrison often instructed his students to look in their home and write down things that were written as some type of metric volume measurement. He wanted to teach his students how to transfer liters to milliliters of things that they saw in their everyday life. This process helped his students to apply what they learned in math class to a real life situation at home. Garrison wanted to make his math homework assignments as part of his students' home life. On some of his homework assignments, students were required to watch a cartoon about math concepts on Cyber Chase on television. This allowed Garrison's students to have fun with completing their homework as they learned mathematics at home while watching Cyber Chase.

All six teachers utilized various types of homework assignments. Some teachers assigned homework assignments that required students to write and solve story problems. In addition, some teachers focused on assigning basic computation worksheets for homework to give their students continuous practice computing numbers. One teacher assigned his students to do math homework at home by way of measuring ingredients while cooking in the kitchen.

Source of Homework

The district's adopted curriculum (Math Expressions) was considered a source of homework that teachers used when they assigned homework to their students. The Math Expressions curriculum was designed to incorporate both traditional and reform mathematics curricula. The homework assignments not only developed and consolidated

understanding of math concepts, but also helped children become organized and self-regulatory (Houghton Mifflin Math Expressions, 2009). All six teachers indicated that they used the Math Expressions program as a source to select homework assignments for their students. Within this theme, there was one sub-theme that emerged in the data. Five teachers (Allen, Young, Mapp, Yates, and Garrison) indicated they also used the Internet and old teachers' manuals as a second source of homework to find worksheets as fillers for homework. For example, Mapp shared that she used the Internet to fill in holes. Mapp explained what she meant about filling in holes:

> If I find that I need more story problems or if we are doing a second lesson or we are having to do a second day of something that we ran out of time, I would look in the Math Expressions resource book for something to assign for homework. If I can't find anything in the resource books, I have to look online for help.

Yates explained how she used the Internet to create math worksheets for her students to complete for homework. She shared:

> I can get homework from anywhere. I use the resources from the Math Expressions book, but I would go on the Internet and find a worksheet. I've found superteacher.com has wonderful worksheets for the kids. They like them [students like the worksheets]. The worksheets are easy and the directions are kid friendly. I use a lot of worksheets. On ed-help.com is where you can come up with your own worksheets. I create my own worksheets for homework especially when we get to the multiplication unit.

Allen, Young, Garrison, and Yates stated that they incorporated other resources from the Internet and their personal resources in order to gather additional sources of homework of math topics that were not covered in the Math Expressions program. Allen said that she retrieved resources from the "school library and the Internet in order to obtain different worksheets that were more basic than the text explanation." Young

shared that she used some of her personal "workbooks for homework because some of the math concepts in the Homework Remembering book she did not cover in class." Therefore, Young used her personal workbooks as an additional source for homework.

In addition, Mapp used the Quick Practice activities (additional resource in the Math Expressions curriculum) as a homework source to provide her students an opportunity to practice newly acquired knowledge at home. Mapp used the Internet to find worksheets of math concepts that were not in the Math Expression resource book. She declared:

> If I can't find anything in the resource books, I have to look online for help. I will type in third grade multistep story problems and find something there or I have a bunch of old teacher resource books that I use for pulling out some [math homework] problems.

Unlike the other teachers, Williams shared that she used the intervention resources from the Math Expressions program as a source of homework for students that struggled with understanding math concepts. This source of homework broke math concepts into smaller chunks for students to develop a conceptual understanding of the math content.

All six teachers utilized the Math Expressions program when they assigned homework to their students. All of the teachers used additional resources such as old teachers' manuals, Math Expressions Intervention resource, and the Internet in order to gather additional materials as a source of homework.

Differentiation of Homework

Differentiation of homework involved the adjustment of student's assignments by way of modification and/or accommodation based on the student's instructional level. In other words, differentiation of homework assignments allowed teachers to meet the academic and individual needs of every student. All six teachers shared that they differentiated the homework assignments for their students. Within this theme, there were two sub-themes that surfaced from the data (e.g., struggling students completing half of their homework and teachers telling students that struggled with understanding math concepts to do as much as they can on their homework). Two teachers (Allen and Yates) indicated that they differentiated their homework for their struggling students by requiring them to complete only half of the homework. Four teachers (Young, Mapp, Williams, and Garrison) shared that they differentiate their homework by informing their students that struggled with understanding mathematics to "do as much as you can" with your homework.

Allen shared that she had four students with special needs in her classroom who worked at their own level. She believed that these students comprehended math concepts at a slower rate than the rest of her students. Therefore, she assigned these students a portion of the assigned homework instead of all of it. This was the process that Allen used to differentiate her homework assignments.

Young and Mapp noted that they had between four to eight students that were academically challenged in their classrooms. They both shared that they typically provided students that struggled in math with the same type of homework as the rest of

their class. They often said to those students to "do as much as you can." This was one way in which they differentiated their homework. Young stated that she might "change a problem to make it a bit less [easier], take what they turn in, or circle the problems that she wanted the students to complete."

Williams and Garrison used the same process as Allen when differentiating their homework assignments for their students that struggled in mathematics. Garrison stated that he gave his student that required additional support "five problems to do just like what I would give the whole class, but if he does one or two, that's ok as long as he got the idea."

Yates described what she told parents to do if their child struggled with his/her homework and how she modified the homework for students that struggled with their math homework. She explained:

> If they get stuck on a problem, encourage them to try it. If they really are frustrated, then just have them complete half of the work. So that's basically how I do it for math just because it seems to be the easiest. Sometimes we might do the odd numbers.

All six teachers communicated that they differentiated their students' homework by way of modifying the homework. Another way that the teachers differentiated the homework was by informing students to complete as much as they can. Teachers informed parents that if students became frustrated while completing their homework, then they should complete only half of the assigned work.

After analyzing the collection of homework from each teacher, only one teacher's (Garrison) collection of homework revealed specific assignments designated for students

that were challenged with understanding mathematics (see Table 5). All of those assignments required students to use low-level of thinking (i.e., completion of an addition chart and simple one-digit and two-digit subtraction equations).

All of the teachers reported that they made modifications to the homework assignments that they assigned to students that required additional academic support. Three teachers (Allen, Williams, and Garrison) indicated that they differentiated their math homework for their students that struggled with understanding math by assigning them one or two math problems to complete as homework. Two teachers (Young and Mapp) stated that they assigned the same homework to all students. However, Young shared that she did additional practices to differentiate her homework for students that struggled in math (e.g., changed a problem and made it a bit easier, took what students turned in, or circled the problems that the students had to complete). One teacher (Yates) said that she assigned half of the homework assignment to students that struggled with mathematics.

All of the teachers were asked during the interview session to include or either indicate any modifications of the homework that they assigned to their students that required additional academic support. All six teachers indicated that they used various ways to differentiate their homework based on their students' instructional and comprehension levels.

Table 5 Teachers' Practices Regarding Differentiation of Homework

	Teachers' Practices Regarding Differentiation of Homework
Allen	Assigned one or two math problems, used one-digit then moved to two-digit equations.
Young	Assigned the same work to all students, changed a problem and made it a bit easier, took what students turned in, or circled the problems that the students had to complete.
Mapp	Assigned the same work to all students.
Williams	Assigned a couple of tasks for students that struggled with understanding math concepts.
Yates	Assigned half of the homework assignment to students that struggled with mathematics.
Garrison	Assigned one or two math problems, used one-digit then moved to two-digit equations.

Summary

The two major areas stated were teachers' beliefs about homework and teachers' practices regarding homework. Themes found within teachers' beliefs about homework were review of skills, extra repetition of practice, connection between home and school, and building responsibility. The theme for teachers' practices regarding homework included quantity of homework, type of homework, source of homework, and differentiation of homework.

Chapter 5

Findings: Alignment of Homework to the Revised Bloom's Taxonomy

The participating teachers in this study compiled all of the homework assignments that they assigned to their students over a three-week period. For example, Allen taught a unit on geometry to her students which took three weeks to complete. Allen completed a homework log and compiled a homework folder that contained a copy of each homework assignment. The researcher collected all of the teachers' homework folders and logs.

The homework assignments were collected and then analyzed to determine the cognitive domain of the homework items that each teacher assigned to his or her students. For each homework assignment, the cognitive domain level of each math item embedded in each assignment was determined using the Revised Bloom's Taxonomy. The purpose of implementing this process was to determine if the homework that teachers assigned to their students was in one cognitive domain level (low/high levels of thinking) or in multiple cognitive domain levels. To date, there is much research regarding the quantity of homework; however, there is a gap in the knowledge-based regarding the cognitive domain level of homework (Jackson, 2007; Williamson & Johnston, 1999). In this study, the researcher sought to describe the cognitive domain level of homework routinely assigned by third grade math teachers.

This chapter begins with a brief reiteration of the full description of the Revised Bloom's Taxonomy Cognitive Domain Levels as described in the literature review (Anderson, 1999). A description of the cognitive domain level of homework filtered through a content analysis of the homework assigned by each teacher beginning with an

overall summary of the distribution and then an explanation of the types of homework, as they relate to the various categories of the Revised Bloom's Taxonomy will follow.

Revised Bloom's Taxonomy: The Cognitive Domain

The following is an example of the progression of multiplication as it relates to the Revised Bloom's Taxonomy Cognitive Domain. These levels were used for analyzing the collection of homework assignments. A mathematical example for each level is provided to help the reader envision how the cognitive domain levels apply to a mathematical concept commonly studied in third grade.

1. **Remembering**: The learner is able to recall previous learned information. In learning multiplication, an example might be a learner reciting the multiplication facts.
2. **Understanding**: The learner is able to comprehend the meaning of information by interpreting and translating what has been learned. With the multiplication example, a learner draws a picture to illustrate a multiplication equation.
3. **Applying**: The learner makes use of information in a context different from the one in which he or she has learned. With multiplication, a learner links multiplication to addition (e.g., 3 x 5 is the same as 5 + 5 + 5).
4. **Analyzing**: The learner breaks learned information into parts to best comprehend that information. With multiplication, a learner makes a family tree showing relationships of multiplication and addition (e.g., the number 5 in the equation 3 x 5 can be decomposed to 3 + 2, therefore, 3 x 5 can also be written as 3(3 +2)).

5. **Evaluating:** The learner makes decisions based on in-depth judgment, reflection, criticism, and assessment. With multiplication, a learner looks at a student work sample and provides an evaluation of the student's thinking. The learner also makes an interpretation of the student's thinking and explains why the student solved the problem that way.
6. **Creating:** The learner creates new ideas and information using what previously has been learned. With multiplication, a learner creates a story problem for 3 x 5 and draws a picture to support the story. The learner also explains the connection between the story and picture.

Cognitive Domain Level of Assigned Homework

The cognitive domain level of homework was filtered through a content analysis of each item within each homework assignment using the Revised Bloom's Taxonomy. The unit of analysis for the homework was at the item level.

Distribution of Homework Items

The distribution of homework items from each teacher is shown in Table 6. A total of 898 math items were analyzed to determine the alignment of the homework assignment to the Revised Bloom's Taxonomy. Overall, 68% of 898 homework items were *remembering*, 12% were *understanding*, 13% were *applying*, 4% were *analyzing*, 1% were *evaluating*, and 2% were *creating* categories. The majority of items, across all cognitive domain levels, were aligned to a low category (*remembering*, 68%).

Table 6 Distribution of Math Items from Teachers Based on the Revised Bloom's Taxonomy Cognitive Domain Levels in Homework (n=898 homework items)

	Remembering	**Understanding**	**Applying**	**Analyzing**	**Evaluating**	**Creating**	**Total**
Allen	6	9	19	0	0	0	34
Young	256	22	13	3	1	0	295
Mapp	136	24	60	26	6	9	261
Williams	13	25	22	1	3	4	68
Yates	40	12	3	1	2	1	59
Garrison	158	13	6	3	0	1	181
Total	**609**	**105**	**123**	**34**	**12**	**15**	**898**
Percentage of Items	**68%**	**12%**	**13%**	**4%**	**1%**	**2%**	

Young. Young's students were learning about place value over the three-week period. Young assigned a total of 295 homework items to her students over a three-week period. The distribution on the Revised Bloom's Taxonomy is shown in Figure 5. Of the homework items, Young assigned 87.0% that were classified as *remembering*. The other items showed 7.3% classified as *understanding*, 4.4% classified as *applying*, 1.0% classified as *analyzing*, 0.3% classified as *evaluating*, and with no items classified as *creating*.

Figure 5. Young's Math Homework Categorized by the Cognitive Domain Levels of the Revised Bloom's Taxonomy (n=295 homework items)

	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Total
Percent of items	87.0%	7.3%	4.4%	1.0%	0.3%	0.0%	100%
Number of items	256	22	13	3	1	0	295

The majority of the homework items, 295 out of 256, were classified as *remembering*. For example, one homework assignment had 144 basic subtraction facts (e.g., 12 – 5, 6 – 6, etc.). The direction for the students on this particular assignment was to see how many equations they could compute within one minute. The level of thinking for this assignment was aligned to the *remembering* (87.0%) category. The development of intellectual abilities and skills for the *remembering* category included the recall of previously learned information.

An example of items aligned to the *understanding* (7.3%) category required the students to look at a place value drawing and write the number that represented the drawing or to make a place value drawing for each number. Students had to incorporate what they knew about place value in order to write the number for the words. For example, one thousand sixty was written as 1,060. The form of thinking that students were required to utilize was *understanding*. In fact, students had to comprehend the concept of place value in order to write the numbers for the words correctly. Another situation where students utilized the *understanding* category was when they had to unscramble the place values and write the number. For example, 8 ones + 6 hundreds + 4 tens was unscrambled to make the number 648.

On some assignments, items were included in which students were *applying* (4.4%) information in a context different from the one in which they had learned. An example of an item that required students to apply their understanding of place value was as follows:

> At Kyle's birthday party, he gave each of his 8 friends a bag. Each bag had 10 party favors. How many [party] favors did Kyle give out altogether?

An example of items aligned to the *analyzing* (1.0%) category required the students to show how they could find the sum by making a ten, hundred, or thousand (e.g., the number 50 in the equation 80 + 50 was decomposed to 20 + 30, therefore, 80 + 20 + 30 = 100 + 30). Of the 295 questions, one homework item was aligned to the *evaluating* (0.3%) level. The students had to critique a subtraction story problem and provide an evaluation of how a picture representation supported or did not support the story problem. In this situation, students had to make decisions based on their in-depth judgment and assessment of what they knew about place value and subtraction.

Garrison. Garrison's students were learning about addition and subtraction skills over the three-week period. Garrison assigned a total of 181 homework items to his students as homework over a three-week period. The distribution on the Revised Bloom's Taxonomy is shown in Figure 6. Nearly 90% of the homework items he assigned were classified as *remembering*. The other items showed 7.0% classified as *understanding*, 3.0% classified as *applying*, 2.0% classified as *analyzing*, 0.0% classified as *evaluating*, and 1.0% classified as *creating*.

Figure 6. Garrison's Math Homework Categorized by Cognitive Domain Levels of the Revised Bloom's Taxonomy (n=181 homework items)

	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Total
Percent of items	87.0%	7.0%	3.0%	2.0%	0.0%	1.0%	100%
Number of items	158	13	6	3	0	1	181

The majority of the homework items, 158 out of 181, were aligned to the *remembering* (87.0%) category that dealt with addition and subtraction computation.

Students had to use an ad to solve addition and subtraction story problems. For example, there was a chart that listed various fruits with a purchase price. Students were given numerous scenarios to determine the total price of purchasing selected items. The form of thinking that students were required to utilize was *understanding* (7.0%). Another example where students had to demonstrate their understanding involved the concept of equality. For example, students were given an equation with a missing number at the beginning or middle of the equation (e.g., ___ + 123 = 197). Students had to determine a number added to 123 that when total 197.

There were six homework items that required students to *apply* (3.0%) what they learned about adding and subtracting numbers to making change with money. The following is an example of students using the addition concept in a new situation involving money:

> Bala bought 2 books for $4.67 each. She gave the cashier a $10 bill. How much change did she get?

Of the 181 questions, three homework items were aligned to the *analyzing* (2.0%) cognitive domain level. Students had to interpret the time on a clock and then write the time as minutes *after* an hour and minutes *before* an hour. Students were challenged to *create* (1.0%) by selecting items from a chart in order to create and solve their own story problem.

Garrison was the only teacher that modified the homework assignments for several of his students that required additional support. Garrison indicated on the top corner of three assignments that they were mainly for five of his students that required additional support in mathematics. The modified assignments consisted of a fill-in-the-

blank addition chart and two- and three-digit subtraction equations. On one particular assignment, there were 56 basic subtraction equations that students were required to complete for homework (e.g., 9 – 6, 15 – 7, etc.).

Yates. Yates' students had just finished addition and subtraction skills and had started to learn about geometry over the three-week period. Yates assigned a total of 59 homework items to her students as homework over a three-week period. The distribution on the Revised Bloom's Taxonomy is shown in Figure 7. Of the homework items, 40 out of 59, were classified as *remembering*. The other items showed 20.0% classified as *understanding*, 5.1% classified as *applying*, 1.7% classified as *analyzing*, 3.4% classified as *evaluating*, and 1.7% classified as *creating*.

Figure 7. Yates' Math Homework Categorized by the Cognitive Domain Levels of the Revised Bloom's Taxonomy (n=59 homework items)

	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Total
Percent of items	68.1%	20.0%	5.1%	1.7%	3.4%	1.7%	100%
Number of items	40	12	3	1	2	1	59

The majority of the homework items, 40 out of 59, were aligned to the *remembering* (68.1%) category that required students to use basic skills to subtract three and four digit numbers (e.g., 264 – 158, 1,237 + 692). For some assignments, students had to list all the pairs of adjacent and opposite sides in the quadrilateral, know the definition of parallelogram, quadrilateral, and perimeter, and demonstrate understanding of the similarity and difference between a rectangle, square, and rhombus. In order to accurately accomplish these types of tasks, students had to utilize their *understanding* (20%) skills.

Students were given the opportunity to read addition or subtraction story problems in order to provide an answer based on the information embedded in the story (e.g., Ms. Molina has 148 paperback books and 82 hardcover books. How many books does she have in all?). Student were *applying* (5.1%) what they knew about addition and subtraction skills in a context different from the one in which they learned. Instead of adding and subtracting numbers, students had to read a story problem in order to determine the order of operation to use in order to accurately solve the problem. Students utilized their analytical skills by way of *analyzing* (1.7%) the story problem in order to find the answer to the subtraction problem without using any calculations.

Students had to make a judgment in regard to addition and subtraction concepts being used accurately within story problems. For example, students read a story and had to explain why they thought the story problem was about addition or subtraction. This particular task was classified in the *evaluating* (3.4%) category.

Students had to use what they knew about attributes of a triangle in order to create a triangle and then label its sides and list all the pairs of adjacent sides in the triangle. This particular task was classified in the *creating* (1.7%) category.

Mapp. Mapp's students had just finished geometry and had started to focus on addition and subtraction story problems over the three-week period. Mapp assigned a total of 261 homework items to her students as homework over a three-week period. The distribution on the Revised Bloom's Taxonomy is shown in Figure 8. More than 50% of the homework items she assigned were classified as *remembering* (simple degree of difficulty). The other items showed 9.2% classified as *understanding*, 23.0% classified

as *applying*, 10.1% classified as *analyzing*, 2.3% classified as *evaluating*, and 3.4% classified as *creating*.

Figure 8. Mapp's Math Homework Categorized by the Cognitive Domain Levels of the Revised Bloom's Taxonomy (n=261 homework items)

	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Total
Percent of items	52.0%	9.2%	23.0%	10.1%	2.3%	3.4%	100%
Number of items	136	24	60	26	6	9	261

After analyzing the collection of Mapp's homework, there were 136 basic addition and subtraction fact items that required students to use rote memory skills (e.g., 380 + 394, 4,562 – 784). These homework items were aligned to the *remembering* (52.0%) category. The addition and subtraction skills were also embedded in story problems in order to deepen students' *understanding* (9.2%) of order and operation skills. For example, students were presented with the following word problem and had to utilize what they understood about addition in order to solve the word problem accurately:

> At the park, 8 children are playing tag and 10 [children] are playing soccer. How many children are playing tag or soccer in all?

In other assignments, students had to demonstrate their understanding of what they knew about quadrilaterals. They were presented with geometric figures and had to determine which figures were rectangles and explain their answers. In order to accurately do this, students needed a foundational understanding that opposite sides of a rectangle were parallel and adjacent sides of a rectangle were perpendicular.

Students eventually moved into using a ruler to draw horizontal line segments of various centimeters. They had to apply what they learned about geometry in order to determine whether various line segments were parallel, perpendicular, or neither. Student were *applying* (23.0%) what they knew about geometry concepts in a context different from the one in which they learned.

The addition story problem concept was extended into a more complex degree of difficulty. For example, in the story problem below, students had to incorporate their addition skills as well as algebraic reasoning skills in order to solve the story problem correctly. This thinking required students to break learned information into parts in order to best *analyze* (10.1%), comprehend, and assess that information:

> The 15 members of the Science Club went to the planetarium. Eight of the students rode in a van. The rest of the students rode in cars. How many students rode in cars? This level of thinking required students to break learned information into parts in order to best comprehend and assess that information.

The students received 6 out of 261 homework items that were classified in the *evaluating* (2.3%) category. Students had to make a judgment in regard to drawing a geometric figure. For example, students had to draw a square that was not a quadrilateral, draw a square that was not a parallelogram, draw a quadrilateral that was not a square, and draw a parallelogram that was not a square. Students had to explain why or why not it was possible to draw each figure. This particular task was classified in the *evaluating* (2.3%) category.

The students received 8 out of 261 homework items that were classified in the *creating* (3.4%) category. Students were challenged to do the following: rewrite a

subtraction story problem into an addition story problem, draw a picture to represent the addition story problem, write an equation, and then solve the story problem. The following is an example of the level of thinking that the students had to demonstrate:

> There are 11 bicycles at Matt's house. 5 are in the driveway, and the rest are on the lawn. How many bicycles are on Matt's lawn? Write an addition story problem that undoes the above subtraction story problem. Then draw a Math Mountain, write an equation, and solve the problem you wrote.

Williams. Williams' students had been working on geometry and reviewing addition and subtraction skills over the three-week period. Williams assigned a total 68 homework items to her students as homework over a three-week period as shown in Figure 9. After analyzing the collection of Williams' homework, the homework items required students to think on the *remembering* (19%), *understanding* (36.8%), *applying* (32.4%), *analyzing* (1.5%), *evaluating* (4.4%), and *creating* (5.9) cognitive domain levels.

Figure 9. Williams' Math Homework Categorized by the Cognitive Domain Levels of the Revised Bloom's Taxonomy (n=68 homework items)

	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Total
Percent of items	19.0%	36.8%	32.4%	1.5%	4.4%	5.9%	100%
Number of items	13	25	22	1	3	4	68

In the *remembering* (19.0%) category, students had to utilize their addition and subtraction skills while computing three and four digit numbers. For example, students had to compute three and four digits equations (e.g., 505 -277, 1,389 + 57). Students were given figures where they had to recall if the figures were lines or line segments. In

the *understanding* (36.8%) category, students were presented with many homework items that required them to comprehend the meaning of information by interpreting and translating what they have learned. For example, students had to incorporate what they knew about lines and line segments to determine whether lines were parallel, perpendicular, or neither. They also had to utilize what they understood about perimeter in order to determine the perimeter of a parallelogram. In the *applying* (32.4%) category, students had to use algebraic reasoning skills in order to accurately solve word problems:

> The owners of a deli sold some sandwiches in the morning. They sold 84 sandwiches in the afternoon. They sold 130 sandwiches the whole day. How many sandwiches did they sell in the morning?

In addition, students had to draw a geometric figure based on the measurements that were provided. For example, students had to draw a line segment 5 centimeters long. Then they had to draw a line segment 7 centimeters long paralleled to their first line segment.

Within the collection of homework items, students had to break a subtraction story problem into parts in order to come up with an answer for a subtraction story problem without applying any calculations. This form of thinking was associated with the *analyzing* (1.5%) category. The students had to make an in-depth judgment regarding the lengths of two adjacent sides for each rectangle. Students had to explain why or why not the rectangle had two adjacent sides. This form of thinking was associated with the *evaluating* (4.4%) category. Lastly, the students had to draw a rectangle that had sides of 5 centimeters and 2 centimeters in length, and create all possible rectangles with a

perimeter of 26 centimeters with whole number lengths of sides. This form of thinking was associated with the *creating* (5.9%) category.

Allen. Allen's students had just started to learn about geometry over the three-week period. Allen assigned a total of 34 homework items to her students as homework over a three-week period. The distribution on the Revised Bloom's Taxonomy is shown in Figure 10. After analyzing the collection of Allen's homework, the homework items required students to think on the *remembering* (17.6%), *understanding* (26.5%) and *applying* (55.9%) categories with no items at the *analyzing, evaluating,* and *creating* categories. One particular note is that more than 80% of the homework items she assigned were classified within *understanding* and *applying.*

Figure 10. Allen's Math Homework Categorized by the Cognitive Domain Levels of the Revised Bloom's Taxonomy (n=34 homework items)

	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	Total
Percent of items	17.6%	26.5%	55.9%	0.0%	0.0%	0.0%	100%
Number of items	6	9	19	0	0	0	34

In the *remembering* (17.6%) category, students were required to use mental math strategies when computing two and three digit addition equations (e.g., 30 + 60 + 50 and 700 + 400 + 300). In this particular cognitive domain level, the degree of difficulty was low. The form of thinking required from students was the recall or recognition of specific facts and place value.

In the *understanding* (26.5%) cognitive domain category, students were required to measure various lengths of line segments to the nearest centimeter. Students had to

use their acquired knowledge on rulers in order to measure the line segments accurately. In addition, students had to understand the difference between lines and line segments that were paralleled and perpendicular. Students had to write what they knew about the opposite sides of a parallelogram, what they knew about adjacent sides of a rectangle, and they had to draw different parallelograms on a grid. In this situation, students had to demonstrate their comprehension of the meaning of information by interpreting and translating what they learned about lines and line segments.

In the *applying* (55.9%) cognitive domain category, students had to use what they learned about measuring line segments and later apply it to a new concept of measuring the perimeter of four different kinds of quadrilaterals (e.g., parallelogram, rectangle, square, and rhombus). In order to find the perimeter of a square, students had to activate prior knowledge regarding attributes of a square (e.g., opposite sides parallel, adjacent sides perpendicular, and all sides equal in length). In several of the homework assignments, the students were instructed to join the points to make different quadrilateral shapes and then find the perimeter of the shapes. Within the collection of the homework items, the students were not presented with assignments that required them to analyze, evaluate, or create new meanings of math concepts. These categories are considered higher degrees of cognitive difficulty.

Comparing Two Teachers in One School

Some of the schools had two third grade teachers in one building. This provided an opportunity to consider whether or not the homework practices were the same among the two teachers or different. This also provided the opportunity for further analysis of

the data to see whether or not there were commonalities in the practices among the teachers in the same school.

Allen and Young

Teachers (Allen and Young) were both third grade teachers at Macy Elementary School and their homework practices were somewhat different from one another. In fact, the majority of Allen's homework items were classified within the *Applying* (55.9%) category and the majority of Young's homework items were classified within the *Remembering* (87%) category.

Williams and Yates

Williams and Yates were both third grade teachers at Boston School. These teachers' homework practices varied greatly from each other. Williams assigned the majority of higher thinking homework items and Yates assigned the majority of lower thinking homework items. The highest cognitive domain of Williams' homework items were aligned to the *understanding* (36.8%) category. Williams had homework items aligned to the *applying* (32.4%) category as well. These two categories were very closely related in terms of cognitive domain levels.

Comparing Teachers' Espoused Homework Practices to Actual Practice

During the interview with the researcher, teachers commented on their homework practices as it related to the Revised Bloom's Taxonomy Level(s). Table 7 highlights what teachers espoused about their homework practices compared to what they actually did. The symbol (⟷) in Table 7 represents an alignment between teachers' homework practices and the actual assigned homework. During the interview sessions, teachers

were not asked to comment about their beliefs about homework as it relates to the Revised Bloom's Taxonomy levels in order not to influence what they may say regarding their practices of homework. Teachers were asked more general questions regarding their practices of homework. The researcher highlighted the comments that teachers shared about their practices about homework and aligned them to each teacher's highest cognitive domain level of homework items. As outlined in Table 7, five teachers' (Allen, Young, Williams, Yates, and Garrison) comments regarding their homework practices were aligned to what they actually assigned to their students for homework. One teacher's (Mapp) comments regarding her homework practices was not aligned to what she actually assigned to her students for homework.

Table 7. Summary of the Alignment of Teachers' Espoused Homework Practices to the Revised Bloom's Taxonomy

	Teacher's Espoused Homework Practices	**Actual Assigned Homework** *(As it related to Revised Bloom's Taxonomy)*
Allen	Assigned story problems so that students could solve, explain, and justify their thinking.	**55.9%** homework items were aligned to ***Applying.***
Young	Regularly assigned computation skills, two-sided multiplication worksheet.	**87%** of homework items were aligned to ***Remembering.***
Mapp	Assigned story problems so that students could solve, explain, and justify their thinking, assigned basic computation skills, assigned story problems for students to determine an answer.	**52%** of homework items were aligned to ***Remembering.***
Williams	Assigned story problems so that students could solve, explain, and justify their thinking, regularly assigned computation skills, assigned homework for students to draw geometric shapes.	**36.8%** of homework items were aligned to ***Understanding.***
Yates	Regularly assigned computation skills, basic facts worksheets.	**68.1 %** of homework items were aligned to ***Remembering.***
Garrison	Assigned basic addition and subtract worksheets, required students to apply what they learned in math class into their home environment, used Cyber Chase television program for mathematics homework.	**87%** of homework items were aligned to ***Remembering***.

Summary

The major area examined in this chapter was the cognitive domain (based on the Revised Bloom's Taxonomy) of homework that each teacher routinely assigned to his or her student. Overall the majority of homework items, across all cognitive domain levels, was aligned to a low category (*remembering,* 68%), however, there were some variation among the distributions of homework. Third grade teachers from the same school distribution of homework items were not the same. In comparing what teachers espoused about homework practices and what was actually assigned, I found the majority of them were aligned.

Chapter 6

Findings: Administrative Influence

Interviews were conducted with the principals from each of the participating schools to determine the role administrative factors play in influencing principal leadership of mathematics homework practices in a school. This chapter begins with an introduction of each principal's educational journey. Then, this chapter describes the four major themes that emerged from the principals' comments—school-wide expectations for homework, complaints about homework, principals' beliefs and value about homework, and cognitive domain of homework.

School Principals

The principals in each of the schools served as a secondary unit of analysis for the study. Two of the principals (Mrs. Strong and Mr. Cummings) worked at a K-8 school located on the north-side of Dell School District and the other two principals (Mr. Sims and Mrs. Harris) worked at a K-8 school located on the south-side. To protect the anonymity of the principals of the study, their names have been masked by assigning pseudonyms to represent principals and schools.

Mrs. Strong: Principal at Macy Elementary School

Mrs. Strong worked in the educational field for 24 years and for 12 of those years she worked in the capacity of school administration. Strong received a Bachelor of Science degree in Education in grades first through eighth. Immediately upon graduation, Strong obtained a teaching position within Dell School District. Strong taught in a multi-age classroom setting with third, fourth, and fifth grade students for

about eight years. Strong was hired as a program implementer at her school. She worked collaboratively with her administrator to align school programs with different initiatives within the community. She researched innovative programs in order to implement research-based initiatives within her school to help teachers and students with statewide testing procedures. Strong worked in the capacity of an assistant principal for about five years. She served as an assistant principal for two different schools within one year. Strong became a school principal in 2001. She served as a principal for five different inner city schools.

Mr. Cummings: Principal at Hilltop School

Mr. Cummings worked in the educational field for 22 years and for 10 of those years he worked in the capacity of school administration. Cummings worked in the position as school principal for seven years and held an administration position for ten years. Cummings received a Bachelor of Science degree in Business Administration. He served in the capacity of a paraprofessional assistant for two years. When Cummings was a paraprofessional assistant, his school principal discovered that he had a degree. She thought that Cummings did exceptional work as a para; therefore, she recruited him to become a teacher in the same classroom that he worked in as a para. Cummings became a special education teacher for students with emotional behavior disabilities for 12 years. He worked as an assistant principal for a K-5 bilingual school for three years.

Mr. Sims: Principal at Boston Street School

Sims worked in the position as school principal for approximately 24 years. Sims received a Master of Science degree in Exceptional Education. During his college years,

he volunteered at a center that cared for children with disability disorders at Children's Hospital on a regular basis. Sims held a teaching position at a middle-high school in Dell School District. Sims taught grades six through eight and he worked with emotionally disturbed and autistic kids for six years. During that time, Sims was given the opportunity to under-fill as an assistant principal at a different high school within Dell School District for several months. He was also offered an opportunity to start an alternative school for middle school students through age 21. Some of the students were coming out of incarceration and were expelled from various middle and high schools. The alternative school housed about 100 students. Sims worked as the principal at the alternative school for four years. Sims became principal at a K-8 school within Dell School District for 10 years. At that time, Sims was contacted by the superintendent to work in the Administration Building in the technology department as the Director of Technology Operations. He worked in this position for four years before asking the in-coming superintendent, who was a different person, to reassign him back as a school principal. Sims was reassigned back to the K-8 school where he was once the school principal in 2003 to present.

Mrs. Harris: Principal at Hope Avenue School

Harris worked in her current school as principal for three years. Harris started out as a teacher and worked for a year and a half in Dell School District. Harris decided to come back to work after her kids were in middle school. Harris became a substitute teacher because she figured that was a quick way to get back into the workforce. Harris liked being a substitute teacher during that time; therefore, she went back to college to

obtain a reading license. Harris spent about 13 years as a reading teacher and soon applied for a program for new leaders. Harris was accepted into the New Leaders program. After completing the program, Harris was hired as a Curriculum Generalist for several years. Harris was promoted to an assistant principal position and worked as an assistant principal in charge (acting principal) for one year.

Administrative Influence of Teachers' Mathematics Homework Practices

Four themes emerged in the principals' comments regarding administrative factors (e.g., policy, complaints, beliefs, and cognitive domain of homework) in influencing principal leadership of mathematics homework practices. These included school-wide expectations for homework, complaints about homework, principals' beliefs and value about homework, and cognitive domain of homework.

School-wide Expectations for Homework

All of the principals shared that their school did not follow a school-wide homework policy. Since there was no school-wide policy, the administrative influence caused each teacher to determine their own homework policy for their students. In other words, all of the principals left it up to their teachers to determine their own classroom-based homework policy for their students. Within this theme, there appeared to be two sub-themes. One sub-theme was the influence of an outside grant for homework and the other sub-theme was the influence of a classroom-level homework policy.

Strong stated that this was her first year as principal at Macy Elementary School and that she did not work with her teachers to develop a school-wide homework policy. Strong shared that her teachers continued to follow whatever homework policy they

followed in the past and that they were expected to assign homework to their students every night. She explained:

> It would be something that was already in existence and we really did not have a lot of conversation around it. And so we really are going to have to have a conversation about the role that homework plays in regards to what you need to see in the classroom and what you are going to be grading. We have not really discussed our policy per se.

Cummings stated that he made announcements every day during dismissal time for students to read for 20 minutes and write for 10 minutes every night. Cummings expressed, "…as an educational leader here [at Hilltop School], I tell teachers to make sure to assign homework every day." He further stated, "as far as having a homework policy per se, we do not have one." Cummings shared that the *expectation* is out there [in the school building] for teachers to assign meaningful homework to their students. However, he further shared as far as him discussing a school-wide homework policy with his teachers, that conversation has not occurred as of yet.

Cummings explained the reason for not having a school-wide homework policy. He shared:

> We don't have one now. We just came up with our mission statement and our vision statement. But as far as our homework policy, we don't have one. We don't have one that says it's a school-wide [policy and] these are the expectations. Last year when I came in [reassigned to Boston School as principal], a lot of things [homework policy] were pre-set. There's no concrete policy that my teachers follow regarding homework. I have been leaving it up to my teachers [the ones who are teaching outside of the Homework First grades: kindergarten through first grade and sixth through eighth] to establish their own classroom homework policy.

Cummings believed that as a new principal and coming in with new initiatives, you must listen to your governance council and learning team in order to come up with an

effective mission statement together. He envisioned his staff going through the same process in order to establish a school-wide homework policy for the school this year.

Sims shared that his school did not have a school-wide homework policy. Sims contended that it was basically assumed within the culture of his school (Boston School) that all teachers were expected to assign homework to their students. Sims expressed his reasons for not having a school-wide homework policy. He stated:

> We don't have an overarching homework policy. I leave it up to the teachers as they see fit. Each teacher has a different style of teaching. The complexion of the class may be different. Some may do homework and some may not. Teaching styles really dictate what kind of homework is out there. I wouldn't put a policy in place and say everybody must do this amount of homework every night or have homework, because then it's assigning homework for the sake of homework and then there's no purpose behind it except to assign it.

Harris was the only principal that shared that she collected her teachers' homework policy statements that they gave to their students' parents. Harris stated that teachers had to write them and send them to parents at the beginning of the school year. Harris shared that she collected and read all of the homework policies. Harris noted that once the homework policy statements were sent to parents; she did not get involved [with homework] unless a parent called and said something about it [homework]. Harris shared that she left it up to the teachers to decide what they thought was appropriate homework. She elaborated on how she communicated to her teachers that the homework was up to them. She said:

> You know I don't know that I've ever really communicated it like that to them. I just never got into homework discussions with them. I've never come up with any policy other than whatever you're doing is okay with me.

Cummings supported second through fifth grade teachers that incorporated last year's Homework First initiative within their classroom this school year in order to encourage students to complete their homework at Hilltop School. Cummings influenced a small group of his teachers to continue to complete charts to identify students that were turning in at least 85% of their homework or better. Cummings supported his teachers by purchasing charts for teachers to keep track of completed homework from students.

On a different note, Harris required her teachers to write and send homework policy statements to their students' parents at the beginning of the school year. Harris influenced her teachers to come up with a classroom-level homework policy and to share it with their students' parents.

In sum, all of the principals indicated that their school did not have a written homework policy, however, each school had an unstated, implicit school-wide expectation that all teachers needed to assign homework to their students. The decision-making process regarding homework practice and policy was left in the hands of individual teachers. Every teacher did his or her own thing in regard to assigning homework to their students.

Complaints about Homework

Principals discussed issues regarding homework practices with specific staff only when there was a major complaint about the assigned homework. Three of four principals (Strong, Cummings, and Sims) shared that they received complaints from parents and Community Learning Center (CLC) staff regarding some of their teachers' homework practices. The complaints involved either too much or not enough homework

assigned to students. The resulting administrative influence regarding the complaints about homework caused the principals to take action by talking directly to the specific teacher and CLC staff about the homework complaint.

Strong talked about some complaints she received at Macy Elementary School from a parent about a certain classroom where students were not receiving any homework. Strong shared that they did not have a consistent teacher in that particular classroom. In this situation, Strong offered the parent Internet resources (Compass Learning and Odyssey) to use for homework with her child at home. Strong said that the suggested resources were aligned to students' individual instructional level in order to help them improve their academic skills in reading and mathematics.

In another situation, Strong received additional complaints from parents regarding the lack of support with homework from the CLC staff. The CLC was an after school program housed inside of designated schools in Dell School District where students received extra support with their homework. Strong shared how she addressed a parent's complaint regarding the lack of support with her child's homework at CLC. She explained:

> I spoke with the CLC director regarding the parent's complaint about her child not receiving adequate support with homework. The CLC director explained to me their order of schedule of the after school program. The CLC staff dedicated one hour each day during the week to focus on helping students with their homework. The CLC director ensured me that he would discuss this situation with the staff in order to rectify the complaint.

Cummings shared a similar situation when a CLC staff complained to him that students were not bringing any homework to CLC or they were completing their homework very quickly. Cummings indicated that this situation gave him "a red flag to

go to the students' teacher to find out why the teacher was not assigning homework to the students." Cummings further shared that the CLC staff informed him that they "needed more rigorous work that would hold [challenge students to think deeply] the kids because the whole purpose of CLC was to provide academic enrichment."

Sims described a situation when parents were complaining that some teachers at Boston School were assigning too much homework to students. As a result of the complaint, Sims set a time requirement for students to spend toward completing their homework. The time spent on completing homework was increased by increments of 10 for each grade band. For example, first grade students were allotted 10 minutes to complete homework and second grade 20 minutes, and so on. Sims further explained how he handled complaints from parents regarding homework issues with his teachers. He said:

> If I get a parent or several parents expressing concerns over some sort of homework that's being assigned by my teachers, I individually conference with that teacher or teachers to let them know that there's some concerns about their homework. I ask the teachers to share anything I should know about their homework practice and what's their feelings about the complaint. I will support my teachers. If they think that this is the correct amount of homework, I am not going to sit there and side step them or anything or undermine them because there has to be trust that goes on and that's not only in the regards to homework.

Harris was the only principal that did not comment about receiving complaints from parents or CLC staff about math homework assigned by her teachers. Harris was the only principal that required her teachers to write a homework policy statement and send it home to their students' parents.

Three principals (Strong, Cummings, and Sims) shared that they took action whenever they received a complaint about homework. The principals spoke directly to

the specific teachers when they received a complaint regarding homework practices in order to address and resolve the matter.

Principals' Beliefs and Value about Homework

Principals talked about their beliefs and value regarding homework. Two principals (Strong and Cummings) stated that they believed that homework was important for students and that their teachers needed to be more consistent with their homework practices. Since homework practices varied from teacher to teacher, the administrative influence was principals requiring teachers to become more consistent between one another regarding their homework practices. Within this theme, there appeared to be three-sub-themes. One sub-theme was the influence of homework being completed in the classroom. Another sub-theme was the influence of homework not being the main factor in grading and the other sub-theme was the influence of a principal not being a fan for homework.

Strong believed that teachers' homework practices needed to be more consistent due to a high population of twins at Macy Elementary School in different classes. Strong expressed her reasons for consistent homework practices among teachers in her school. She said:

> That is one conversation that we have had and that we need to have again. We need to be more consistent with our homework practices. We can't have one 5th grade classroom doing something and the other 5th grade classroom doing something totally different. I have a lot of twins in my building. I pointed out to the teachers that you can't have one sibling going home and having all of this to do and the other sibling going home and they have hardly anything to do. So we do need to be more consistent with our homework practices and even with our pacing, so that somebody isn't further ahead and somebody is way behind. At least in the household where you have siblings, it shows.

Cummings expressed that homework was very important and it gave kids the opportunity to practice what they learned in class. However, Cummings believed that his teachers needed to be more consistent with their homework practices at Hilltop School. He explained what he meant about consistency of homework:

> I think right now it [homework] varies from teacher to teacher. As far as the consistency of homework and the level of rigor. I'm discovering that, don't forget this is the beginning of my second year, I'm discovering that I think if I get a hold of that [consistency of homework] and I bring that to my learning team, our students will soar even more. Homework is practice and it needs to be meaningful and rigorous, I strongly believe in that.

Sims believed that homework should not be removed from the classroom. He explained how teachers were not guaranteed that their students actually completed their own homework. He said:

> I truly have troubles with making sure that the kids are really understanding what they are doing when they remove it [homework] from the classroom and take it home, especially the younger kids. And then parents take over and you can see when parents actually do a project or help them out because kids are using words they normally don't use and teachers can pick that out too. So then it's [homework] just a game to get it [homework] done.

Harris explained that if the students were completing their homework incorrectly, it was more harmful than helpful for them. Harris described how it was more beneficial for students to complete their homework in class. She shared:

> I know that the new program we have in math and reading [Springboard] that there's not much homework with that. I know that the math teacher and the reading teacher in fifth grade are flipping and blending their classroom. So I know that their homework is actually a 15 minute lesson that students will go home and watch on the computer. So that the work is actually being done in the classes. That to me makes sense, where kids could like preview what's coming and if some of them get it and then some of them don't, they work with much smaller groups.

Strong reported that teachers were struggling with how to manage homework in terms of students not being graded on their homework, due to the implementation of a new initiative called standards-based report cards. Strong said:

> We are in the midst of changing our report cards and with the standards-based report card, homework is not graded. Homework right now, and I know that teachers are probably struggling with that in the older grades than the younger grades and that even though we give assignments, teachers don't really know how to manage it in terms of if the students don't do it, what's the consequence.

Cummings believed that homework was important, but it should not be the main factor in grading. On the same note, Harris stated that she was really glad that teachers really can't hold homework against students' academic grades anymore due to the standards-based report cards initiative. Harris shared how students' grades were affected in prior years due to missing homework assignments. She explained:

> My students were getting D's and F's, like I think last year my 6th grade math classes' grade level wound up with 45% getting D's or F's and it was all due to missing homework. If a kid can show you on a test or on anything else you want that they understand that, I don't get the whole missing homework thing. I never got that, I never got that as a teacher. You know, people would say, oh this kid could get an A but he missed homework and so now he's going to get a B. If he's gotten an A then you know he understands it.

Harris shared that she was not a big fan of homework. In fact, the teachers at Hope School were aware of Harris' personal perception regarding the use and practice of homework. Harris contended:

> They know that I am not a huge homework fan. They know that I don't see a lot of value in it. In the way that it [homework] is traditionally used. So that much I have communicated, but again, I think that they just respect [her perception about homework]. I don't question what they are doing with their homework, so I think they figure, I just respect that [respect what teachers assign for homework to their students].

Strong and Cummings believed that homework was important for students; however, Harris was not a huge fan for homework. Sims and Harris believed that homework should not be removed from the classroom. In other words, they believed that students should complete their homework in class instead of at home. Strong, Cummings, and Harris shared that homework should not be the main factor in grading.

Cognitive Domain of Homework

All of the principals described what a mathematics homework assignment might look like if given by their third grade staff to their students. Three principals (Strong, Sims, and Harris) believed that the typical assigned homework would be low-level work. One principal (Cummings) stated that the typical assigned homework from his third grade mathematics teacher would be rigorous work. In addition, all of the principals indicated what they preferred to be included in the assigned homework. The administrative influence from talking about homework made the principals think about their expectations of cognitive levels of homework. Due to the unintended consequence of the conversation, it was possible that the researcher had indirectly influenced the principals' work. This occurred due to the principals having to articulate their expectations of what they preferred the mathematics homework to require.

Strong shared the type of homework she envisioned coming from her third grade classroom was low-level computation homework. She said that students would be told to "turn to page 45 and complete problems 1 through 35." Strong further shared that it depended on the grade level in regard to the level of rigor of the assigned homework. She said some grade level required "a little bit more understanding."

Strong explained the type homework that she preferred to see from third grade. She said:

> What I would prefer to see is something that takes them [students' understanding] up to at least evaluating and even creating. To me, it [homework] wouldn't necessarily come straight from the book, but it would be an assignment or project which I would say would be something that you wouldn't say tonight I want you to go home and do this. It would be something that is spelled out, laid out and over time. And then the student can come back with it within 5 to 7 days. I've seen that done as well, not here [Macy Elementary School], not this year, but maybe we will get there.

Strong believed that students that struggled with academic skills were more likely to complete their homework in households where they were supported by an adult and/or an older sibling(s). She stated that the "lower level homework was more likely to come back completed by the student because they can complete the work even before they get home a lot of times." Strong shared that the higher levels of Bloom's Taxonomy such as evaluating and creating, "are more likely to be completed by older students in the middle school grades."

Sims believed that his third grade teachers were "all over the board" assigning very "basic stuff" such as "recalling" low-level work. Sims explained what he preferred to see students being assigned for homework. He concluded:

> There's no one typical way of assigning homework or doing homework. I don't like just to make work unless there is a real purpose behind it, and there's an end point that says, this is where I'm going to be when I'm done with my homework assignment, not just fill these worksheets out. I hate worksheets. I rather have them say, here's a project you have to do and it will take two weeks. To me that's homework. Going and doing that kind of stuff. Not the day in and day out, that boring stuff.

Harris stated that the typical kind of homework that she believed was being assigned in third grade was low-level work. Harris envisioned the third grade teacher

saying the following to his students "do pages 9 to 10 and here are the problems." Strong preferred for her teachers to move away from the traditional homework. She shared that she wanted her teachers to move more toward giving suggestions as to what students could do at home that would support problem solving as opposed to here's the worksheet.

On a different note, Cummings shared that he believed that the type of homework that was being assigned in third grade was rigorous work. He said:

> Rigor is defined as something that is challenging, but for every grade level, it is different. Teacher will assign rigor and if we are look at Bloom's, I would think it would be homework that forces the students to analyze, evaluate, and create. These are the elements that would be incorporated into the homework that teachers assign to our students.

Cummings shared that he preferred for the assigned homework to "start off on a basic level then at the end it should be a culminating experience which would be under the high end of Bloom's such as creating, evaluating, and analyzing." Cummings further explained how he envisioned meaningful homework. He said:

> Well I know that meaningful homework is supported by Bloom's taxonomy. It should be scaffolded, it should have all the elements of Bloom's Taxonomy. Which means that it could be various levels of homework some might involve recalling previous learned information. Some might involve just comprehending the meaning. Some might be applying a concept in a new situation. So I think that homework should fall into one or maybe more of these elements of Bloom's Taxonomy.

Three principals (Strong, Sims, and Harris) reported that their third grade mathematics teacher(s) would typically assign low-level homework to their students, as outlined in Table 8. However, these principals preferred for their teachers to assign project-based homework assignments that would require students to utilize problem solving skills. Cummings on the other hand believed that his teacher typically assigned

rigorous homework to her students. Interesting to note, Cummings preferred for his teacher to assign basic homework leading up to move rigorous work.

Table 8. Summary of Principals' Espoused Typical Homework Assigned to the Preferred Homework

	Typical Homework Assigned	Preferred Homework to Be Given
Strong	**Low-level** computation homework, "turn to page 45 and complete problems 1 through 35."	An assignment or project that takes students' understanding up to at least evaluating and creating.
Sims	All over the board" assigning very "basic stuff" such as "recall" **low-level** work.	A project that will take two weeks to complete.
Harris	**Low-level** work, "do pages 9 to 10 and here are the problems."	Move away from the traditional homework. Move more toward homework that supports problem solving.
Cummings	**Rigorous** work.	Start off on a basic level to the high end of Bloom's such as creating, evaluating, and analyzing.

Chapter 7

Discussion and Conclusions

This chapter presents an overview of the study, a discussion of the themes and findings, limitations of the study, implications for practice, and implications for further research. The data collected, taken as a whole, created a picture of third grade math teachers' beliefs and practices regarding homework, the cognitive domain levels of the homework items (through the lens of the Revised Bloom's Taxonomy Cognitive Domain) that the teachers routinely assigned to their students, and administrative influences related to teachers' beliefs and practices of homework. The experiences described by the teachers and principals during the interview sessions were similar to results gained from previous studies (Jackson, 2007; Kohn, 2006) as well as surfaced new information surfaced about the cognitive domain level of homework.

Overview of the Study

The purpose of this phenomenological study was to gain a better understanding of third grade math teachers' beliefs and practices regarding homework, to explain how teachers' beliefs and practices regarding homework aligned to the framework of the Revised Bloom's Taxonomy Cognitive Domain, and to determine the administrative influences on homework practices. The data were collected during October and November 2013. Six, third grade math teachers (primary unit of analysis) and four principals (secondary unit of analysis) were interviewed from Dell School District in order to collect data to answer three research questions:

1. What are teachers' beliefs and practices regarding homework in mathematics?

2. What is the alignment of the cognitive domain level of the homework items that each teacher assigned to his or her students as it related to the Revised Bloom's Taxonomy?
3. How do administrative factors influence and support teachers' practices regarding homework in mathematics, including connections to the Revised Bloom's Taxonomy?

Each participant (teacher and principal) was interviewed for approximately one hour. A follow-up meeting was set at a later time with the teachers. This was arranged in order to ask additional questions based on the interviewees' responses from the initial interview and also to collect the homework samples. The follow-up meetings varied between 10 to 15 minutes. The interview transcripts were then transcribed. The data were analyzed to determine themes related to each of the research questions: teachers' beliefs and practices of homework, alignment of homework items to the Revised Bloom's Taxonomy, and administrative influences on homework.

Major Findings

The four major findings that emerged from the study are discussed in relation to the relevant literature on teachers' beliefs and practices regarding homework in mathematics, the alignment of the cognitive domain level of the homework items that each teacher assigned to their students and the administrative influence on teachers' beliefs and practices about homework.

Major Finding 1: Homework Is For Low-level Thinking

All six teachers believed that homework allowed their students extra repetition of practice on math skills, helped to promote student responsibility, and served as a tool to inform parents of what was going on in the classroom. Teachers' beliefs about homework seem to suggest to the researcher that ***homework is for low-level thinking***. Teachers assigned homework to their students so that they could practice what they learned in math class. The majority of the homework items consisted of worksheets that activated students' prior knowledge at the low recall level of Bloom's. Most of the homework items required students to indicate a single correct response without explaining and justifying their reasoning. With this said, the researcher believes that homework was used for practice and not to stimulate the thinking abilities of students. Similarly, Kohn (2006) found that practice often leads to habit—which is, by definition, a mindless repetition of behavior—but not understanding. When understanding is absent, the ability to use and apply the skill is very limited. Kohn further claimed that lots of practice can help some students get better at remembering the correct response, but not to get better at—or even accustomed to—thinking.

Teachers used homework for students to practice the content that was covered in the classroom. As a result, teachers gave their students homework at the remembering level, thinking that they did the learning in class; therefore, they should be able to successfully do or practice similar math items at home. Homework was at a practice level for most of the teachers. It seems that teachers were not questioning or challenging themselves in regards to how homework could be more than just practice, nor were the

school principals challenging teachers to think about the benefits in regards to their homework practices. For the most part, principals took a hands-off approach regarding homework. Because teachers were giving students mainly practice work, one might infer that this was related to their beliefs about using homework to promote student responsibility. In other words, they wanted their students to be successful with their homework, that is to complete it and return it, thus they assigned low-level homework items that students could solve themselves without any struggle or assistance from others.

In summary, this study found that homework was not used to further student learning. Instead, homework was used to maintain the status-quo and to provide students with practice on learning that had already occurred in the classroom. For example, most of the homework items required students to determine a solution without explaining and justifying their reasoning (e.g., 68% of 898 homework items were classified as *remembering*). Whereas, at higher levels, students should be able to explain through picture, numbers, or words what the term multiplication, for example, means.

Major Finding 2: Homework Practices Were Not On The Principals' Leadership Agenda

All six teachers continued to implement the same traditional homework practices that they used, or experienced themselves, in the past. The truth of this statement surfaced in all of the principals' comments. The principals reported that "they left it up to their teachers to determine the homework policy" at the classroom level. All teachers and principals in the study were expected to continue business as usual in regards to homework practices. Therefore, teachers implemented their same homework policy that

they used in the past for this current school year. The principals, as usual, indicated that they did not question their teachers about their existing homework practices and policies. The principals supported the teachers in "running business as usual" by implementing their same homework procedures and practices from the past. Due to this, the researcher can only assume that teachers' individual homework practices were procedures that they used within their teaching career year—after—year. This in turn, leads the researcher to conclude that there was no instructional leadership by the principals for homework. The principal did not provide leadership or guidance for teachers to consider if their current homework practices and policies were effective for their students. In essence, there was no leadership coming from the school principal pertaining to homework practices and policies, and as a result, the teachers' homework practices went unmanaged by principals.

However, when principals received a complaint from parents and/or a staff member from the afterschool Community Learning Center (CLC) program regarding the quantity and/or lack of quality of the assigned homework, they typically had a "private" conversation with the teachers regarding the complaint. In fact, one principal (Sims) informed his teachers whenever there was a complaint about homework. He explained that he would ask the teachers whether there was anything that he should know about her homework policy and what were her feelings regarding the complaint, but he did not press the teacher to change current homework procedures, nor did he attempt to manage the process. Another principal (Harris) shared that she did not monitor her teachers' homework; while another principal (Strong) stated that none of her teachers were struggling with homework not being completed or returned by their students. In all of

these instances, the researcher perceives the principals taking a "hands-off approach" regarding homework issues. Thus, this study found that homework practices were not on the principals' leadership agenda.

Major Finding 3: Low-Level Homework With Little Attention to Bloom's Taxonomy

After analyzing the collection of homework items from each teacher, the researcher noticed ***low-level homework items with little attention to higher levels of Bloom's Taxonomy.*** Many of the homework items were aligned to the low-level of Bloom's Taxonomy (e.g., 68% of 898 homework items were classified as *remembering*). Some teachers assigned homework items that required students to apply the math skills that they learned in class (e.g., 13% of 898 homework items were classified as *applying*). It was extremely rare for homework items to be classified at, — the higher levels of thinking where students had to analyze, evaluate, and create (e.g., 4% of 898 homework items were classified as *analyzing*, 1% of 898 homework items were classified as *evaluating*, and 2% of 898 homework items were classified as *creating*). This research further affirms the findings of Kohn (2006a) and Jackson (2007) that classrooms where there is currently a lot of homework are often the same classrooms where the homework is mainly at low-levels and is not particularly worthwhile for furthering student learning. This statement further supports the researcher's findings that homework is for remembering; due to the excessive amount of low-quality assigned homework items.

The study did reveal glimpses of teachers (Mapp and Williams) who ventured out toward higher levels of Bloom's Taxonomy in their selection of homework items;

however, this action was not consistent across all of the teachers. A grand total of 898 homework items were assigned, but only a few homework items were aligned to the higher levels of Bloom's Taxonomy Cognitive Domain levels (e.g., 34 out of 898 homework items were classified as *analyzing;*12 out of 898 homework items were classified as *evaluating*, and 15 out of 898 homework items were classified as *creating*).

The comparison of teachers' espoused homework beliefs to what they actually assigned to their students for homework showed strong alignments. For example, two teachers (Yates and Garrison) stated that they regularly assigned basic computation worksheets for homework. Yates' collection of homework consisted of 68.1% math items aligned to the *remembering* cognitive domain level and 87% of Garrison's math homework items were aligned to the *remembering* cognitive domain level as well. One teacher (Allen) assigned story problems that required her students to solve, explain, and justify their thinking. Allen's collection of homework consisted of 55.9% math items aligned to the *applying* cognitive domain level.

In addition, many of the teachers assigned homework items across cognitive levels on the continuum from low to, moderate to, high levels of thinking. However, the majority of the math homework items that most teachers assigned were those on the lower end of the continuum. Teachers less frequently assigned homework items on the higher end of the continuum. For more information regarding teachers' espoused homework beliefs to what they actually assigned to their students for homework, refer to Table 7 in Chapter 6.

During the interview sessions, the researcher intentionally did not ask the teachers to comment about their homework beliefs as it related to the Revised Bloom's Taxonomy levels. The researcher did not want a conversation about Bloom's Taxonomy to influence what teachers may imply regarding their beliefs and practices of homework. As a result, the researcher interpreted the comments that teachers shared about their beliefs and practices about homework and aligned them to the Revised Bloom's Taxonomy levels. The research found that there was a strong alignment between teachers' espoused homework beliefs to what they actually assigned to their students for homework. For example, five of the teachers' assigned homework aligned to their espoused practices. However, one teacher indicated that she gave more high-level homework than what was actually assigned. For more information regarding teachers' espoused homework practices and how their practices aligned to the Revised Bloom's Taxonomy levels, refer to Table 7 in Chapter 6.

This study showed that two teachers (Young and Garrison) assigned 87% of their homework items within the lowest cognitive domain levels. The majority of the homework items from both teachers required students to complete basic computation items. When the researcher analyzed the collection of Garrison's homework items, 158 out of 181 homework items were classified as *remembering*. However, 110 of the 158 homework items were part of the modified assignments for the five special education students in Garrison's class. The researcher included these items as part of Garrison's total collection of homework items. This issue impacted Garrison's total distribution of homework items. It appears to the researcher that there was not a substantial distinction

within the differentiated homework items between Garrison's regular education students and special education students. In fact, each group of students received the majority of homework items aligned to the lowest cognitive domain level of the Revised Bloom's Taxonomy. The researcher believes that Garrison may have a misunderstanding between the concept of differentiation and modification. Garrison merely modified the size of the numbers (i.e., changing 125 + 115 to 25 +5) instead of differentiating math items by content, process, or product.

Teachers informed the researcher that they normally assigned low-level homework and students did high-level work in their classrooms. Teachers shared that the implementation of high-level work in the classroom helped them to identify areas where the majority of the students struggled and excelled in order to determine next steps for instruction. The researcher speculates that the reason teachers assigned low-level homework was to provide students the opportunity to practice what they understood about content, not to deepen or expand their conceptual understanding.

In sum, it appears that the teachers thought assigning low-level practice homework was beneficial to their students. However, this may not be the case. Therefore, an implication for teachers and administrators is to reconsider the purpose and type of homework assigned as well as the allocation of items at various levels of cognitive domain. This might lead teachers and administrators to purposefully engage in conversations about making homework more aligned to learning instead of practice. This in turn would help to move students' thinking further along in order to deepen their thinking.

Major Finding 4: Homework Is A Lost Art

This study inspired four principals to think about their leadership practices regarding how they influence or do not influence teachers' beliefs and homework practices within their schools. ***Homework is a lost art*** because principals did not utilize the opportunity to talk with teachers about using homework more effectively to promote students' learning; therefore, teachers continued implementing their same homework practices from the past.

All of the principals shared with the researcher that homework was not included on their agenda for discussion in regards to establishing or even considering a school-wide homework policy. For example, Sims, principal at Boston School, explained that a conversation around homework was not typically discussed with his teachers. He said:

> It's [homework] not something that we revisit every year. It is basically assumed that teachers are going to do this [assign homework to their students].

This makes the researcher assume that teachers took the leadership within their own hands to determine a homework policy that seemed to work best for them, due to the fact that the administrators typically did not engage in conversation about homework issues with their staff.

Another principal (Strong) noted that his staff have not had the type of conversation that they need to have around homework best practices. This leads the researcher to wonder whether the principals have a sense of "blind trust" in their teachers' ability to assign homework to their students on a regular basis. One principal (Sims) took it a step further and expressed the importance of establishing trust in his teachers' decisions regarding homework. He said:

> I will support my teachers and if they think that this is the correct amount of homework, I am not going to sit there and side step them or anything or undermine them because there has to be trust that goes on and that's not only in regards to homework.

The data revealed that all of the principals left it up to their teachers to establish their own classroom level policy. Pasi (2006) recommended that homework must follow clear, understandable policies that make sense. Policies that simply seem punitive will be suspect; policies that enhance the goals of teaching and learning will elicit more support. The researcher is led to infer that there is no school-wide vision coming from the leadership of principals as it relates to homework expectations and policy. The lack of a school-wide vision for homework may exist simply because administrators in the study typically viewed ***homework as a lost art for discussion***.

Researchers that are in favor of formal district-wide homework policies recommend that principals clearly specify what kind of homework is most effective; how much homework is appropriate at each grade level; who will be responsible for deciding how much homework to assign; how the scheduling of homework will be coordinated among different teachers; and also parents' responsibilities regarding homework (Skaggs, 2007; Cooper, 2007; Eddy, 1984). In addition, Blazer (2009) recommended that districts refrain from establishing formal homework policies and instead develop guidelines at the individual school level. Based on the above recommendations, the researcher believes that if principals took the leadership to engage their teachers in conversation about homework best practices, then perhaps teachers would become more cognizant of the cognitive domain level embedded in their assigned homework.

Since principals did not include homework issues on their agenda for discussion, teachers' homework policies were not monitored unless there was a complaint. Once a complaint was received, the principal took action to conference with the teacher. Although the principal took action to address the teacher regarding the complaint, the principal did not enforce any actions to produce a school-wide homework policy change. It was interesting to note that when the principal responded to a complaint about homework, it was, in general, about the lack of quantity or quality of the homework. In other words, the complaint occurred because there was not enough homework or the homework was too easy. This leads the researcher to suggest that the people that complained about the homework were requesting more items that related to the higher levels of Bloom's Taxonomy be embedded in the homework. Kohn (2007) asserted that busywork, such as copying information or filling in worksheets, has little value. Homework is more meaningful to students when they are required to use higher level thinking skills, such as drawing conclusions, making comparisons, analyzing, and evaluating (Blazer, 2009; Bluestein, 2006; O'Rourke-Ferrara, 1998).

Principals shared with the researcher the type of homework they thought their teachers would assign to their students, as well as indicated what type of homework they would prefer to be assigned. Two interesting results that occurred were that teachers actually assigned the type of homework that their principal perceived them to assign [lower end of Bloom's Taxonomy] and that principals preferred for their teachers to assign homework on the higher end of Bloom's Taxonomy. This seems to suggest that principals knew the type of homework that the third grade teachers were assigning to

their students. However, despite their awareness and preference for assigned homework, there was no action taken to establish a school-wide homework policy. Likewise, Pasi (2006) attested that the responsibility of the principal is to ensure that homework is consistent with the district educational goals.

Implications for Practice

Homework should be used to give students the opportunity to extend their thinking of mathematical concepts rather than mainly for low-level practice, as found in the study. The findings indicated that homework was used for recalling low-level information and not for learning. In order to really use homework as a vehicle for learning, it would be beneficial to have more leadership from the principal in the school to put a stronger emphasis on the role of homework in an effort to promote learning. Leadership is as simple and as complex as establishing a clear direction for people throughout the organization and influencing them to move in that direction (Louis, Leithwood, Wahlstrom, & Anderson, 2010).

In addition, based on the data, whenever teachers assigned homework, they typically assigned the same type of homework to all students. All of the teachers informed the researcher that they supported both regular education students and special education students in their classroom. This in itself leads the researcher to wonder whether students might have been functioning at various cognitive levels or had differing education needs. Therefore, it might be a disservice to the students if they receive the same type of homework, despite their instructional level. The recommendation for teachers is to really know their students in order to assign homework that is going to meet

students at their instructional level and to take them to deeper and higher-levels of thinking. The content may be the same; however, the product of the homework could be differentiated by cognitive domain, number of items, or other student needs. Similarly, Sagor (2002) found that differentiating homework tasks was critical to ensuring that students were academically successful. As a result of differentiating the homework tasks, students were able to internalize and apply math skills correctly. The implication to teachers is that they need to adjust their homework assignments to scaffold and challenge students from easier to harder or lower to higher levels of performance. The implication to the principal is to implement a process that reveals evidence of students' academic gains based on teachers differentiating homework tasks specifically for students that struggle with understanding mathematics. Dufour and Marzano (2011) contend that not everyone in an organization must believe it is possible to help students learn at higher levels, but someone must believe in that possibility if that improvement is to occur. That someone must be the leader. As reported by Dougherty (2012), an easier assignment does not mean a first grade task in third grade. Easier means, for example, reading a less challenging text, but one that still offers room to think, or laugh, or reflect. Teachers should make sure students fully grasp the concepts and skills needed to complete their homework assignments. This supports what is recommended by Marzano and Pickering (2007) and Shellard and Turner (2004), when homework is designed at the appropriate difficulty level, students were able to complete assignments independently with a relatively high success rate, but still find the assignments challenging.

Another finding indicated that teachers' homework practices were not managed by principals. Principals left it up to their teachers to determine their own classroom level homework policies and practices. This leads the researcher to believe that it would be valuable for principals to establish a school-wide homework policy because this was lacking within all schools in the study. A school-wide homework policy would allow principals to utilize their leadership skills by engaging their teachers in robust conversations regarding homework practices with the intent to develop a vision for homework within the school. As a result, this leadership practice would help to establish a sense of consistency among teachers regarding homework in the building. The school-wide homework policy could explicitly define a standard set of expectations for students. The recommendation is that at the beginning of the school year, principals and teachers inform students and parents on how much homework will be assigned, which days homework will be collected, the role of homework in determining student progress, the consequences for late or incomplete homework, and how parents should support the completion of assignments. The implication for practice is that schools should have a formal policy on homework that is developed with input from principals, teachers, students, and parents. This supports what is also recommended by many researchers (Brewster & Fager, 2000; O'Rourke-Ferrara, 1998; Skaggs, 2007; Thomas, 1992).

Lastly, another finding showed that the majority of teachers assigned very low-level homework items that required students to simply recall procedural concepts rather than communicate and justify their thinking. Students' learning of math concepts was rarely pushed into rigorous areas. Based on the findings in this study, the researcher

perceived the majority of the assigned homework that teachers routinely assigned to their students was of low cognitive level with little attention to Bloom's Taxonomy. The findings also indicated that some teachers assigned homework items that were classified in the higher area of Bloom's Taxonomy; however, this was not a consistent practice across all teachers. Homework was not a topic that principals had on their agenda, and thus they did not discuss ways that teachers could use homework to continue to help students learn outside of school. With this said, the researcher recommends opportunities for principals and teachers to determine homework strategies that could push and sustain learning for all students at higher levels. Furthermore, using homework more intentionally and purposefully to move students further toward higher level thinking and reasoning would support the rigorous expectations of student learning in the *Common Core State Standards for Mathematics* and prepare them for the forthcoming, new state-wide student assessment, such as, the Smarter Balanced Assessment.

Implications for Further Research

This study could be replicated at the middle school and high school level. Once research is acquired at the middle school and high school level, it can then be compared to the findings in this study. The same procedures could be followed to obtain evidence from elementary, middle, and high schools pertaining to teachers' beliefs and practices regarding homework, the alignment of Bloom's Taxonomy to the assigned math homework items, and the administrative influences on homework practices and policies.

Further research could investigate the alignment of classroom instruction to assigned homework items. The research could shed light on the cognitive domain of

classroom instruction in conjunction with the cognitive domain of the assigned homework items. The purpose of the study would be to analyze the alignment between classroom instruction and assigned homework using the Cognitive Rigor Matrix (Hess, Jones, Carlock, & Walkup, 2009) to further determine the complexity of student thinking aligned to the Revised Bloom's Taxonomy within the Cognitive Domain.

The information gained from further research may inform supervisors, policy makers, teachers, and other stakeholders about the value of incorporating the Revised Bloom's Taxonomy framework within homework practices. This information may also be of interest to curriculum and instruction specialists who want to establish professional development opportunities for principals and teachers to practice analyzing the alignment of homework items to the Revised Bloom's Taxonomy Cognitive Domain in order to improve students' thinking and reasoning skills in mathematics.

The researcher noted that the special education students were given low-level homework. This is an interesting avenue for further research to investigate what type of homework is assigned to special education students verses regular education students. It would be a productive avenue to inquire if the cognitive level of the homework tends to be the same or different between special education students and regular education students.

Most researchers agree that homework has a greater impact on student learning when teachers provide written, descriptive- feedback on students' homework. Descriptive feedback corrects misunderstanding, highlights errors in thinking, and lets students know where they excelled and where they need to work harder (Paulu & Darby,

1998; Shellard & Turner, 2004; Walberg and Paik, 2004). While this study did not examine how teachers provided students with feedback on their homework given that it only looked at the types of items assigned, the study naturally leads one to wonder how teachers utilize the completed homework to inform instruction and further student learning. Thus, a potential study would be to explore how teachers use homework and whether the feedback they provide to students is effective promoting student understanding.

Summary

Homework in mathematics was used primarily for low- level practice, more so than high-level thinking. Teachers' homework practices were not managed by principals, because principals did not view homework issues as an important topic for discussion with staff. Teachers assigned low-level homework with little attention to the higher levels of the Revised Bloom's Taxonomy cognitive domain so that students would be successful and responsible for completing their assigned homework. Homework, in these schools, was a lost art of the educational landscape. Teachers continued past practice and principals did not provide leadership that could have influenced teachers' homework beliefs and practices.

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Appendix A

Solicitation Email for Participation of Research Study to Principals

Hello Principal/School Leader:

I hope that you are having an excellent start of the 2013-2014 school year! My name is Pandora Bedford and I am sending you this email because I am requesting your support with my Ph.D. research study. I am interested in collecting data from your school for my research study. I am currently completing my Ph.D. research study at University of Wisconsin-Milwaukee.

I have been employed with MPS for 18 years. I have worked in the capacity of para-professional, teacher, Math Teaching Specialist, Regional Coordinator of Curriculum and Instruction, and Assistant Principal (current position). Currently, I am on a sabbatical leave of absence from August 2013 to January 2014 to focus on my Ph.D. research study.

The purpose of my research study is to provide participants an opportunity to share their day-to-day beliefs and experiences regarding homework pedagogy and best practices. My research study supports and aligns with MPS district initiatives and strategic plan. My research study would serve as a guide and tool for educators to use to improve student learning and achievement in mathematics. I plan to work specifically with third grade teachers of schools that use the Houghton Mifflin Harcourt Math Expressions program.

I would like to schedule a face-to-face interview with you within the next couple of weeks in order for you to share with me your beliefs and expectations regarding homework practices. I have attached a Letter of Consent to provide further details regarding my Ph.D. research study.

Please email me at bedforpd@milwaukee.k12.wi.us and sign the Letter of Consent if you are interested in participating in my Ph.D. research study. I hope to hear from you soon.

Sincerely,

Pandora D. Bedford

Appendix B

UNIVERSITY OF WISCONSIN-MILWAUKEE

*Overview of the Research Study for **Principal***

TITLE OF THE STUDY

Teachers' Beliefs and Practices Regarding Homework: An Examination of the Cognitive Domain Embedded in Third Grade Mathematics Homework

PURPOSE OF THE RESEARCH

The purpose of this research study is to provide participants an opportunity to share their day-to-day beliefs and experiences regarding homework pedagogy and best practices.

TIMELINE

- Brief meeting- October 2013
- Initial 1 hour interview- October 2013

PROCEDURES

- Introduce researcher to third grade math teacher(s) in the school building
- 1 hour interview session with researcher

ABOUT THE RESEARCHER

- Employed with MPS for 18 years
- Worked in the capacity of para-professional, teacher, Math Teaching Specialist, Regional Coordinator of Curriculum and Instruction, and Assistant Principal (current position)
- Sabbatical leave of absence from August 2013 to January 2014 to focus on Ph.D. research study

CONTACT: Pandora D. Bedford at (phone: 414-365-2921) or (email: bedforpd@milwaukee.k12.wi.us) for further questions.

Appendix C

UNIVERSITY OF WISCONSIN-MILWAUKEE

*Overview of the Research Study for **Teacher***

TITLE OF THE STUDY

Teachers' Beliefs and Practices Regarding Homework: An Examination of the Cognitive Domain Embedded in Third Grade Mathematics Homework

PURPOSE OF THE RESEARCH

The purpose of this research study is to provide participants an opportunity to share their day-to-day beliefs and experiences regarding homework pedagogy and best practices.

TIMELINE

- Initial 1 hour interview- October 2013
- Obtain collection of homework assignments (two-four week period)
- Follow-up 1 hour interview- October 2013

PROCEDURES

- Complete homework log
- Collection of homework log and homework assignments at the end of the unit

ABOUT THE RESEARCHER

- Employed with MPS for 18 years
- Worked in the capacity of para-professional, teacher, Math Teaching Specialist, Regional Coordinator of Curriculum and Instruction, and Assistant Principal (current position)
- Sabbatical leave of absence from August 2013 to January 2014 to focus on Ph.D. research study

CONTACT: Pandora D. Bedford at (phone: 414-365-2921) or (email: bedforpd@milwaukee.k12.wi.us) for further questions.

Appendix D

Solicitation Email for Participation of Research Study to Teachers

Hello Third Grade Math Teacher:

I hope that you are having an excellent start of the 2013-2014 school year! My name is Pandora Bedford and I am sending you this email because I am requesting your support with my Ph.D. research study. I am interested in collecting data from your school for my research study. I am currently completing my Ph.D. research study at University of Wisconsin-Milwaukee.

I have been employed with MPS for 18 years. I have worked in the capacity of para-professional, teacher, Math Teaching Specialist, Regional Coordinator of Curriculum and Instruction, and Assistant Principal (current position). Currently, I am on a sabbatical leave of absence from August 2013 to January 2014 to focus on my Ph.D. research study.

The purpose of my research study is to provide participants an opportunity to share their day-to-day beliefs and experiences regarding homework pedagogy and best practices. My research study supports and aligns with MPS district initiatives and strategic plan. My research study would serve as a guide and tool for educators to use to improve student learning and achievement in mathematics. I plan to work specifically with third grade teachers of schools that use the Houghton Mifflin Harcourt Math Expressions program.

I would like to schedule a face-to-face interview with you within the next couple of weeks in order for you to share with me your beliefs and expectations regarding homework practices. I have also attached a Letter of Consent to provide further details regarding my Ph.D. research study.

Please email me at bedforpd@milwaukee.k12.wi.us and sign the Letter of Consent if you are interested in participating in my Ph.D. research study. I hope to hear from you soon.

Sincerely,

Pandora D. Bedford

Appendix E

UNIVERSITY OF WISCONSIN-MILWAUKEE

Research Participant Information and Consent Form (Principals)

Title of the Study: Elementary Math Teachers' Beliefs and Practices Regarding Homework: An Examination of Homework Cognitive Demand

Principal Investigator: Dr. Latish Reed (phone: 414-416-8037) (email: reedlc@uwm.edu)

Student Researcher: Pandora D. Bedford (phone: 414-365-2921) (email: bedforpd@milwaukee.k12.wi.us)

DESCRIPTION OF THE RESEARCH

The purpose of this research study is to provide participants an opportunity to share their day-to-day beliefs and experiences regarding homework pedagogy and best practices. You have been asked to participate in my research study because your school uses the Houghton Mifflin Harcourt Mathematics program with third grade students in an urban school. You also serve as an administrator in this school. This study will include other school administrators and third grade teachers with these same selection criteria and will take place September 2013- December 2013.

I will e-mail a content letter to request for your participation in my research study. I would like to interview you one time for approximately one hour at a location of your choice. The topics in the interview include your background history in education and your beliefs and expectations regarding homework practices.

I would like to digitally record the interview session. These recordings will be transcribed and I will share the transcripts with you for your feedback and any changes. I will be the only person who will have access to the audio recordings.

WHAT WILL MY PARTICIPATION INVOLVE?

In addition to the interview described above, I will provide teachers with a homework log to record the date of the homework, title of the homework, list of page number(s) and problem number(s) of the assignment, and a brief description of the assigned homework. I also would like to collect a sample of each homework assignment that is assigned to the students from the beginning to the end of the unit. I will collect the homework log and homework assignments at the end of the unit. This research study is **not** designed to analyze student understanding of the homework assignments. Therefore, I plan to collect the homework assignments before they are completed by students.

ARE THERE ANY RISKS TO ME?

While your participation in this study will be confidential, there is a potential risk with sharing sensitive information that could affect your reputation. We will mitigate this risk by de-identifying the data as quickly as possible to ensure your confidentiality to avoid any potential risks to you.

ARE THERE ANY BENEFITS TO ME?

There is no specific benefit to you. Your participation in this study will add to the limited body of research that exists on homework practices and contribute to the development of a resource that will support other educators who routinely assign homework to students.

HOW WILL MY CONFIDENTIALITY BE PROTECTED?

While there will probably be publications as a result of this study, your name, the name of your school, the name of your district, the name of your state or region of the country will not be used. Pseudonyms will be assigned to individual participants and schools.

If you participate in this study, I would like to be able to quote you directly without using your name. Your permission at the end of this form requests this from you.

WHOM SHOULD I CONTACT IF I HAVE QUESTIONS?

You may ask any questions about the research at any time. If you have questions about the research, you should contact the principal investigator**:** Dr. Latish Reed, at (414) 416-8037. You may also call the student researcher, Pandora D. Bedford at (414) 365-2921.

If you have questions about your rights as a research subject, you should contact the Education Research IRB at (608) 262-9710, edirb@education.wisc.edu

Your participation is completely voluntary. If you decide not to participate or to withdraw from the study, it will have no effect on any services you are currently receiving.

Your signature indicates that you have read this consent form, had an opportunity to ask any questions about your participation in this research and voluntarily consent to participate. You will receive a copy of this form for your records.

Name of Participant (please print):_____

Signature:_____ Date:_____

I give my permission to be quoted directly in publications without using my name.

Signature:_____ Date:_____

Appendix F

UNIVERSITY OF WISCONSIN-MILWAUKEE

Research Participant Information and Consent Form (Teachers)

Title of the Study: Elementary Math Teachers' Beliefs and Practices Regarding Homework: An Examination of Homework Cognitive Demand

Principal Investigator: Dr. Latish Reed (phone: 414- 416-8037) (email: reedlc@uwm.edu)

Student Researcher: Pandora D. Bedford (phone: 414-365-2921) (email: bedforpd@milwaukee.k12.wi.us)

DESCRIPTION OF THE RESEARCH

The purpose of this research study is to provide participants an opportunity to share their day-to-day beliefs and experiences regarding homework pedagogy and best practices. You have been asked to participate in my research study because your school uses the Houghton Mifflin Harcourt Mathematics program with third grade students in an urban school. You also serve as a teacher in this school. This study will include other third grade teachers with these same selection criteria and will take place September 2013- December 2013.

I will e-mail a content letter to request for your participation in my research study. I would like to conduct an initial interview with you for approximately one hour at a location of your choice. I would also like to schedule a follow-up interview for approximately one hour. The topics in the interview include your background history in education and your beliefs and expectations regarding homework practices.

I would like to digitally record the interview session. These recordings will be transcribed and I will share the transcripts with you for your feedback and any changes. I will be the only person who will have access to the audio recordings.

WHAT WILL MY PARTICIPATION INVOLVE?

In addition to the interview described above, I will provide teachers with a homework log to record the date of the homework, title of the homework, list of page number(s) and problem number(s) of the assignment, and a brief description of the assigned homework. I also would like to collect a sample of each homework assignment that is assigned to the students from the beginning to the end of the unit. I will collect the homework log and homework assignments at the end of the unit. This research study is **not** designed to analyze student understanding of the homework assignments. Therefore, I plan to collect the homework assignments before they are completed by students.

ARE THERE ANY RISKS TO ME?

While your participation in this study will be confidential, there is a potential risk with sharing sensitive information that could affect your reputation. We will mitigate this risk by de-identifying the data as quickly as possible to ensure your confidentiality to avoid any potential risks to you.

ARE THERE ANY BENEFITS TO ME?

There is no specific benefit to you. Your participation in this study will add to the limited body of research that exists on homework practices and contribute to the development of a resource that will support other educators who routinely assign homework to students.

HOW WILL MY CONFIDENTIALITY BE PROTECTED?

While there will probably be publications as a result of this study, your name, the name of your school, the name of your district, the name of your state or region of the country will not be used. Pseudonyms will be assigned to individual participants and schools.

If you participate in this study, I would like to be able to quote you directly without using your name. Your permission at the end of this form requests this from you.

WHOM SHOULD I CONTACT IF I HAVE QUESTIONS?

You may ask any questions about the research at any time. If you have questions about the research, you should contact the principal investigator**:** Dr. Latish Reed, at (414) 416-8037. You may also call the student researcher, Pandora D. Bedford at (414) 365-2921.

If you have questions about your rights as a research subject, you should contact the Education Research IRB at (608) 262-9710, edirb@education.wisc.edu

Your participation is completely voluntary. If you decide not to participate or to withdraw from the study, it will have no effect on any services you are currently receiving.

Your signature indicates that you have read this consent form, had an opportunity to ask any questions about your participation in this research and voluntarily consent to participate. You will receive a copy of this form for your records.

Name of Participant (please print):_____

Signature:_____ Date:_____

I give my permission to be quoted directly in publications without using my name.

Signature:_____ Date:_____

Appendix G

Initial Teacher Interview Protocol

Establishing Rapport
1. Briefly tell me about your educational journey. • College, license, district, grades taught What brought you to this school? • Promotion, new career, etc.
2. What are some of the reasons that you assign math homework to students?
3. Share with me your thoughts about the purpose and value of homework? (i.e., Practice, preparation, extension, integration, behavioral skills, time management, self-confidence, communication with parent, cooperative learning, fulfill mandates),
4. What resources and strategies do you use to create your homework? • Textbook • Standards • Collaboration with grade level teachers
5. What are some ways you decide what to give to your students for math homework?
6. Describe the different type of homework that you typically assign to your students in math? • Review of the lesson • Teach New content

7. Walk me through a typical homework assignment that you assigned to your students.
8. Think about the homework that you have given over the last two weeks, how do you use homework to promote student thinking and reasoning? • Student explain their thinking • Student show their thinking in multiple ways • Conceptual/ procedural understanding
9. What are some ways you differentiate your homework assignments for your students? • Based on students' academic needs • Learning goals set by students • Instructional strategies/ manipulatives • Scaffolding learning
10. Tell me about how you decide what to give to whom? • Visual learners, Audio learners, Struggling learners, Over-achievers
11. How do you use homework? • Grading • Written comments
12. How much homework do you assign to your students? • How often? Number of minutes spent to complete homework?
13. Tell me about the demographics of your classroom. How do you describe your students?
14. Is there anything else you feel I should know about why/how you assign homework?

Appendix H

Protocol for Conducting the Initial Principal Interview

Establishing Rapport
a. Tell me about your career path in education and how long have you been the principal/school leader at your school?
2. Think back to when you were a teacher, what type of homework did you assign to your students? In your career, have you had the opportunity to assign homework to students? If so…can you tell me about it?
3. What can you tell me about your school's homework policy?
4. Elaborate on the development of your school's homework policy? How was it developed? (i.e., Staff, parents, district, community)
5. In what way do you get involve in either monitoring or supporting your teachers with homework? • Listen For: Check-ins, lessons plans, staff meetings, grade level meetings
6. What about the implementation of your homework policy…is there anything that you do…or do you just leave it up to your teachers?
7. When you think about homework, what do you know about Bloom's Taxonomy? So…you talked about skills, are there other things that you hope homework would help students to understand? • Conceptual understanding • Procedural • Problem solving • Cognitive demand
8. Describe as you envision what would be the typical homework assignment that your teachers would assign in math class?
9. Is there anything else you feel I should know about your school's homework practice?

Appendix I

Homework Log

School Code:_____

Please complete this homework log every time you assign math homework to your students. Please attach a blank copy of each homework assignment to this homework log in sequential order (the order in which the homework is assigned throughout the entire math unit). **Please indicate on the Homework Log if no homework was given on a particular day.** Please keep all documents (e.g., homework log and homework assignments) in the designated folder.

Date	**List page number(s) and problem number(s)**	**Description of the assigned homework**

Appendix J

Documentation of Text from E-mail Messages

Date	Subject of the Message

Appendix K

Tracking of Field Notes

School Code _____

Description of event_____

Date	Notes

Appendix L

Revised Bloom's Taxonomy Homework Question(s) Chart

School Code _____ Date of assigned homework: _____ Title of homework assignment_____

Directions: Read each question on the homework assignment. Assign each question a cognitive domain level based on the development of intellectual abilities and skills then divide by total number of questions of the assignment (column 2). Calculate the percentage of cognitive domain level for each category (column 3).

Category of Cognitive Domain Levels (From simplest to most complex degrees of difficulties)	**Number of question(s) in each category/Total number of question(s)**	**Percentage of Cognitive Domain Level**
Remembering: Recall previous learned information.		
Understanding: Comprehending the meaning, translation, interpolation, and interpretation of instructions and problems. State a problem in one's own words.		
Applying: Use a concept in a new situation or unprompted use of an abstraction. Applies what was learned in the classroom into novel situations in the work place.		
Analyzing: Separates material or concepts into component parts so that its organizational structure may be understood. Distinguishes between facts and inferences.		
Evaluating: Make judgments about the value of ideas or materials.		
Creating: Builds a structure or pattern from diverse elements. Put parts together to form a whole, with emphasis on creating a new meaning or structure.		

Note: The cognitive domain involves knowledge and the development of intellectual skills (Bloom, 1956). This includes the recall or recognition of specific facts, procedural patterns, and concepts that serve in the development of intellectual abilities and skills. There are six major categories, which are listed in order above, starting from the simplest behavior to the most complex. The categories can be thought of as degrees of difficulties. That is, the first ones must normally be mastered before the next ones can take place. Information retrieved from http://www.nwlink.com/~donclark/hrd/bloom.html

CURRICULUM VITAE

PANDORA D. BEDFORD

PROFESSIONAL OBJECTIVE

Pre-K-12 Administrative Positions

PROFESSIONAL PROFILE

Student-focused, results-driven education professional with 14 years of increasingly responsible experience working in culturally rich urban environments. Possess several licensures including Wisconsin elementary teacher (1-6), elementary English (1-6), and principal (Pre-K-12) licensures. One year formal internship with elementary principal. Highly organized and detail-oriented with the ability to multi-task and prioritize duties. Remarkable analytical and problem-solving skills. Passionate advocate of students from diverse academic, socioeconomic, and cultural backgrounds. Enthusiastic, self-confident, and diplomatic with exceptional oral, written, technological, and interpersonal skills. Collaborative team-player with a coaching leadership style.

CORE COMPETENCIES

Curriculum development• educational pedagogy • school law • management education • program evaluation • team building • conflict resolution • instructional technology • shared governance • multicultural leadership • data-driven decision making • action research • faculty professional development

EDUCATION

Ph.D., Urban Education, concentration: Administrative Leadership, University of Wisconsin – Milwaukee, degree expected May 2014.

M.S., Curriculum and Instruction, University of Wisconsin – Milwaukee, 2000.

B.S., (with honors) Elementary Education, minor: English, University of Wisconsin – Milwaukee, 1998.

LICENSURES/CERTIFICATIONS

✓ Wisconsin Principal Licensure (Pre-K-12), July 2003.
✓ Wisconsin Academy Staff Development Initiative (WASDI) Lead Teacher Institute:

✓ Wisconsin Certified Lead Teacher in the area of Mathematics Education: 2000.
✓ Wisconsin Elementary Education Licensure (1-6): July 1998.
✓ Wisconsin Elementary English Licensure (1-6): July 1998.

RELEVANT WORK EXPERIENCE

Professional Development Supervisor (Underfill), Organizational Development Office Staff Development, Milwaukee Public Schools, Milwaukee, WI: January 2014- present.

- Implement the district's Professional Development Plan to support effective teaching and learning at elementary, middle and high school levels, in support of the district and state efforts and the Comprehensive Literacy Plan (CLP) and the Comprehensive Math and Science Plan (CMSP).
- Provide guidance to principals and school leaders regarding the teacher and staff evaluation processes and assist with the implementation of the Charlotte Danielson's Framework for Effective Teaching teacher evaluation tool.
- Attend meetings and workshops to keep abreast of new and emerging technology and teaching products and practices.
- Actively support the MPS Strategic Plan.
- Perform other duties as assigned.

Assistant Principal, Morse Marshall School for the Gifted and Talented, Milwaukee Public Schools, Milwaukee, WI: August 2012- June 2013.

- Provide guidance and feedback to teachers regarding the teacher and staff evaluation process.
- Development of systems for disciplinary actions, breakfast and lunchroom procedures, student assemblies, parent teacher conferences, open house, and after school tutoring.
- Plan and conduct professional development for teachers and school staff.
- Observe classroom instruction and identify instructional needs in schools.
- Monitor and support School Improvement Plan implementation.

Assistant Principal (Underfill), Lincoln Center of the Arts Middle School, Milwaukee Public Schools, Milwaukee, WI: May 2012- June 2012.

- Provide guidance and feedback to teachers regarding the teacher and staff evaluation process.
- Determine effectiveness of classroom instruction and recommend strategies to teachers.
- Plan and conduct professional development for school staff.
- Observe classroom instruction and identify instructional needs in schools.

Regional Coordinator of Curriculum & Instruction, Milwaukee Public Schools, Milwaukee, WI: July 2011- May 2012.

- Support, monitor and provide feedback to principals/school leaders on all phases of teaching and learning in schools.
- Observe classroom instruction and identify instructional needs in schools.
- Ensure fidelity of implementation of MPS instructional requirements.
- Analyze, monitor data and track progress of schools including curriculum benchmarks and standardized test results.
- Work with principals/school leaders to organize and coordinate grade level and department meetings to ensure horizontal and vertical articulation of the MPS instructional program and core curriculum standards throughout the region.

Mathematics Teaching Specialist, Milwaukee Public Schools, Milwaukee, WI: 2003 – 2011.

- Provide leadership for monitoring students' learning on state tests and district/school assessments.
- Ensure embedded math professional development and support for administrators, teachers, students, and parents.
- Analyze student achievement data and discuss areas of need in mathematics.
- Build the capacity of schools for continuous improvement toward student success with challenging mathematics.

Associate Lecturer, Improving Mathematics Teaching and Learning: Communication and Reasoning in Mathematics: Part 1 and Part 2, University of Wisconsin-Milwaukee, Milwaukee, WI: 2010-2011.

- Provide insight on best practices with math teachers to support students' ability to communicate their reasoning in mathematics.
- Develop understanding of ways to improve students' oral communication skills.
- Enhance math teachers' knowledge of strategies that support written communication in mathematics.

Associate Lecturer, Current Topics in Curriculum and Instruction: Teacher Narratives as Inquiry into Mathematics Classroom and Leadership Practice, University of Wisconsin-Milwaukee, Milwaukee, WI: 2009-2010.

- Established a teacher writing group to reflect and develop narratives of their professional practice in mathematics.

- Engaged teachers in a professional learning community centered on reflective practice through the development, sharing, and professional critique of written narratives.
- Edited teachers' written narratives or stories of classroom and leadership practice in mathematics.

Associate Lecturer, Collaborative Teacher Education Program for Urban Communities, University of Wisconsin-Milwaukee, Milwaukee, WI: 2003 – 2005.

- Facilitated discussions among students enrolled in field experience courses to provide a link between course work and field experience.
- Prepared and delivered the curriculum and emphasized Wisconsin Standards for Teacher Development and Licensure and its connection to urban teaching.
- Worked with a cohort of twenty students per semester.

Certified Math Lead Teacher, Wisconsin Academy Staff Development Initiative, Wisconsin Dells, WI: 2000-2002.

- Exclusively selected and trained to facilitate standards-based staff development workshops for teachers of mathematics throughout the state of Wisconsin.

Cooperating Teacher, Lloyd Street Global Education School, Milwaukee Public Schools,
Milwaukee, WI: 2002-2003.

- Mentored pre-service teachers and acted as both leader and facilitator as I guided the teachers through the teaching and disciplinary process. Provided positive feedback and encouragement on an ongoing basis.

PREVIOUS WORK EXPERIENCE

Classroom Teacher, Second & Third Grade, Lloyd Street Global Education School, Milwaukee Public Schools, Milwaukee, WI: 1995-2003.

PUBLICATION

- **Bedford, P.,** Hollinger, R., & Huinker, D. (2006). Using a structured protocol for analyzing and learning from student work. *Wisconsin Teacher of Mathematics, (57),* 15-21.

CONFERENCE PRESENTATIONS

- Burzynski, S. and **Bedford, P**. (May 2011). *Let's talk: How to bring mathematical discourse to life in your classroom.* Presented at the Wisconsin Mathematics Council Forty-third Annual Conference, Green Lake, WI.

- **Bedford, P**. and Conner, E. (October 2010). *Making math family nights engaging for parents!* Presented at the Metropolitan Milwaukee Alliance of Black School Educators Fortieth Annual Conference, Milwaukee, WI.

- **Bedford, P**., DeHaro, J., and Schuldt, A. (May 2010). *Make-it-take-it: Mathematics activities.* Presented at the Wisconsin Mathematics Council Forty-second Annual Conference, Green Lake, WI.

- **Bedford, P**. and Wagner, A. (May 2010). *Meeting the needs of special education students.* Presented at the Wisconsin Mathematics Council Forty-second Annual Conference, Green Lake, WI.

- Rahming, B. and **Bedford, P**. (April 2010). *A coaching model in the transformation of math teachers to math teacher leader.* Presented at National Council of Supervisors of Mathematics Forty-second Annual Conference, San Diego, CA.

- **Bedford, P**., Hedges, M., and Schefelker. (April 2010). *Building effective relationships that lead to instructional change in mathematics classrooms.* Presented at National Council of Supervisors of Mathematics Forty-second Annual Conference, San Diego, CA.

- **Bedford, P**. and Wagner, A. (October 2009). *Meeting the needs of special education students.* Presented at the Metropolitan Milwaukee Alliance of Black School Educators Thirty-ninth Annual Conference, Milwaukee, WI.

- **Bedford, P**., Maly, L., and Hollinger, R. (May 2009). *Problem solving, protocols, and practice through the ages*. Presentation at the Wisconsin Mathematics Council Forty-first Annual Conference, Green Lake, WI.

- DeHaro, J., Donohue, L, and **Bedford, P**. (May 2009). *Differentiated instruction in your math classroom: Making it work!* Presented at the Wisconsin Mathematics Council Forty-first Annual Conference, Green Lake, WI.

- Schefelker, B. and **Bedford, P**. (April 2009). *Marvelous math: Ways to help every child succeed in (and enjoy) math*. Presentation at Annual Parent Leadership Conference, Madison, WI.

- **Bedford, P**., Maly, L., and Hollinger, R. (January 2009). *What we've learned about assessment part 2: Analyzing and learning from student work - a protocol*. Presentation at the Fifth Annual New Wisconsin Promise Conference, Madison, WI.

- Fossum, A. and **Bedford, P**. (May 2008). *Descriptive feedback in mathematics: Moving to the next level*. Presentation at the Wisconsin Mathematics Council Annual Meeting, Green Lake, WI.

- **Bedford, P**., DeHaro, J., and Henry, I. (April 2008). *MMP protocol for examining student work.* Presentation at the Wisconsin Mathematics Council Annual Meeting Preconference, Green Lake, WI.

- Fossum, A. and **Bedford, P**. (January 2008). *Descriptive feedback in mathematics: Moving to the next level.* Presentation at the New Wisconsin Conference: Closing the Achievement Gap, Madison, WI.

- **Bedford, P**. and Harris, S. (May 2007). *Thinking through problem solving*. Presentation at Wisconsin Mathematics Council Annual Conference, Green Lake, WI, Friday May 4, 2007.

- DeHaro, J. and **Bedford, P**. (May 2007). *Using descriptive feedback to improve student achievement.* Presentation at Wisconsin Mathematics Council Annual Conference, Green Lake, WI.

- **Bedford, P**., Harris, S., Huinker, D., and Schefelker, B. (April, 2005). *Distributed leadership for mathematics: Bringing together leadership to support highly qualified teachers*. Presented at the annual meeting of the National Council of Supervisors of Mathematics, Anaheim, CA.

SERVICE

- Interview Committee: Northwest Secondary School, Milwaukee, WI: 2011

- Treasurer: Beta Epsilon Chapter of Pi Lambda Theta, Milwaukee, WI: 2000 - 2003

PROFESSIONAL MEMBERSHIPS

- Metropolitan Milwaukee Alliance of Black School Educators, Inc. (MMABSE): 2010 - present

- Wisconsin Education Association Council (WEAC): 2008 - 2013
- Wisconsin Education Association of Student Support Programs, Inc. (WEASSP): 2007- 2013
- National Council of Supervisors of Mathematics (NCSM): 2006- 2013
- National Council of Teachers of Mathematics (NCTM): 2004 – 2013
- Wisconsin Mathematics Council (WMC): 2003 - 2013
- Milwaukee Pathways to Teaching Careers Program: 2000 - 2001

AWARDS

- **Chancellor's Graduate Student Award**, University of Wisconsin-Milwaukee: 2013 – 2014
- **Teacher of the Year**, Metropolitan Milwaukee Alliance of Black School Educators, Inc. (MMABSE): 2007
- **Educator Honor Roll**, University of Wisconsin-Milwaukee: 2006 – 2007
- **Lura M. Carrithurs scholarship recipient**, Beta Epsilon Chapter: 2000