

Teacher Knows Best:

Adaptations to District-adopted Math Program as Shared by Elementary Math Teachers

By

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Submitted to the graduate degree program in Education Leadership and Policy Studies and the Graduate Faculty of the University of Kansas in partial fulfillment of the requirements for the degree of Doctor of Education.

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Date Defended: May 21, 2012

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Chairperson Dr. Susan Twombly

Date approved: 6/1/2012

## ABSTRACT

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Despite the resources and training provided, teachers make decisions to adapt from the written curriculum throughout their day. Some would argue that the teacher's ability to not only recognize when students are struggling, but to also be able to select adequate instructional strategies to reteach the concept, is their most valuable asset. The purpose of this dissertation was to examine the reasons why teachers adapt curriculum. This study involved 55 teachers from a Midwestern school district. The participants completed the *Stages of Concern Questionnaire*, a component of Frances Fuller's *Concerns-Based Adoption Model*, was administered to all K-5 staff in the school district. The Stages of Concern Questionnaire measured the relative intensity of concerns among teachers implementing a new math program. The results of the Questionnaire were used to select participants for a follow up interview. Participants were asked to reflect on the strengths of the math program, concerns they had about the math program. Teachers were also asked discuss what kinds of adaptations they make during instruction, and why. The interviews were analyzed to determine if patterns or themes emerged. The study showed that teachers often make adaptations including pre-meditated adaptations and reactionary adaptations. Teachers rationalize their need to adapt citing experience, training, and various student behaviors. Understanding teachers concerns in regard to their content and how those concerns relate to the adaptations that teachers make, could be used to design more meaningful professional development for staff. Professional development could be differentiated for the

types of concerns that teachers have, provide opportunities for staff to address those concerns, and perhaps achieve higher learning gains with their students.

## Acknowledgements

The author wishes to express sincere appreciation to the Department of Education Leadership and Policy Studies at the University of Kansas for the extended long-term support and especially to Dr. Susan Twombly for her reserve of patience and knowledge. This dissertation would never have been completed without the encouragement, patience and devotion shown by my family and friends. To Peyton, Brett, Christian, and Aiden, thank you for inspiring me to continue this project through to completion. My dear friends Beth Morrow and Katie Whiteknight, thank you for your shoulders, editing skills, and encouragement. To my aunt and collegial mentor, Dr. Jill Hackett, thank you for setting the bar high and for encouraging me at an early age to reach for the stars. To my mother, Geralidine Lederer, thank you for your daily check-ins and the much appreciated words of wisdom and guidance. To my husband Jeremy, thank for helping me find the time and the strength to persevere through all of the coursework, the dissertation, and the other challenges we have endured through this process.

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## CHAPTER 1: INTRODUCTION TO THE STUDY

### **Background**

A new math textbook series was adopted recently in a Kansas School District. The textbook adoption process was time consuming and expensive and included sixty regular classroom teachers, Title math teachers, instructional learning coaches, several building principals, and district-level curriculum specialists. From start to completion, the textbook adoption took three years. The purpose of the first year was to conduct a curriculum review; the committee examined state standards, relevant assessment data, and evidence based instructional practices. Through the curriculum review process, the committee was able to identify criteria that would be used to select texts for further review. By the end of the first year, the committee had selected ten for initial review. The second year was spent assessing each of the ten finalists for alignment to the state standards, evaluating each for evidence-based instructional strategies, and devoting countless hours to discussion on text features, lesson plan design, user-friendliness, until finally, two exceptional textbooks emerged. At the end of the second year, twelve teams were selected to participate in a year-long field test; each team came from a different school and there were two teams from each grade level. During the third year, six teams began the school year field testing Math Expressions and 6 teams began field testing the Math Trailblazers. Throughout the process, the entire group met monthly to compare how students were performing on quizzes, tests, and other formative assessments. In addition, the teams discussed curriculum alignment, compared student performance on daily work, analyzed strategies suggested by each program, recorded questions and challenges they encountered during instruction, and shared anecdotal accounts of their experiences with differentiated instruction, student engagement, and cyclic review. Teams were asked to share the program they were piloting with the rest of the

staff in their building and ask for feedback or concerns. By the end of the third year, a recommendation went to the Board of Education. In addition to the recommendation for a new math textbook and associated materials, the committee recommended a 5-year, intensive professional development plan to support the adoption. The professional development plan would provide much needed training on math instruction, a plan to encourage fidelity to the program and all of its components, and evaluation of use by staff and administrators. The textbook series, Math Expressions was implemented during the 2009-2010 school year. At the time of this study, teachers are beginning the second year of the professional development plan.

This particular textbook adoption process was designed to be thorough and include representation from all stakeholders in an attempt to garner as much ownership and validity as possible among the staff that did not participate as well as those that did. The assumption is that such a democratic and inclusive process will lead to greater buy-in and use of the adopted program. Despite these efforts, anecdotal data has indicated that not all teachers are teaching the program as it was intended or “with fidelity.” Despite an overwhelming interest among staff to adopt Math Expressions as the new textbook series, teachers have deviated from the program and made adaptations from the expectations provided for lesson design, language usage, lesson sequencing, and many are not utilizing the supplemental resources provided that would support the implementation of evidence-based strategies such as differentiated instruction. Even though anecdotal testimonies and informal observations of teachers indicate that teachers are adapting the curriculum, these adaptations are not perceived negatively by teachers. On the contrary, teachers are reporting increases in student learning. In fact, despite concerns that the new curriculum is not being implemented as intended, state math assessment scores increased in almost every elementary school in 2010-11. Given this finding, combined with concerns about

implementation, the curriculum adoption, implementation and adaptation process in this district poses several questions for administrators: 1) to what extent has the adopted curriculum been implemented with fidelity, 2) what are teachers concerns with the new curriculum and 3) when teachers elect to adapt some aspects of the curriculum, which components do they change and why?

My role in this process has been extensive. I am part of the district-level curriculum specialist team that plans curriculum review processes, textbook adoption processes, and any corresponding professional development. It is in my best interests and the best interests of the teachers that I serve, to provide practical professional development including strategies that they need and hopefully want to know in order to meet their students' needs. I understand that what I believe staff should receive during professional development is not always the same as what the staff feel that they should receive during professional development. The findings of this study will help me do my job better because they will give me more information about what teachers are actually doing, how it's working, and how I can better support them. It seems as though other curriculum leaders who support teachers in similar ways could also benefit from learning more about a teacher's thought processes during actual instruction.

Because the district invested so much time and resources, both human and financial, it has a vested interest in successful implementation of this program. To this end it is important for the district to know how the program is being implemented, what concerns teachers have with the program's components, and most importantly, how and why teachers elect to deviate from the program.

My relation to the curriculum in question poses both benefits and concerns for how this study is carried out. I have access to the teachers who participated in this process and a working

relationship with many of them. I was prepared for the possibility that there would be teachers who would not be comfortable participating or may not be completely honest in their responses. I considered these facts as I planned for the data collection process.

### ***Math Expressions***

*Math Expressions* is a kindergarten through grade 6 math program adopted by the school district in my study during the 2010-2011 school year. The program contains elements of both traditional approaches to math instruction as well as inventive structures to create opportunities for students to build mathematical ideas. Published by Houghton-Mifflin Harcourt, *Math Expressions* includes unique features such as *Math Talk*, or daily opportunities for the teacher to encourage student discourse; students ask each other questions about their mathematical thinking, challenge each other, summarize the strategies they use, and much more through the *Math Talk* experience. Each grade level, kindergarten through grade six has its own textbook in this series. Each textbook is divided into units. There are six units in the kindergarten textbook and then anywhere from ten to fourteen units in each of the additional texts. The lessons provided in each unit contain background information, detailed instructions for teachers, and support for when students need additional support in their learning. The program also contains information about the content that teachers can send home to parents at the beginning of each unit.

### ***Math Expressions Professional Development for Teachers Involved with this Study***

When the School Board approved the adoption of the *Math Expressions* series in this school district, they also adopted a five-year professional development plan. This professional development plan included for all elementary teachers who would be responsible for implementing this program, regardless of the years of teaching experience acquired. All teachers

participated in three full days of training when they were pulled out of the classroom and brought into the district office and trained on evidence based practices for math instruction and how to use the new program effectively. In addition, all elementary teachers participated in six, ninety-minute collaboration sessions, facilitated by a learning coach to provide an opportunity to share strategies with colleagues and reflect on immediate needs or concerns with teaching the program. Staff completed evaluations after each collaboration session and provided information about their individual professional development needs. The curriculum coordinators used the common themes among the many needs that emerged from the evaluations to design the three district-wide professional development days according to those needs. During the current school year, the second year of implementation, staff participated in three half-day professional development sessions where they focused on utilizing the components of the Math Expressions program that were proving to be more challenging for staff. In addition to the three half-days, teachers also had six ninety-minute collaboration sessions; ‘more time to collaborate with colleagues’ was by far the most popular request among staff according to their evaluations.

### **Statement of the Purpose**

After all of the time, energy, and money devoted to curriculum review, textbook adoption and ongoing professional development, the district owes it to itself to determine how comfortable staff are with the newly adopted curriculum, how likely they are to change the curriculum or deviate from it completely, and the reasons why they change the curriculum. The purpose of this study is to identify the concerns teachers have with the recently adopted math program and to identify the adaptations teachers make to the program during instruction and to understand why teachers make those adaptations. The math program adopted by the school district was selected in part because of the evidence provided by the publisher of its effectiveness. However, this

effectiveness is only guaranteed if the program is used ‘with fidelity’ meaning that the program is followed as written. The program designers are typically highly-regarded math professors and researchers, elementary ‘master’ teachers, and curriculum experts. The designers have methodically organized the content so that concepts are presented to students in a specific order using lesson plans that contain evidence-based instructional strategies. The publishers warn against letting teachers deviate from the strategies, sequence of content, and instructional practices presented in their program; they warn that the effectiveness of the program is at risk when teachers adapt the program too greatly. Despite these warnings, district curriculum administrators have plenty of anecdotal evidence that teachers regularly deviate from the designed curriculum. Specifically, this study seeks to answer the following questions:

1. What concerns do teachers have about the program, its components, or district expectations for implementation?
2. How do a teacher’s concerns about the program affect the adaptations they make to the program?
3. How do teacher’s perspectives, intuition, and understanding of their student’s needs affect their instructional decisions, specifically decisions that mark an adaptation from the curriculum?

To answer the first question, the *Stages of Concern Questionnaire* was administered to all K-5 staff in the school district. The *Stages of Concern Questionnaire* is a tool associated with the *Concerns-Based Adoption Model* (George, 2006) and provided information about the concerns and the varying intensity of those concerns among teachers implementing the *Math Expressions* program. Once levels of concern were identified for each participant who returned a survey, some staff were asked to participate in a follow up interview. Teachers selected for interviews

were asked questions about their use of *Math Expressions*. They were asked to describe the program's strengths and then to explain what concerns they have with the program. Finally, teachers were asked to elaborate on any adaptations they are making with the program and to explain their rationale for these adaptations. These interviews were analyzed to determine if patterns emerge within the groups of teachers interviewed.

This dissertation is organized as follows. First, I will review relevant literature. Then, in Chapter 3, I will describe the research methods used. Results are presented in Chapter 4 and the study concludes with a discussion of findings and their implications in Chapter 5.

## CHAPTER 2: LITERATURE REVIEW

*“The real work of learning happens in the classroom, in the interaction between teacher and student. This interaction is affected by innumerable large and small decisions made by principals, school boards, superintendents, state legislatures, education department officials, and the federal government. These decisions and their implementation can either aid or hinder quality education in the classroom”*

*-Committee for Economic Development 1994*

This literature review will begin with an explanation of what curriculum is and what it means to today’s educators. This review will provide the reader with an understanding of where curriculum comes from and the factors that influence its development including a description of how the curriculum specialists, teachers, and students impact curriculum. A summary of research describing why teachers resist external curriculum influences is provided as well. While literature about curriculum development including methods for development, who is involved in the curriculum review and textbook selection process, and why teachers resist change is available, it is more difficult to find research that explains why teachers chose to adapt their curriculum from day to day.

### **Curriculum Defined**

The Oxford English Dictionary’s (2012) definition of curriculum is as follows, “specifically a regular course of study or training as at a school or university.” Historically, educators have focused on aspects of this definition to guide their work and roles as curriculum designers. Tyler (Tyler, 1957) and Schwab (Schwab J., 1978) can be credited with early views of the teacher as a curriculum developer. Tyler claimed that an effective teacher can create a

meaningful learning experience for students when provided with learning objectives and that the work of creating the learning experience ought to belong to the teacher since they know their students the best (Tyler, 1957). Later, Schwab provided additional rationale to support Tyler's views saying that the teacher and the means by which they deliver the curriculum become part of the curriculum (Hlebowitsh, 2005).

Curriculum has also been defined as a specific set of materials that order content used to support pre-K through grade 12 classroom instruction (Clements, 2007). The written curriculum, or the content and delivery expectations of a school or school district, is often dictated by the state department of education. School districts choose which textbook or resource they want teachers to use to teach this written curriculum usually with the help of a curriculum committee or other expertise. After a textbook adoption, teachers are usually "trained on the program."

Teachers base their instructional decisions on their experience, values, and perceptions of the curriculum (Zahorik, 1977). Fenwick English describes the connection between the written, taught, and tested curriculum (English, 1980). He talks about the disconnect that occurs when the written, taught, and tested curriculum are not aligned. Although 44 states had some form of test-based accountability in place prior to the No Child Left Behind Act (2002), all states now have mandated state assessments in grades three through eight and then again in high school. Schools are being held more accountable for the written curriculum provided to school districts by each state's department of education. There is no longer room for any disconnect between the taught and the tested curriculum. On a positive note, there is evidence that increased accountability systems have led to larger gains in our nation's schools (Hanushek, 2009).

No Child Left Behind (NCLB) has certainly increased the urgency in having a clearly articulated curriculum. Each state not only has its own set of content standards for teach content

area and required assessments for students in grades three through eight, but it also has proficiency levels and high expectations for reaching proficiency. According to NCLB, by the 2014 school year, all students must obtain a score of ‘proficient’ or higher on the state assessment. The urgency for teachers is in their need to prepare students for these assessments by teaching the required content. Unfortunately, the days of teacher directed, teacher developed curriculum are no longer. While teachers have little flexibility with regard to the content that they must teach, they do, of course, have flexibility when selecting their instructional practices.

Despite our best efforts to thoroughly develop curriculum and train teachers on its implementation, there is often a noted disconnect between the written or adopted curriculum and that which is actually taught (Hlebowitsh, 2005). The intended curriculum has long been influenced by external factors including the urbanization, industrialization, the cold war, legislation, corporate powers, publishers, foundations, and professional organizations. Internal factors include teachers, students, administrators, curriculum specialists, and superintendents (Cuban, 1992). The taught curriculum has been influenced by external factors such as universal goals of schooling (mastering basic skills, problem solving skills, etc.), accrediting agencies, and textbooks. Internal factors include students, teachers, principals, school and classroom structures, and the historical curriculum. The taught curriculum has been influenced by these factors throughout the last century (Cuban, 1992).

### **The Curriculum Specialist and Curriculum Development**

In larger districts, the work of designing curriculum is left to curriculum specialists. Curriculum specialists have a variety of educational backgrounds and expertise and are influenced politically and professionally. Undoubtedly, curriculum specialists have been influenced by more recent events such as the No Child Left Behind legislation; schools across

the nation have drastically changed their practices since the implementation of NCLB in preparation for mandated state assessments. When considering the dated theoretical knowledge (Bolstad, 2004) on curriculum development and the reality of how high-stakes assessments have affected today's curriculum planning practices, it is difficult to imagine a clear picture of what's actually happening in today's classrooms. Many districts across the nation have been successful in narrowing the achievement gap, continue to make AYP, and boast the ability to meet all learner's needs. This study will examine the adaptations that today's teachers make to their curriculum and their rationale for doing so.

According to Philip Jackson's work, *Conceptions of Curriculum and Curriculum Specialists*, before curriculum specialists were used, curriculum selection was based on past practice, consensus, or recommendation from school or district administrators (Jackson, 1992). Sometimes the content within a curriculum has simply been in place so long that no one questions why it is used, it simply always has been used (Benjamin, 1939). There are also topics such as the reading, writing, and arithmetic that everyone agrees should be included in the curriculum because the information is "good for others to know." Lastly, school or district administrators might sit down to determine the curriculum based on textbooks, local opinion, and sometimes a consultation with a professional organization for the content area (Jackson, 1992).

Scholars in the area of curriculum development and leadership including Bobbitt, Schwab, and Tyler have provided today's curriculum designers with theories and methodologies, based on psychology of learning, student development and the conditions in which teaching and learning occur, to reference as they engage in curricular work (Hlebowitsh, 2005). Many of these methodologies include utilizing instructional staff in some capacity throughout the curriculum review process. While most school districts have adopted various ways of including teachers in

curriculum review, few have examined the positive or negative effects that teachers might experience as a result of their participation or how teacher's instructional decisions might be influenced as a result of the curriculum work experience (Connelly & Clandinin, 1988).

According to Hlebowitsh (2005), Joseph Schwab not only believed that teachers should be involved in curriculum development, he went so far as to identify the ideal types of experiences that teachers should bring to the group (Hlebowitsh, 2005). Hlebowitsh recommended five types of perspectives be involved in the process in order to provide a well-rounded diagnoses of the most appropriate type of curriculum to meet the needs of all students. These included perspectives from learners, teachers, the content area, social experience, and a curriculum specialist to facilitate the process and ensure equal participation from all parties mentioned (Schwab J. , 1978). Schwab suggested that curriculum leaders need not spend so much time focusing on the theory and should instead center around the practical nature of curriculum and examine useful implications throughout the process.

Different processes related to curriculum development have yielded various results. The work of curriculum teams and especially the resulting synopsis of the project in the form of a case study have been used to help guide the development of curriculum projects (Schwab J., 1978). Other forms of action research tend to be beneficial for the participants of the project but not as beneficial for the recipients of the resulting case study. According to Philip Jackson (1992), it is not always clear what readers are supposed to gain from reading a case study documenting another group's curriculum efforts.

### **The School's Influence on Curriculum and Instruction**

There are two distinct traditions of school reform: site based management and centralized control (Connelly & Clandinin, 1988). Systems that employ site-based management tend to view

the teacher as the autonomous professional who is capable of identifying their curriculum and accompanying instructional strategies with little interruption from the district office or especially a curriculum specialist. A system that maintains a centralized control of curriculum and instructional expectations is sometimes described as a top down organization; these districts utilize curriculum specialists to write, facilitate, and maintain curriculum initiatives within a school district (Ainley, 2000). Positive effects of centralized curriculum control have been documented and include increasing emphasis on quality when selecting principals, increased budgetary accountability, more resources such as data analysis tools and management tools for schools to build capacity of decision making, and common instructional expectations perceived by teachers and school community (Ainley, 2000).

School-based Curriculum Development (SBCD) has been defined as “a process in which some or all of the members of a school community plan, implement and/or evaluate an aspect or aspects of the curriculum offering of the school. This may involve adapting an existing curriculum, adopting it unchanged or creating a new curriculum (Bezzina, 1991:40).” In schools where the teachers felt support from the district, principals, and other teachers, a curriculum initiative is more likely to be implemented (Datnow 2000). In districts where the principal was involved in the initiative at a higher level such as a state or national committee, the likelihood of implementation increased (Datnow 2000).

Some research has shown that teachers who are confident in their teaching ability and teachers that are open-minded are more likely to make changes to curriculum (Bowins 2011). In addition, if a teacher decides to adapt their curriculum it is most likely because they were influenced by a colleague to do so (Nias 2005). Assuming this is true, one would have to wonder why a teacher felt compelled to seek consultation from a colleague regarding the curriculum.

How did the colleague influence the change to curriculum? What other factors influenced change?

Unfortunately, the bulk of the research in this area is becoming dated and does not reflect recent reform efforts and legislative efforts that affect today's school systems. This study will investigate the concerns, challenges, and influences that affect today's teachers. We will learn from this research how a teacher's decision to change their curriculum is influenced.

### **Student Influence on Curriculum Development**

*“The students have always influenced my curriculum, I just ask them what they want to be when they grow up and tilt the content in that direction.”*

*-Science Teacher from the School District Participating in this Study*

While the day to day adaptations teachers made might be based on the teacher's feeling of student's needs, curriculum adoption and corresponding textbook selection procedures do not often involve students. Research suggests that students can, but most often do not play a role in curricular change. Historically, the voice of the student in the curriculum development process has been minimal (Macdonald, 1999). The absence of the student perspective has not been a concern, it just has not raised enough concern to warrant any empirical research in this area; curriculum leaders and instructional staff have been content in keeping the student voice a passive one when it comes to curriculum review. While this was true in the late nineties, one has to wonder, in an age when student performance on high-stakes tests is so important, if there has not been a trend toward increased student involvement.

No Child Left Behind has required schools to focus on the needs of students who fall below the state-determined proficiency levels. As curriculum leaders work to design or review

curriculum, we cannot overlook the unique needs and challenges that face our students such as English Language Acquisition, poverty, learning disabilities, and social/emotional needs (Hanushek, 2009).

The National Middle School Association posted a position paper on its website titled, *How Might Middle School Students Be Involved in Classroom Curriculum Planning* (2010)? The paper asserts that while teachers are ultimately responsible for students' learning, youth can and should be involved in classroom curriculum planning (NMSA, 2010). Several suggestions for ways that teachers can involve students in smaller scale planning (for example, unit planning) are mentioned. Unfortunately, all of the resources provided within the article date from the early to mid- nineties and do not account for the kinds of opportunities for involvement teachers or even curriculum leaders are actually providing for today's students.

### **Teacher Influence on Curriculum Development**

The literature on teacher involvement in curriculum development generally focuses on several key elements including school systems management, and the experiences that the teacher brings to the curriculum development process, and a teacher's capacity to change.

In his book, Curriculum Development, Laurie Brady (1992) contends that teachers need to know about the system and school context in which curriculum planning operates before they can be a participate in the process. Furthermore, certain elements of school management work to provide an environment conducive to participative curriculum development (Brady, 1992). He contends that teachers do not need to be scholars of the disciplines in which they write curricula however, they need to be mindful that they are making "philosophical, psychological and sociological assumptions" (Brady, 1992, p. 65), based subjectively on their own experiences. Curriculum leaders who elicit the help from teachers should then be conscious of the types of

assumptions that teachers bring to the curriculum process and address any gaps or misunderstandings in this area before the collaborative curriculum work begins. In other words, teachers and curriculum leaders should all be ‘on the same page’ when it comes to an understanding of curriculum development. How does this understanding come to pass? How do curriculum leaders protect the subjectivity that teachers bring to the curriculum development process while also removing inconsistencies in understanding and structuring the process around research-based practices?

Case studies from the mid-nineties document the experiences of teachers when School-based Curriculum Development began to increase in popularity. One study notes that if teachers who developed the curriculum were those who taught it, they would not only know their curriculum very well, but would also have stronger relationships with their colleagues by the time they’ve completed the curriculum work (McCutcheon, 1990).

### **Teacher Influence on Daily Classroom Instruction**

In their paper, *Narrative Understandings of Teacher Knowledge* (Connelly & Clandinin, 2000) Connelly and Clandinin speak of a teacher’s knowledge as an evolving landscape based on personal practical knowledge, classroom experiences, and student interactions,

We think of teacher knowledge in narrative terms, describing it in terms of narrative life constructions. We do not see teacher knowledge as something fixed and static to be replaced by something else, but as something lifelike, something storied, something that flows forward in ever changing shapes. Teachers and students do not, in our view, come together as bearers of mature and immature knowledge, the immature to be replaced by the mature. Rather, we see everyone,

teachers and students, living out stories in which they figure as characters. What we or anyone else knows--what student and teacher may be said to know--are expressions of those stories. To understand what happens when teacher and student meet in teaching-learning situations, it is necessary to understand their stories. (2000, p. 316)

While this study will not explore each teacher's individual story in depth, the interview process will explore a deeper understanding of teacher's concerns and how those concerns may influence the types of adaptations teachers make.

Teacher's *Decision Making Space*, as described by David Smith and Terence Lovat is determined by several frames of influence: the systems frame, the school/institution frame; the faculty frame; the learners' frame; and the teacher self-frame (Smith & Lovat, 1990). Decisions in the systems frame include the decisions that teachers feel that they have no control over. The school or institution frame of includes consists of the restrictions that teachers perceive to have been placed on them by the school such as environmental restraints, access to resources, or division of students. The faculty frame of influence includes the decisions that teachers perceive to have been made by faculty chairs such as curriculum and planning decisions. The learner frame of influence includes the expectations that the teachers have of their students, and the teacher's self-frame relates to the teachers professional self-concept (Smith, 1990).

A teacher's set of principles, standards, understandings, and assumptions influence their *Personal Teaching Theory*, a term described by Asher Shkedi (1998). The best way to learn about someone's *Personal Teaching Theory*, also known as their *Curriculum Story* (Tann, 1993) is to let them explain it to you. The ideas, knowledge, experiences, and perspectives an experienced teacher has will far surpass that of a novice teacher (Shkedi, 1998) and since

teachers continue to develop based on their existing constructs, the personal teaching theory is limited to the individual experiences of each teacher. Involvement in a curriculum committee will increase the understanding and confidence that a teacher has in their content because it increases their experience with the program and probably answers some of the questions or addresses some of the concerns they may have been storing. Most teachers, however, do not participate on curriculum committees and thus may have questions or concerns about the curriculum that go unaddressed. In many school districts, little is done to determine what kinds of questions or concerns teachers have about their curriculum. It is likely that teachers are adapting the program because of the questions, concerns, or misunderstandings they have about the curriculum. This study will identify the types of concerns teachers have about the curriculum and explain how those concerns might influence the types of adaptations teachers make.

In a study conducted in 1987, researchers E. Wayne Ross, Jeffrey Cornett, and Gail McCutcheon investigated teacher personal theorizing, or how teachers decide what to teach and the basis for those decisions (Ross, Cornett, & McCutcheon, 1992). They interviewed three social studies teachers who were identified as competent in instruction and student management by their building administrator. The researchers also observed the teachers actually teaching their social studies lessons. One goal of the study was to determine if textbook resources recently provided to teachers to encourage effective inquiry-based instructional strategies specifically for use in social studies were actually being used or if they were not being used, then why? Nationally, at that time, the consensus was that these new materials were a failure as most teachers opted not to use them. Research that influenced this study had previously concluded that teachers are at the root of curriculum change and that teacher's reflection and personal inclination was significant in shaping the day-to-day classroom experiences (Ross, Cornett, &

McCutcheon, 1992). They found that practical concerns such as classroom management and availability of instructional materials influenced teacher planning. Teachers might use the textbook resources as suggestions for instruction, but then base their actual teaching on what they believe will work in their classroom is based on unique factors such as classroom dynamics and preparation time (Ross, 1992).

Research specific to how teachers decide what to teach in math indicates that teachers have individual belief systems related to the content and base instructional decisions on these beliefs (Handal, 2003). In many cases, these beliefs are directly linked to traditional learning experiences that teachers had. In other words, they teach the way that they were taught. Handal cited that previous scholars in this area identified several sub-systems that also influence teaching. These include a teacher's beliefs about: a) what mathematics is, b) how math teaching and learning actually occurs and c) how math teaching and learning should occur ideally (Handal, 2003). The author continues to note that teachers' thoughts on personal efficacy, computers, calculators, assessment, group work, perceptions of school culture, particular instructional strategies, textbooks, and students' characteristics are influential as well (Handal, 2003). To summarize much of the literature in this area, Handal states that the job of teaching requires the teacher to rapidly make decisions usually in the isolation of their classroom, and in widely varied situations. Most teachers rely on intuition and practical experiences to make decision and determine what works and what does not work in the process (Handal, 2003).

In a study that examined curriculum adaptation behaviors among experienced physical education teachers, many factors were found to influence curriculum change among these teachers (Bowins 2011). Factors that appeared to affect the adaptation process include confidence in one's ability to teach the subject matter, experience (which contributes to one's

confidence), one's personality and willingness to be-open minded, opportunities for planning to prepare for impending change, beliefs in the curriculum and its efficacy, and opportunities to research materials (Bowins 2011). Teachers who felt that support from colleagues, opportunities to collaborate, support from building administration and district administration, professional development, and support from the community also supported their implementation of the new curriculum (Bowins 2011).

### **Teacher Resistance to External Curriculum Influences**

The Federal Programs Supporting Educational Change, a federally funded study conducted by the Rand Corporation evaluated the effectiveness of federally funded instructional programs by determining what conditions and strategies tend to promote change in schools and which do not (Berman & McLaughlin, 1974). The study found that secondary school teachers were less likely than elementary school teachers to change. In addition, the longer a teacher has been in the classroom, the more negatively they will perceive the change. The greater the teacher's efficacy, the more positively they will perceive the change (Berman & McLaughlin, 1974). Teachers who believed that there were significant amounts of behavioral change expected from them were less likely to accept change (Berman & McLaughlin, 1974). In their report Berman and McLaughlin present the concept, "dynamic conservatism" as the tendency of the system to fall back into the way things were, reverting back to pre-existing behaviors as result of teacher's resistance to change (1974, pg. 8).

Too often, teachers become the recipients of a packaged curriculum and without the opportunity to participate in the curriculum development process, have difficulty "owning" the material and consequently struggle with implementation (Schubert, 1986). In their study that examined School-based Curriculum Development across four countries, Marsh, Day, and

Hannay found that teacher motivation to participate in curriculum work is often driven by two main themes: current level of job satisfaction and educational innovations. Teachers who are not satisfied with some aspect of their job are more likely to engage in curriculum development for its empowering effect (Marsh, Day, & Hannay, 1990). Furthermore, educational innovations are exciting to those whose nature entice them to continuously seek a challenge, learn, and grow.

Curriculum supervisors in mid-sized school districts are typically responsible for designing the curriculum and instruction programs for each of the core content areas: Language Arts, math, science, and social studies. They supervise or otherwise facilitate textbook selection, assessment development, and professional development for staff. When teachers are presented with curriculum guides developed by an outsider, such as a curriculum writer who does not directly interact with the teacher, the teacher might adhere to it only as far as they can relate to the guide and make sense of it (Shkedi, 1998). If something does not make sense to us, it is our human nature to self-accommodate.

Prior to No Child Left Behind, curriculum work was often initiated by building or district leaders as a means by which teachers could further develop their instructional skills. When teachers had an opportunity to engage in professional dialogue in the context of their required curriculum, school leaders found these opportunities for school improvement and especially individual teacher growth invaluable (Marsh, Day, & Hannay, 1990). Since No Child Left Behind however, school districts have been required to administer academic measures (assessments) to gauge student progress. Rather than the building administrator selecting curriculum work based on their own rationale, administrators now have assessment data to guide school improvement initiatives. More and more administrators are using state assessment data and corresponding state-mandated performance criteria to measure progress from year to year

and to establish areas in need of improvement. Districts have hired curriculum specialists to use assessment data to design tightly aligned curriculum and corresponding user-friendly guides for teachers. Unfortunately, studies have shown that teachers do not use these guides as often as hoped they would (Shkedi, 1998). Teachers have admitted that student materials and textbooks guide the curriculum much of the time, not a curriculum guide. When asked, teachers can likely distinguish between what their district wants them to teach and what they are actually teaching (Shkedi, 1998).

Some experts believe fidelity to curriculum or lack thereof, correlates to the degree of ownership teachers have in the curriculum development process (Schwab, 1978). In addition, experts have criticized how little teachers are involved in the curriculum development process. Curriculum work must have a practical purpose in the eyes of teachers; it is not necessary to dismiss curriculum theory, but curriculum work should remain practical in nature because there is always so much work to be done and so little time to do it (Hlebowitsh, 2005).

In his article, *Teachers' Resistance to the Use of School-based Interventions* (1986), author Joseph Witt found that teachers were not likely to use an intervention just because previous research claimed "it worked"; several other factors contributed to their personal decision to implement a resource including: effectiveness, time and resources required, theoretical approach of the intervention, and ecological intrusiveness<sup>1</sup> (Witt, 1986). Some literature suggests that change can hurt emotionally and that's why teachers are reluctant change (Fullan, 1991). In the early nineties, educational literature about teacher's resistance to change was plentiful. Teachers did not feel that policy makers, administrators, and professional

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<sup>1</sup> Ecological intrusiveness is the degree to which the intervention deviated from the natural or regular strategies used during instruction; the preference is that interventions deviate with minimal intrusiveness.

development specialists, who were removed from the classroom, were in the best positions to mandate curriculum requirements (Richardson, 1998).

### Measuring Teacher Concerns Related to Curriculum

The *Concerns-Based Adoption Model* (CBAM) is a framework that describes, explains, and predicts how staff may behave throughout the change process. The model describes how people considering and experiencing change evolve in the kinds of questions they ask (Stages of Concern) and in their use of whatever the change is (Hord, 1987). By using a tool such as the CBAM, we can better understand teachers' concerns and design staff development that addresses those concerns by meeting teachers where they are in the change process.

Concerns evolve through the stages as an individual's needs are met. Generally, the concerns staff will have at the early stages of change are more self-oriented: what is this new

Figure 1 Stages of Concern Identified in the *Concerns-based Adoption Model* (Schaafsma & Athanasou, 1980)

Stage of concern	Definition
0 Awareness	Little concern about or involvement with the innovation is indicated
1 Informational	A general awareness of the innovation and interest in learning more about it is indicated
2 Personal	Individual is uncertain about the demands of the innovation, his/her inadequacy to meet those demands, and role with the innovation
3 Management	Attention is focused on the processes and tasks of using the innovation and the best use of information and resources
4 Consequence	Attention focuses on impact of the innovation on students in the immediate sphere of influence
5 Collaboration	The focus is on co-ordination and co-operation with others regarding the use of the innovation
6 Refocusing	The focus is on exploration of more universal benefits from the innovation, including the possibility of major changes or replacement with more powerful alternatives

program and how will it affect me? When these questions are answered, staff will develop questions based on technical aspects of the change: where do I begin? How do I organize my time? Finally, after self and task concerns are addressed, staff will start to focus on the impact of the program: is the program working? Is there a program that might work even better (Loucks-

Horsley, 1996)? Figure 1, Stages of Concern Identified in the *Concerns-Based Adoption Model*, lists each stage of concern and a definition of what an individual might be feeling in that stage. In the *Awareness Stage*, an individual may have little concern about the innovation. The *Informational Stage* is characterized by an individual having some awareness of the innovation and some interest in learning more. In the *Personal Stage*, individuals are concerned about their role with the innovation, what the demands might be and how much work will be needed to understand their part. Stage 3, the *Management Stage* is characterized by the individuals focus on the processes involved with using the innovation; they are interested in the tasks, information, and resources involved. In Stage 4, the *Consequence Stage*, the individual is concerned about the impact the innovation has on the students. Stage 5, the *Collaboration Stage*, is characterized by an interest among individuals in collaborating or working with colleagues regarding the use of the innovation. Finally, *Refocusing* in Stage 6, the attention is given to exploring alternative innovations that might do an even better job of meeting students' needs than the current innovation does. It is important to remember that individuals can have concerns of less or greater intensity in all of the stages (George, 2006).

Perhaps the teachers in the district that is the subject of this study are not implementing the program as it was intended because they still have many concerns related to the program and how it affects them that have not been addressed. When people question or resist change, it is not necessarily because they are choosing to be defiant or truly resistant to change. It could be that they need time and support to understand and incorporate the changes that are being asked of them.

Michael Fullan's work in the area of educational change (1991) has offered some insight on teacher implementation of curriculum. According to Fullan, there are three major areas that

affect implementation: characteristics of change, local characteristics, and external factors (Fullan, 1991). When deciding whether to commit to the change or to reject it, the stakeholder will consider the issues that affect implementation listed. *Characteristics of change* include: need for the change, goals, complexity of the change, and quality of the program. *Local factors* include the teacher, the school, and the board of education. *External factors* are the government or other agencies (Fullan, 1991).

For the purpose of this study, we will assume that the curriculum in place is supposed to be institutionalized, that is, administrators have made the decision that the curriculum and its implementation, is required. With this assumption we assume that the curriculum is embedded in the structure of the school through policy (school or district mandates), budget, and time allowances. We will also assume that teachers and administrators are supposed to be committed to the curriculum and there are procedures established to provide assistance to staff when needed.

### **Literature Review Summary**

Curriculum is typically known as the content and learning objectives designed to guide educators in the learning process. Teachers might refer to the curriculum they are provided as they teach, but it is likely that what and how a teacher instructs will be influenced by more than just a written curriculum. The teachers own experiences, professional development, collaboration with colleagues, leadership in the school, participation in a curriculum committee, students, and the day to day situations that emerge also influence how the teacher plans for and conducts instruction. The *Concerns-Based Adoption Model (CBAM)* and the *Stages of Concern Questionnaire* can be used to identify the types of concerns individuals have about an innovation. The CBAM has been used by educators to identify the types of concerns that

teachers have about an innovation and plan for appropriate staff development to address those concerns.

## CHAPTER 3: RESEARCH METHODS

### Introduction

In this section, I will outline the methods that used to answer the questions guiding this study:

1. What concerns do teachers have about the program, its components, or district expectations for implementation?
2. How do a teacher's concerns about the program affect the adaptations they make to the program?
3. How do teacher's perspectives, intuition, and understanding of their student's needs affect their instructional decisions, specifically decisions that mark an adaptation from the curriculum?

I will answer question 1 using *The Stages of Concern Questionnaire*, a tool developed by Frances Fuller as part of his *Concerns-based Adoption Model* (CBAM). The CBAM model identifies seven stages of concern about an innovation. They are called stages because there can be developmental movement within the stage and the type of concern that someone has may develop into a different type of concern as time passes.

Questions 2 and 3 will be answered through the interview process. The questionnaire provides information about each participant's stage of concern and I selected participants to be interviewed based on each teacher's stage of concerns. The interview questions inquired as to whether the teacher adapted the curriculum and what those adaptations look like. The questions also explored the teacher's rationale for making those adaptations. In the sections below I describe the population that selected to participate in this study, the *Concerns-Based Adoption Model* and the *Stages of Concern Questionnaire*. Next, I describe how I used the *Stages of*

*Concern Questionnaire* results to select participants for interviews and explain the rich information collected through the interview process.

### Population and Sample

This study was conducted in a mid-western school district in Kansas. There are fourteen elementary schools (K-5), four middle schools (6-8), two high schools (9-12) and an adult learning center in this school district. Table 1 illustrates the population of this school district.

Table 1

*Basic Demographic Information for Mid-western School District Involved with this Study*

<b>Student Demographic</b>	<b>N</b>	<b>Percentage</b>
<b>Gender</b>		
Female	5,338	48.3%
Male	5,713	51.7%
<b>Grade</b>		
Kindergarten	912	8.3%
First	827	7.5%
Second	876	7.9%
Third	904	8.2%
Fourth	851	7.7%
Fifth	917	8.3%
Sixth	837	7.6%
Seventh	895	8.1%
Eighth	855	7.7%
Ninth	717	6.5%
Tenth	769	7.0%
Eleventh	739	6.7%
Twelfth	723	6.5%
<b>Free/Reduced</b>		
No	6,928	62.7%
Reduced	830	7.5%
Free	3,293	29.8%
<b>Students Receiving English Language Services</b>		
Yes	705	6.4%
No	10,346	93.6%
<b>Students Receiving Special Education Services</b>		
Yes	1,929	17.5%
No	9,122	82.5%
<b>District Performance on the State Math Assessment in 2011</b>		
Exemplary	1,725	15.6%

Exceeds Standard	1,485	13.4%
Meets Standard	1,256	11.4%
Approaches Standard	450	4.1%
Academic Warning	204	1.8%
No Test Score	5,935	53.7%

Table 2 provides a demographic breakdown of the 14 elementary schools within the school district involved in this study and includes the percent of students at each school who are receiving Special Education services and/or English Language services. This table also shows the percent of students who receive free or reduced lunches which should help to illustrate the socio-economic make-up of each school. In addition, the chart also shows the percent of students in grades 3<sup>rd</sup> through 5<sup>th</sup> who were proficient on the state math assessment in 2011.

Table 2

*Basic Demographic Information for Elementary Buildings Involved with this Study*

	<b>Percent of Students who Receive Free/reduced Lunch</b>	<b>Percent of Students who Receive Special Education Services</b>	<b>Percent of Students who Receive English Language Services</b>	<b>Percent of Students who Scored Proficient (or higher on the Kansas Math Assessment in 2011)</b>
Building A	26%	10.8%	.2%	89.4%
Building B	45.8%	11.8%	0	91.3%
Building C	72.8%	17.4%	.5%	80.7%
Building D	15.8%	10.3%	.7%	91%
Building E	65.1%	14.3%	0	95%
Building F	59.2%	12%	55.8%	86.6%
Building G	42.6%	20.3%	0	98.1%
Building H	48.2%	.8%	.8%	86.9%
Building I	60.3%	11.9%	17.9%	93.8%
Building J	10.9%	8.5%	1.7%	98.6%
Building K	59.2%	25.8%	3.4%	77.3%
Building L	49%	13.2%	23.9%	97.5%
Building M	54.3%	15.8%	0	100%
Building N	37.5%	11.5%	11.8%	97.3%

All kindergarten through fifth grade teachers employed by this school district, (212 total staff) were presented with the *Stages of Concern Questionnaire*. Fifty-five teachers returned their

survey; at least one survey came back from a teacher assigned to each of the 14 elementary schools. Teachers were asked to respond to several demographic questions in the survey as well. The demographic information was useful when selecting teachers for follow up interviews. Table 3 provides information about the fifty-five teachers who returned the surveys.

Table 3

*Demographic Information of Teacher Participants*

<b>Teacher Demographic</b>	<b>N</b>	<b>Percentage</b>
<b>Years of Teaching Experience</b>		
0-3 Years	4	7.2%
4-5 Years	4	7.2%
6-10 Years	9	16.3%
11-20 Years	13	23.6%
21-30 Years	17	30.9%
30+ Years	8	14.5%
<b>Years Teaching <i>Math Expressions</i> at Current Grade Level</b>		
1 Year	8	14.5%
2 Years	35	63.6%
3 Years	12	21.8%
<b>Self-Perceived Level of Expertise</b>		
Novice	6	10.9%
Intermediate	21	38.18%
Skilled	26	47.3%
Expert	2	3.6%
<b>Self-Perceived Level of Fidelity</b>		
0-1	0	0%
2	0	0%
3	1	1.8%
4	0	0%
5	1	1.8%
6	0	0%
7	3	5.4%
8	13	24%
9	20	36.4%
10 – Full	17	30.9%

The majority of teachers who returned completed surveys had more than 11 years of experience and 25 participants among the group had more than 21 years of experience. Fewer

novice and early-career teachers returned surveys. Participants were asked to indicate how many years they have been using the program at their grade level. The majority of teachers have been using the program at their grade level for two years; twelve teachers are in their third year<sup>2</sup> of using the program, thirty-five teachers are in their second year, and eight teachers are in their first year with the program. When teachers were asked to rate their level of fidelity to the program, how closely they perceive themselves to be teaching the program as it was meant to be taught per district and programmatic expectations, roughly ninety-one percent of the respondents felt they were implementing the program at level eight or higher.

Participants were also asked to identify their level of skill at teaching the math program. They were to consider how effectively and accurately they were teaching the math program as it was intended and identify themselves with one of four levels: novice 1-3, intermediate 4-5, skilled 6-8, or expert 9-10 according to their perceived with regard to their ability to teach the math program. Most of the participants felt that they were intermediate or skilled at teaching the program.

Historically, this school district has used a Site-Based Management (SBM) model for school governance. Although district support staff and district administrators managed programs and provided professional development, most professional development opportunities at the district level were optional and secondary to initiatives established in each building. With SBM, the building principal worked with their Building Leadership Teams to assess the unique needs in their building and planned for building-wide initiatives and corresponding opportunities for training accordingly. In recent years, the district has moved away from SBM and the effects of district-wide initiatives to improve student learning have been implemented. Nonetheless, the

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<sup>2</sup> Only teachers that participated in the field test during the 2008-2009 school year could be in their third year of using the program.

effects of the specialized training provided to staff during the SBM days can still be observed through the instructional practices at each building. For example, many schools participated in the Reading First Grant and staff gained substantial literacy training. Some schools studied Rick Dufour and how to implement Professional Learning Communities successfully. Other buildings studied SIOP (Sheltered Instruction, Observation Protocol) to better meet the needs of their students who are were learning English as a second language. Some schools embraced the work of Ken O'Connor and Charlotte Danielson and implemented Standards-based Grading in their schools while others did not.

### **Concerns-Based Adoption Model (CBAM)**

In the 1960's and 1970's, innovations were the focus of educational change. "Best-practice" was presented in terms of a program or textbook, developed by an external source, for adoption and implementation by schools. The schools need only to adopt the innovative program and all of their needs would be met (George, 2006). Overtime, implementation of these resources did not yield their promised outcomes. Instead, there began an interest in the study of the adoption process and the process of change. Francis Fuller (1969) and others at the Research and Development Center for Teacher Education at the University of Texas began investigating how individuals reacted when they were asked to change their behaviors and practices or adopt an innovation; their work resulted in the *Concerns-based Adoption Model* (Hall, Wallace, & Dossett, 1973).

### ***Development of the Stages of Concern Questionnaire***

The original development of the *Stages of Concern Questionnaire* lasted three years with designers exploring several formats and approaches for questioning before the final configuration of the instrument was recommended (George, 2006). The original *Concerns-*

*Based Adoption Model* (Hall, Wallace, & Dossett, 1973) contained definitions and scale points which could serve as guidelines for the design of the questionnaire. Initially, 544 statements describing concerns were created and then sorted into eight groups, each corresponding to one of the seven stages of concern leaving the eighth pile reserved for unacceptable statements. From this exercise it was determined that 400 of the statements were directly related to one of the seven stages of concern; these statements had to be sorted into the same group by at least six of the ten total judges who conducted the sorting. After many revisions and edits to account for redundancy, a pilot instrument was established using the 195 statements remaining (George, 2006). In innagural studies, the pilot instrument was used to examine the use of teaming among a group of teachers and the use of instructional modules by a group of college faculty. Subscales were identified after 363 questionnaires were returned. Statistical analysis concluded that “seven factors explained more than 60% of the common variance among the 195 items and that the hypothesized scales corresponded to the factor scales” (George, 2006, p. 12). To further investigate validity, the developers interviewed several people who had completed the pilot questionnaire to evaluate their concerns about the innovation in question. These results were correlated with the participants scores based on the pilot questionnaire. Later, the tool was reduced to thirty-five items including five statements for each of the seven stages. Over a two year span, the instrument was used in eleven innovation studies and validity tests were conducted. After the questionnaire was administered in each study, participants were later interviewed to determine how their responses compared to the questionnaire results (George, 2006). Validity tests were designed to examine how scores on the seven stages of concern scales relate to one another and to other variables as the literature on concerns theory would suggest. Intercorrelation matrices, interview data correlations, and the subsequent confirmation of

predicted group differences and changes over time contributed to the validity of the instrument (George, 2006).

The *Stages of Concern Questionnaire* was finally published in 1979 by Gene E. Hall, Archie A. George, and William L. Rutherford in a manual titled, *Measuring Stages of Concern: A Manual for use of the SoC (Stages of Concern) Questionnaire*. The *Stages of Concern Questionnaire* used in this study can be found in *Measuring Implementation in Schools, The Stages of Concern Questionnaire*, written by Archie A. George, Gene E. Hall, and Suzanne M. Stiegelbauer. Both of these manuals are available through the Southwest Educational Development Laboratory (SEDL).

#### ***Use of the Concerns-based Adoption Model (CBAM) and the Stages of Concern Questionnaire***

During the 1980's and 1990's, school improvement initiatives were focused around organizational change. The Concerns-based Adoption Model (CBAM) served as a mechanism to monitor the change process as districts pursued school improvement initiatives such as restructuring, site-based management, increased accountability and finally No Child Left Behind. The CBAM and its tools have proven to be as valid today as they were when they were developed 40 years ago. As the CBAM increased in popularity, cadres of users have emerged widely. The CBAM and its *Stages of Concern Questionnaire* have been used as a tool for researchers to understand the change process and the results have been used by schools and organizations to develop and focus professional development.

Yuliang and Huang (2005) used the *Stages of Concern Questionnaire* to study the concerns of teachers and their involvement with technology integration. The study found that inexperienced teachers had Personal and Informational concerns, more experienced teachers had

concerns about consequences the change would have with students, and renewing teachers had concerns about collaborating and refocusing. The cohort's most intense concerns were Personal and Informational (Yuliang & Huang, 2005).

Rakes and Casey (2002) also used the *Stages of Concern Questionnaire* to examine teacher use of instructional technology among teachers across the United States. They found that teachers, regardless of years of experience and number of years with a computer in their classroom, collectively showed more intense concerns with regard to Informational, Personal and Collaboration (Rakes & Casey, 2002). The researchers interpreted this data to indicate teachers were still in their early stages of understanding the innovation, in this case, the integration of technology in their classrooms.

CBAM tools have been used to study technology integration at the university level (Krueger, Boboc, Smaldino, Cornish, & Callahan, 2004). Sometimes, researchers have found it effective to use several of the CBAM tools collectively to monitor the level of use and types of concerns individuals have regarding an innovation and to monitor the effects of specially designed professional development (James & Lamb, 2000; Atkins & Vasu, 2000).

### **Procedures**

The *Stages of Concern Questionnaire* was used to answer my first research question, what concerns do teachers have about the program, its components, or district expectations for implementation? After obtaining approval from both the University of Kansas Human Subjects Committee and from the school district to conduct this study, the *Stages of Concern Questionnaire* was sent to all 216 K-5 elementary teachers employed by the school district participating in this study; 55 teachers completed the questionnaires and mailed them back. Each

participant's completed survey yielded seven scores, one for each stage of concern. The highest score among the seven is called the peak score (George, 2006).

I then selected five teachers with Peak Levels at the lower stages (Stage 0, Stage 1), five teachers with Peak Levels in the middle stages (Stage 2, Stage 3 or Stage 4), and five teachers with Peak Levels at the higher stages (Stage 5 or Stage 6) to request a follow-up interview. Teachers remained in these subgroups for analysis. Theoretically, teachers with similar Peak Levels would have similar concerns about an innovation. Interviews were then conducted to get at the types of concerns teachers had, the types of adaptations they are making to the program, and their rationale for making these adaptations.

The interview process allowed me to answer questions two and three. During the interviews, participants shared their perceived strengths of the program, perceived concerns, the types of adaptations they are currently making and why they felt they needed to make those adaptations.

In the sections below I will describe specifically how the *Stages of Concern Questionnaire* was administered, interpreted, and used to form teacher subgroups. Next, I will describe how the interviews were conducted and finally, how the data was analyzed for each subgroup.

### ***Stages of Concern Questionnaire Administration***

The *Stages of Concern Questionnaire* contains 35 statements each of which reflects a possible concern about an innovation. A cover page is generally provided with the questionnaire and should contain the purpose of the questionnaire, some example items, and directions for how to complete the questionnaire. The cover page also directs the respondent toward the specific initiative that should be considered when responding to statements.

Participants were asked to read each item and then respond in terms of their present concerns or how they feel about an innovation in this case, *Math Expressions*. Each item has a scale ranging from 0-7 which participants refer to and then determine how true the statement is for them now. This statement is very true of me at this time = 7, this statement is somewhat true of me now = 4, this statement is not at all true of me at this time = 1, and this statement seems irrelevant to me = 0. Items in each of the seven areas of concern are characteristic of concerns which are typically found within that area; there are five statements for each area of concern.

The final part of the survey, the demographic page, can be modified according to the information needed during the research. It typically takes 10-15 minutes to complete the questionnaire.

### *Assigning Stages of Concern to Participants*

The *Concerns-based Adoption Model* is based on the idea that people have concerns including feelings, thoughts, and perceptions about an innovation. Different stages of concern (see Table 4) have been identified and research has shown that there is developmental movement through these stages (Fuller, 1969). People may have different types of concerns and some of these may be more or less intense than others.

Table 4

#### *Stage of Concern and Related Expressions of Concern at Each Stage*

<b>Stage of Concern</b>	<b>Name of Stage</b>	<b>Expression of Concern</b>
6	Refocusing	I have some ideas about something that would work even better.
5	Collaboration	How can I relate what I am doing to what others are doing?
4	Consequence	How is my use affecting learners? How can I refine it to have more impact?
3	Management	I seem to be spending all my time getting materials ready.
2	Personal	How will using it affect me?
1	Informational	I would like to know more about it.
0	Awareness	I am not concerned about it.

Table 5 shows the statements included in the *Stages of Concern Questionnaire* organized by stage of concern.

Table 5

*Stages of Concern Questionnaire Items Related to Each Stage*

<b>Item Number</b>	<b>Stages of Concern Questionnaire Items</b>
<b>Stage 0</b>	
Item 3	I don't even know what the innovation is.
Item 12	I am not concerned about this innovation.
Item 21	I am completely occupied with other things.
Item 23	Although I don't know about this innovation, I am concerned about things in the area.
Item 30	At this time, I am not interested in learning about this innovation.
<b>Stage 1</b>	
Item 6	I have a very limited knowledge about the innovation.
Item 14	I would like to discuss the possibility of using the innovation.
Item 15	I would like to know what resources are available if we decide to adopt this innovation.
Item 26	I would like to know what the use of the innovation will require in the immediate future.
Item 35	I would like to know how this innovation is better than what we have now.
<b>Stage 2</b>	
Item 7	I would like to know the effect of reorganization on my professional status.
Item 13	I would like to know who will make the decisions in the new system.
Item 17	I would like to know how my teaching or administration is supposed to change.
Item 28	I would like to have more information on time and energy commitments required by this innovation.
Item 33	I would like to know how my role will change when I am using the innovation.
<b>Stage 3</b>	
Item 4	I am concerned about not having enough time to organize myself each day.
Item 8	I am concerned about conflict between my interests and my responsibilities.
Item 16	I am concerned about my inability to manage all the innovation requires.
Item 25	I am concerned about time spent working with non-academic problems related to this innovation.
Item 34	Coordination of tasks and people is taking too much of my time.
<b>Stage 4</b>	
Item 1	I am concerned about students' attitudes toward this innovation.
Item 11	I am concerned about how the innovation affects students.
Item 19	I am concerned about evaluating my impact on students.
Item 24	I would like to excite my students about their part in this approach.
Item 32	I would like to use feedback from students to change the program.
<b>Stage 5</b>	
Item 5	I would like to help other faculty in their use of the innovation.
Item 10	I would like to develop working relationships with both our faculty and outside faculty using this innovation.
Item 18	I would like to familiarize other departments or persons with the progress of this new

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	approach.
Item 27	I would like to coordinate my effort with others to maximize the innovation's effects.
Item 29	I would like to know what other faculty are doing in this area.
<b>Stage 6</b>	
Item 2	I now know of some other approaches that might work better.
Item 9	I am concerned about revising my own use of the innovation.
Item 20	I would like to revise the innovation's instructional approach.
Item 22	I would like to modify our use of the innovation based on the experiences of our students.
Item 31	I would like to determine how to supplement, enhance, or replace the innovation.

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Based on the participant's responses, they are given a raw score in each of the seven areas of concern. The raw score is simply the sum of the responses to the five statements in that scale and there are seven scales (one for each stage of concern). Each participant receives seven raw scale scores. For example, if an individual's responses to items within a stage were 6, 6, 7, 5, 4, the raw score for that scale is 28. The *Stages of Concern Questionnaire Manual* (George, 2006) provides a percentile conversion chart (2006, pg. 29) where the researcher can locate 28 on the chart<sup>3</sup> and then view the corresponding percentile score.

To determine the percentile score for the entire cohort, the sum of all the responses to a question is calculated. For example, the sum of Q3 was 110 (see Table 6). The sum of all the responses for Stage 0 (Q3+Q12+Q21+Q23+Q30) was 699. The sum 699 was then divided by the total number of questionnaires, fifty-five with the resulting average of thirteen. This value is called the raw score; Stage 0 had raw cohort score of 13. The raw score is then converted to a percentile, using the Percentile Conversion Table provided in manual (2006, pg. 29). From the Conversion Chart, it is evident that a raw score of thirteen is in the 75% percentile. According to

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<sup>3</sup> The percentiles provided are based on the questionnaire data collected by 830 people who completed the 35-item survey in the fall of 1974. These individuals were carefully selected having a wide range of experience and from different levels in education (elementary schools, high schools, and higher-education). The percentiles represent the percent of the total frequency scored below a measure.

Hall, George, and Rutherford, “The higher the percentile score, the more intense the concerns at that stage, the lower the score, the less intense the concerns are at that stage,” (Hall, George, & Rutherford, 1979, p. 31).

Table 6

*Stages of Concern Cohort Data with Raw Scores*

Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
Q3: 110	Q6: 103	Q7: 120	Q4: 235	Q1: 172	Q5: 158	Q2: 195
Q12: 175	Q14: 113	Q13: 227	Q8: 117	Q11: 238	Q10: 178	Q9: 129
Q21: 153	Q15: 174	Q17: 181	Q16: 169	Q19: 242	Q18: 172	Q20: 173
Q23: 135	Q25: 212	Q28: 180	Q25: 161	Q24: 306	Q27: 265	Q22: 246
Q30: 126	Q35: 147	Q33: 165	Q34: 175	Q32: 217	Q29: 248	Q31: 224
Sum: 699	Sum: 749	Sum: 873	Sum: 857	Sum: 1175	Sum: 1021	Sum: 967
Average: 13	Average: 14	Average: 16	Average: 16	Average: 21	Average: 19	Average: 18

### Analysis

The *Profile Interpretation Method* described by George (2006) was used to analyze quantitative results from this study. The CBAM literature claims that concerns develop and are intense at Stages 0, 1, and 2, evolve to being more intense at Stages 3 and 4, and finally are the most intense at Stages 4, 5, and 6 (Fuller, 1969). The *Profile Interpretation Method* provides the most insight into all the types of concerns that are the most and least intense and a sense of how those concerns may affect the way a person approaches the innovation.

### *Quantitative Methods*

According to the *Stages of Concern Questionnaire* manual, a participant’s behavior toward an innovation will likely reflect their highest of the seven scores assessed on the *Stages of Concern Questionnaire*; the stage with the highest score is termed the individual’s Peak Level. The results chapter of this dissertation includes a quantitative analysis of the entire cohort (N=55) of teachers that completed the survey followed by quantitative analyses of each of the

subgroups I created. The three subgroups were formed based on the results of the *Stages of Concern Questionnaire*; each subgroup contained five teachers with common Peak Scores. Five teachers with Peak Levels at Stage 0 or Stage 1, five teachers with Peak Levels in Stage 2, Stage 3 or Stage 4, and five teachers with Peak Levels in Stage 5 or Stage 6 shaped my three subgroups. Graphs were created to illustrate the concerns profile of the participants in each subgroup.

Through its many years of use, the CBAM developers have identified specific types of concerns associated with each stage. For example, participants with higher concerns in Stage 3 are usually concerned about time, logistics, planning, and basic managerial issues related to the innovation. Participants with higher concerns in Stage 4 are concerned with the impact of the innovation on students. In contrast, lower scores in these areas could suggest that the participant does not have concerns in those areas. Low scores in Stages 0 and 1 indicate the participant is not concerned about obtaining information about the innovation or the effects that the innovation might have on them personally.

*The Guidelines for Profile Interpretation of SoC Questionnaire Data* (George, 2006, pg. 52-54) provided in *The Stages of Concern Questionnaire Manual* (George, 2006) were used to analyze the types of concerns among each subgroup.

### ***Qualitative Methods***

The three subgroups were formed based on the results of the *Stages of Concern Questionnaire* as previously described; each subgroup contained five teachers with common Peak Scores. The five teachers with Peak Levels at the lower stages (Stage 0 or Stage 1), five teachers with Peak Levels in the middle stages (Stage 2, Stage 3 or Stage 4), and five teachers with Peak Levels at the higher stages (Stage 5 or Stage 6) were all contacted for a follow-up

interview. During the interview, participants were asked to explain what they perceive to be the strengths of *Math Expressions* program. Next, participants were asked about their concerns with the program and what adaptations they make to compensate for those concerns. Finally, I asked participants to explain the rationale for these adaptations. The results of these interviews helped me answer my 2<sup>nd</sup> and 3<sup>rd</sup> research questions, how do a teacher's concerns about the program affect the adaptations they make to the program, and how do teachers' perspectives, intuition, and understanding of their student's needs affect their instructional decisions, specifically decisions that mark an adaptation from the curriculum?

### *Qualitative Analysis*

After transcribing each of the participant interviews, I used a coding method to identify the specific strengths, concerns, adaptations, and rationale for adaptations. Next, I created a spreadsheet to organize the strengths, concerns, adaptations, and rationale for each subgroup. The responses amongst each subgroup were then analyzed for similarities and differences. The adaptations were analyzed even further to determine the significance of the adaptation; a significant adaptation is one that actually removes a key learning experience from the lesson that could affect the capability of the student to meet the learning objective.

## CHAPTER 4: RESULTS

The research questions that guided this study were:

1. What concerns do teachers have about the program, its components, or district expectations for implementation?
2. How do a teacher's concerns about the program affect the adaptations they make to the program?
3. How do teacher's perspectives, intuition, and understanding of their student's needs affect their instructional decisions, specifically decisions that mark an adaptation from the curriculum?

In this section, I will present the percentile scores and other demographic information for all fifty-five participants (cohort) who returned surveys using *The Profile Interpretation Method* described by George (2006). I will illustrate the process of selecting a total of fifteen teachers to form three subgroups of five teachers each with common Peak Levels. I will provide a detailed explanation of each subgroup's profile and the types of concerns likely to be associated with those profiles according to the CBAM (2006). Next, I will present the responses to the interview questions asked to each of the fifteen participants. Similarities and differences within each subgroup are presented.

### Stages of Concern Cohort Analysis

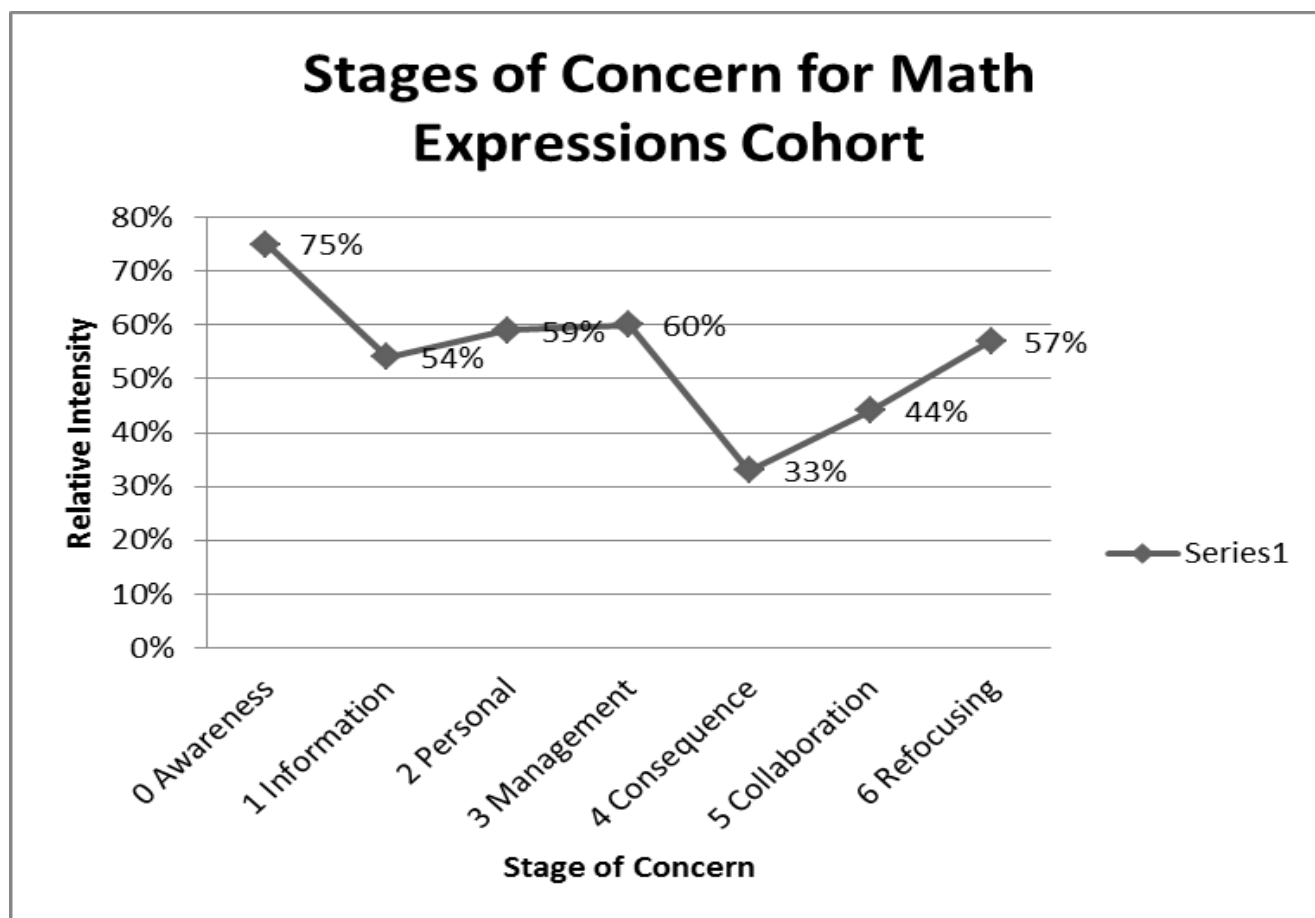
*Stages of Concern Questionnaires* were sent to all 216 K-5 elementary teachers employed by the Midwestern school district participating in this study; 55 teachers completed the questionnaires and mailed them back. Each participant's ID number and scale score for each stage are provided in the appendix. Each participant's completed survey yielded seven scores,

one for each stage of concern. The highest score among the seven is called the peak score (George, 2006).

Figure 1 displays the entire cohort's profile. The profile shows the intensity of concerns teachers have in each stage. Higher percentile scores indicate higher intensities; higher intensities indicate the high potential for concerns or unanswered questions that a teacher may have. A low intensity indicates that teachers may not have questions or immediate concerns that need to be addressed. To interpret the results, I referenced the Guidelines for Interpretation of *Stages of Concern Questionnaire* Data found in the *Stages of Concern Questionnaire Manual* (2006, pg. 52-54).

Figure 1

*Stages of Concern for Math Expressions Cohort Graph*



Each of the fifty-five participant's data included a Peak Level as seen in Table 7. The Peak Level is the stage at which a participant's concerns are the most intense. This chart illustrates the relative intensity of the group's concerns at each of the seven stages.

Table 7

*Stages of Concern, Math Expressions Cohort Peak Levels*

Stage	Name of Stage	N	Percentage
0	Awareness	24	43.6%
1	Information	2	3.6%
2	Personal	6	10.9%
3	Management	9	16.3%
4	Consequence	1	1.8%
5	Collaboration	6	10.9%
6	Refocusing	7	12.7%

The intensity of concerns in Stage 0 is 75%. According to the guidelines for Interpretation of *Stages of Concern Questionnaire* Data found in the *Stages of Concern Questionnaire Manual* (2006, pg. 52-54), this is a relatively high intensity of concern indicating that while teachers have a lot of questions at this time, their questions might be related to other innovations. The intensity of the group's concerns in stage 4 is 33%. This might indicate that teachers are not as concerned about the effects of Math Expressions on students as they are concerned about other aspects of the innovation.

Twenty-four participants had peak scores in Stage 0. This stage is known as the *Awareness Stage*, meaning that the teacher is likely aware that an innovation is being introduced but the teacher is not really interested or concerned with it. Two teachers most intense concerns were in Stage 1, the *Informational Stage* characterized by teachers having an interest in information about the change. Seven teachers had the most intense concerns at Stage 2, the *Personal Stage* when individuals are typically interested in how the innovation will affect them

personally. Eight teachers had peak scores in Stage 3, the *Management Stage*, when teachers generally have concerns about how the change will be managed in practice. One teacher's most intense concerns were at Stage 4, the *Consequence Stage*, having an interest in the impact the innovation has on students or the school. Six teacher's most intense concerns were at Stage 5, the *Collaboration Stage*, characterized by teachers interested in working with colleagues to make the change effective. Seven teachers most intense concerns were at Stage 6, the *Refocusing Stage*, when teachers will begin refining the innovation to improve student learning results.

Developers of the CBAM and the *Stages of Concern Questionnaire* provide some guidance when interpreting higher and lower scores at each of the stages (George, 2006). These interpretations (George, 2006, pg. 52-54) can be used by researchers to make assumptions about the individuals or the group as a whole based on where they had high or low scores.

Stages 1, 2, 3, and 6 had similar levels of relative intensity indicating that teachers are equally concerned about obtaining information about the program, how the program would affect them personally and how they would manage the program. The intensity of concerns at Stage 5, the *Collaboration Stage*, was lower than the first four stages meaning that participants may not be as concerned about working with colleagues to implement the program. The intensity of Stage 6 was similar to Stages 1 through 3 indicating that participants might be interested in refining the innovation and finding ways to make it better.

### ***Summary of Cohort Scores***

The teachers who responded to the *Stages of Concern Questionnaire* have concerns in the various stages, meaning that teachers have questions or needs that need to be addressed related to their awareness, the amount of information they have, the personal effects the innovation has, the management of the innovation, consequences of the innovation for students, collaboration with

colleagues on the implementation of the innovation, and evaluating implementation on the innovation. As a group, the intensity of concerns in the *Awareness Stage* is the highest meaning that teachers have concerns, but this particular innovation is not their main concern. Teachers in this cohort have intense concerns regarding acquiring information about the innovation, about how the innovation affects them personally, and how they will manage the innovation. So while teachers' primary concerns, as indicated by the peak score in Stage 0, are possibly related to another innovation, they do have significant concerns about this innovation as well. In the following sections, I will describe how characteristics of the teachers in my study.

### **Stages of Concern Subgroups**

The results of the *Stages of Concern Questionnaire* yielded seven composite scores, one for each Stage of Concern. Whichever stage has the highest score reflected the participant's behavior toward the innovation the closest; the stage with the highest score is referred to as the individual's *Peak* stage. Based on the results of the *Stages of Concern Questionnaire*, three subgroups of teachers were formed. Each subgroup contained five teachers with common Peak Scores. Five teachers that Peaked in the lower stages, Stage 0 or Stage 1, were placed in Subgroup 1, five teachers that Peaked in the middle stages, Stage 2, Stage 3 or Stage 4, were placed in Subgroup 2, and five teachers that Peaked in the higher stages, Stage 5 or Stage 6, were placed in Subgroup 3. I attempted to select teachers that represented a diverse demographic with regard to years of teaching experience when selecting the five teachers in each subgroup. Some demographic information including the years of teaching experience and the self-perception of how skilled the teacher's feel they are at implementing Math Expressions are organized by subgroup in Table 9.

Table 9

*Subgroup Demographic Information*

<b>Participant ID Number</b>	<b>Peak Stage</b>	<b>Years of Teaching Experience</b>	<b>Self-perception of Skill in Implementing the Program</b>
<b>Subgroup 1</b>			
10091	0	1-3	Novice (1-3)
10086	0	6-10	Intermediate (4-5)
10175	0	21-30	Intermediate (4-5)
10151	0	6-10	Skilled (6-8)
10191	0	30+	Skilled (6-8)
<b>Subgroup 2</b>			
10090	2	21-30	Skilled (6-8)
10245	2	11-20	Intermediate (4-5)
10248	2	11-20	Skilled (6-8)
10198	3	4-5	Skilled (6-8)
10260	3	30+	Skilled (6-8)
<b>Subgroup 3</b>			
10187	5	21-30	Skilled (6-8)
10106	5	21-30	Expert (9-10)
10112	5	21-30	Intermediate (4-5)
10085	6	21-30	Intermediate (4-5)
10196	6	30+	Skilled (6-8)

While all teachers had a peak score, or a highest score among all seven stages, the *Stages of Concern* data provides a snapshot of the concerns teachers have in each of the other stages and their intensities. It is helpful to look at an individual's entire profile to view the relative intensity of their concerns within each of the Stages. The next section provides a summary of each of the subgroup's profiles.

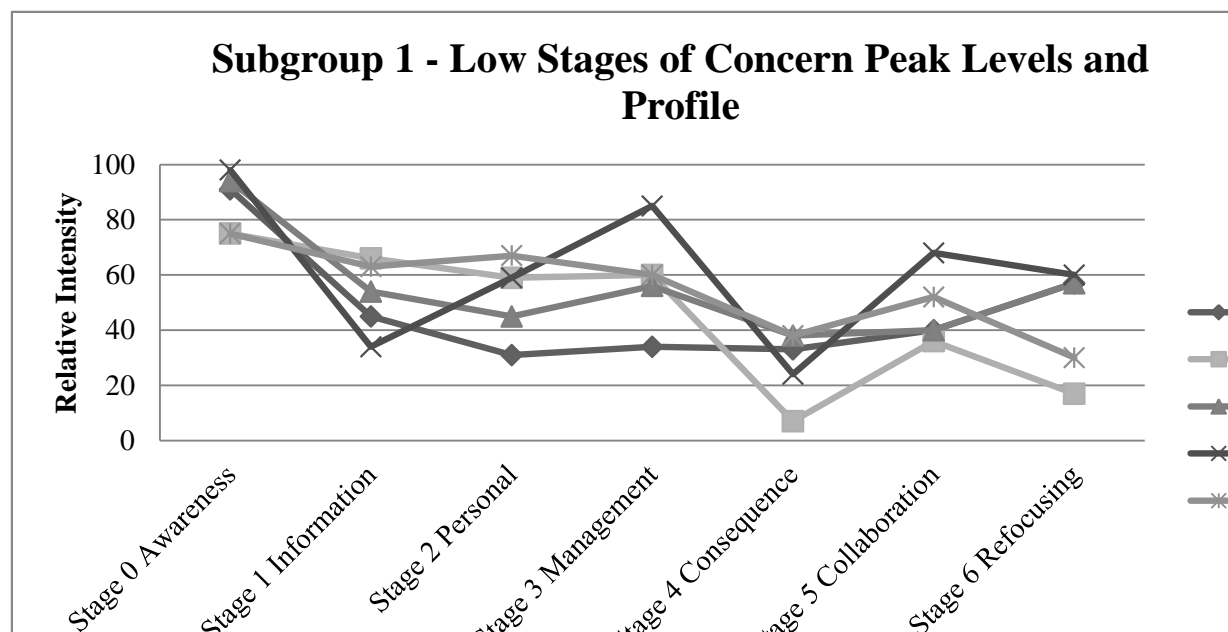
***Subgroup 1 Stages of Concern Profile***

Five teachers with Peak Levels at Stage 0 or Stage 1 were selected to be in Subgroup 1. Figure 2 illustrates the Stages of Concerns Profile for Subgroup 1. According to the *Guidelines for Profile Interpretation of SoC Questionnaire Data found in the Manual* (2006, pg. 52-54), some interpretations can be generated when looking at this graph. It is likely that other things or

innovations are of greater concern than the innovation under consideration. Some participants have relatively intense concerns in Stage 3 and Stage 5, meaning that they might have concerns related to managing resources and collaborating with colleagues.

Figure 2

*Subgroup 1 Profile*



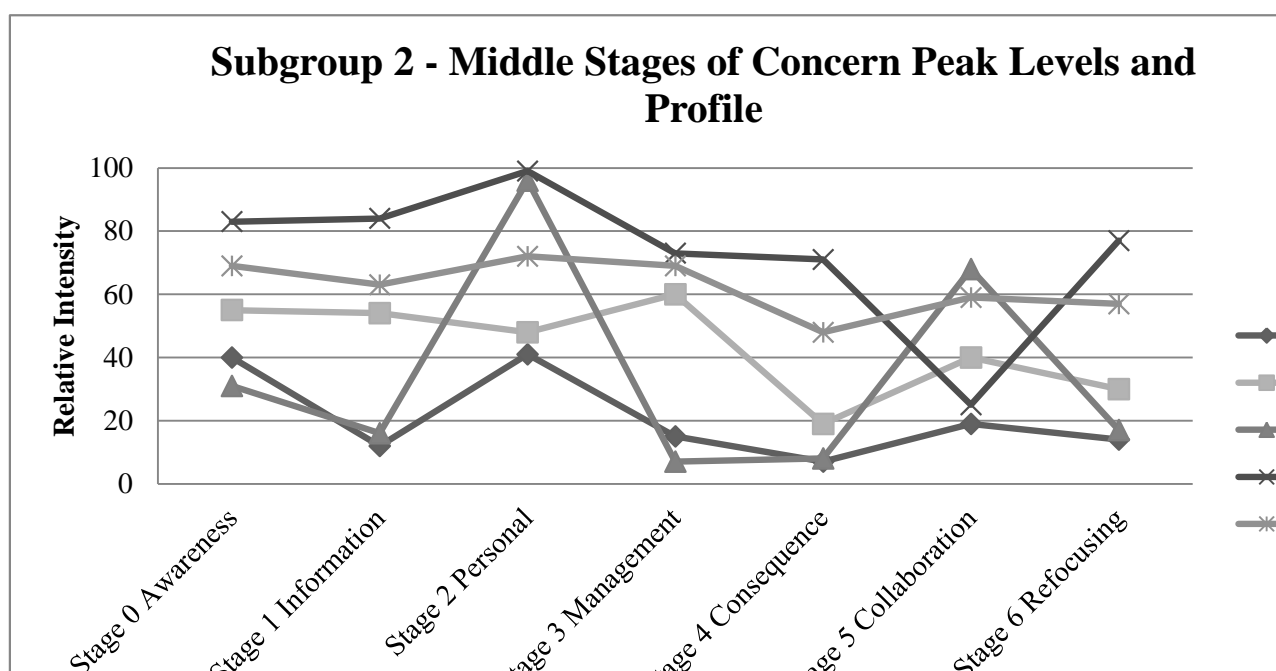
***Subgroup 2 Stages of Concerns Profile***

Five teachers with Peak Levels at Stage 2, Stage 3, or Stage 4 were selected to be in Subgroup 2. Figure 3 illustrates the Stages of Concerns Profile for Subgroup 2. According to the *Guidelines for Profile Interpretation of SoC Questionnaire Data* found in the Manual (2006, pg. 52-54), several interpretations can be generated when looking at this graph. It is likely that participants have intense personal concerns about the innovation and its consequences for them. Although these concerns may reflect some uneasiness about the innovation, they do not necessarily indicate that participants are resistant to the innovation. More specifically,

participants that have low Stage 1 and high Stage 2 concerns may be negative toward an innovation and not necessarily open to information about it.

Figure 3

*Subgroup 2 Profile*



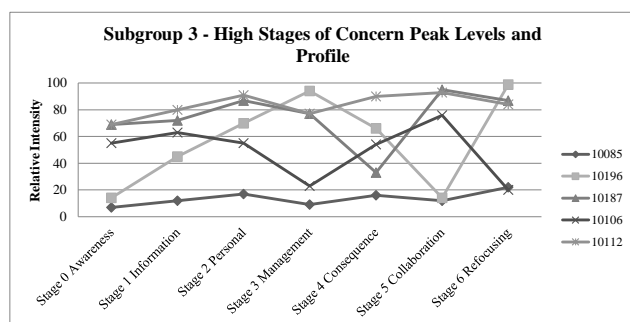
***Subgroup 3 Stages of Concerns Profile***

Five teachers with Peak Levels at Stage 5 or Stage 6 were selected to be in Subgroup 3. Figure 4 illustrates the Stages of Concerns Profile for Subgroup 3. According to the *Guidelines for Profile Interpretation of SoC Questionnaire Data* found in the Manual (2006, pg. 52-54), several interpretations can be generated when looking at this graph. Participants with a high Stage 5 may have concerns about working with others in relation to using the innovation. A person who scores high on Stage 5 is likely to be an administrator. A high Stage 6 could indicate a person who has become frustrated because management concerns have not been resolved and as a result has developed strongly held ideas about how the situation should be changed.

Generally, a high Stage 6 score indicates that the person has ideas about how to change an innovation or situation from their point of view.

Figure 4

### *Subgroup 3 Profile*



### **Interviews with Teachers in the Three Subgroups**

Interviews were conducted to determine how a teacher's concerns about the program affect how they implement the program. Responses to the interviews tell the story of how teacher's perspectives, intuition, and understanding of their student's needs affect their instructional decision, specifically decision that mark and adaptation of the program. In this section, I will describe similarities among the responses of those teachers who peaked in Stages 0 or 1, Stages 2, 3, or 4, and Stages 5 or 6 respectively. I will describe the commonalities found in each subgroup's perceived strengths, concerns, and adaptations as communicated during the interview process. I then provide some details about the demographic of each subgroup, review the characteristics according to CBAM for individuals in these Stages, and summarize the

perceived strengths and concerns for each particular subgroup. Next, I explain the adaptations provided by teachers in this subgroup and then connect the concerns characterized by each subgroup to the group's corresponding adaptations. Finally, I include an analysis of the variety of adaptations provided and address whether the adaptations mark a significant deviation from the lesson.

### ***Subgroup 1 Results***

#### ***Review of Subgroup 1 Profile***

Teachers in this stage had from one year to thirty-plus years of teaching experience. These teachers classify themselves as Novice, Intermediate, and Skilled with regard to teaching Math Expressions. These teachers liked that the program is sequential, there are plenty of materials available, the flow of the program, and how the program cycles review. Teachers in this group were concerned about the amount of material to get in this year and the amount of paper work with grading.

According to the *Guidelines for Profile Interpretation of SoC Questionnaire Data* found in the Manual (2006, pg. 52-54), some interpretations generated when looking at this the profiles of these teachers who peaked in Stage 0 or Stage 1 included the likelihood that other things or innovations are of greater concern than the innovation under consideration. Some participants have relatively intense concerns in Stage 3 and Stage 5, meaning that they might have concerns related to managing resources and collaborating with colleagues.

#### ***Subgroup 1 Perceived Strengths of the Program***

Teachers who had the most intense concerns in Stage 0 or Stage 1 felt that Math Expressions was very straight-forward. They appreciated that the lessons were well laid out and easy to use. A first year teacher in this group noted that she appreciated that the lessons were

“pretty scripted which is helpful for a first year teacher.” As another teacher reflected, “[The program] is very clear about providing [the students] with a foundation and then continuing to build.” Similarly, a third remarked, “it starts with a foundational viewpoint and then builds throughout the unit, leading to mastery.” Teachers in this subgroup felt that the cyclic review or Daily Practice Problem component was particularly beneficial for students and remarked on how this portion of the lesson has become a daily routine and starting point from which they “dive-in to math.”

### ***Subgroup 1 Perceived Concerns of the Program***

A commonly shared concern for these teachers was the lack of time especially time to extend or differentiate using the resources provided. They recognized that the resources are there including suggestions for differentiation and extensions for students and recognized the added value they bring to the program, but yet reflected on how “there’s just not enough time to get it all in.” These teachers also shared significant concerns about the content that they needed to cover in preparation for the state assessments. When they are prioritizing content, rearranging chapters and lessons, it is in the interest of teaching the topics that will be assessed. These teachers noted in particular that there is not enough in the program on the concepts of time and money. These concepts are available in the program, but the units are “too short.”

### ***Subgroup 1 Adaptations***

Most teachers in this group are supplementing the program with their own resources or resources they have received from colleagues to make up for what they perceive the program is lacking. A first year teacher remarked, that at her grade level they were supplementing with:

A program that was used in the past that we’ve kind of taken bits and pieces that are a little bit easier and align a little bit better with state

assessment items that are coming up that either Math Expressions covers too late or doesn't really cover them very deeply. I think time was one that we've done a little bit more with than Math Expression actually covers. But it is definitely on the test. So we've done more than that where it comes up on our daily practice. We consciously will take lessons on our own that my collaborating teachers have collected like little worksheets or little lessons that we can do in smaller groups and really make sure that we are covering everything because sometimes Math Expressions doesn't quite get there like we would like it to.

Other adaptations that these teachers make include modifications in how they provide independent practice for the students. Teachers reflected on how many papers they have to shuffle with this program and at times its "a timesaver to have them use whiteboards to practice, because then there's no worksheet to grade." Teachers use whiteboards to monitor progress throughout the lesson and can record on their clipboards or otherwise note who is getting it and who needs more help. Teachers are also making these decision in collaboration with each other; the use of "we decided" and "it doesn't quite get us there like we would like it to" indicate that teachers are working together to make decisions.

### ***Subgroup 1 Connection between Concerns and Adaptations***

The CBAM interpretations (George, 2006, pg. 52-54) were referenced to help me understand the results of the *Stages of Concern Questionnaire*. According to the interpretations teachers in this subgroup would likely be concerned about time and management of materials. The feedback received during interviews confirmed that teachers are adapting the program with

materials that they have found successful in the past or with strategies that they have used to save time. Table 10 illustrates this connection.

Table 10

*Subgroup 1 Concerns and Corresponding Adaptations*

<b>Subgroup 1 Concerns According to the CBAM Interpretations</b>	<b>Subgroup 1 Adaptations</b>
<ul style="list-style-type: none"> <li>• other things or innovations are of greater concern than the innovation under consideration</li> <li>• concerns related to managing resources</li> <li>• concerns about collaborating with colleagues</li> </ul>	<ul style="list-style-type: none"> <li>• using materials that teachers know will yield positive results on the state assessment instead of learning how to better make use of resources in the program</li> <li>• using whiteboards instead of worksheets to reduce the amount of papers to grade</li> <li>• made the decision to adapt with colleagues</li> </ul>

*Subgroup 2 Results*

*Review of Subgroup 2 Profile*

Teachers in this stage had experience ranging from four years to thirty-plus years. These teachers identified themselves mostly as Skilled with Math Expressions (one person in this group was Intermediate). Subgroup 2 included teachers with Peak Levels at Stage 2, Stage 3, or Stage 4. According to the *Guidelines for Profile Interpretation of SoC Questionnaire Data* found in the Manual (2006, pg. 52-54), it is likely that participants with Peak Levels in stages 2, 3, or 4 have intense personal concerns about the innovation and its consequences for them. Although these concerns may reflect some uneasiness about the innovation, they do not necessarily indicate that participants are resistant to the implementation of the innovation. More specifically, participants that have low Stage 1 and high Stage 2 concerns may be negative toward an innovation and not necessarily open to information about it.

### ***Subgroup 2 Perceived Strengths of the Program***

Teachers with more intense concerns in the middle stages felt that a major strength of the program was the practice it provided for computation. One teacher in this group, who is in her first year of teaching the program at her grade level proclaimed,

I think that this program is good for computation. The kids are really good with their basic facts. They are a lot better than they were before, I feel. It's also good when you have a sub, you can give the program to him/her and they can just pick it up. There's homework every night and I think that's good, that will help them in 5<sup>th</sup> grade when they have a lot more math homework. I think for a new teacher, trying to get her bearings, its good because it's quick and easy to just take and teach from.

### ***Subgroup 2 Perceived Concerns of the Program***

A concern shared by all in this subgroup was related to the Daily Practice Problems. One teacher shared, "The review problems should take five minutes and they actually take much longer than that." Another commented, "the Daily Routines are hard to get used to." The Daily Routines are components of the program that are supposed to be continued throughout the year, at the beginning of each lesson to help build fluency with math facts, develop number sense, and provide opportunities for student discourse. The student discourse, referred to in this program as Math Talk, is highly regarded by teachers in this group although many of them admit that they probably aren't doing it correctly. One teacher shared that she, "does not spend a lot of time on math talk because it takes too much time to implement correctly and we need that time for instruction, that time just continues to disappear."

### ***Subgroup 2 Adaptations***

All teachers in this group have adapted the morning routines, including the math talk, to “make it work” for them. The program suggests that a student leader should facilitate the Daily Routines; this student should be proficient enough in the review problems to go to the front of the class, solve the problems quickly, and then using developmentally appropriate mathematical vocabulary, explain their thinking to the rest of the class. The class, during this routine, are to sit at their desks attentively and quiet, watching the leader. During the explanation, the student leader is supposed to engage the other the class; the ‘audience’ is supposed to ask the leader questions about how he solved the problem and vice versa. When teachers were trained on this component, they were assured that students did not develop the ability to engage in mathematical discourse with their peers overnight. The entire *Daily Routine* process was one that was developed throughout the year and required a significant investment in time and energy on the teacher’s part. Unfortunately, as evidenced in these interviews, the teachers are not implementing this component of the program optimally. While they may not be implementing the component correctly, they at least recognize the benefits of student discourse, or “Math Talk”, understand that there is room for improvement in their classrooms, and are wondering how to create an environment that encourages student discourse better.

### ***Subgroup 2 Connection between Concerns and Adaptations***

The CBAM interpretations (George, 2006, pg. 52-54) were referenced to help me understand the results of the *Stages of Concern Questionnaire*. According to the interpretations, teachers in this subgroup might have intense personal concerns about the innovation and its consequences for them. The instrument also asserts that while these concerns may reflect some uneasiness about the innovation, they do not necessarily indicate that participants are resistant to

the innovation. Finally, the instrument claims that participants with a low Stage 1 and high Stage 2 concerns may be negative toward an innovation and not necessarily open to information about it. The teachers in my study found contradict this tendency. Teachers in my study made adaptations in the program to ‘make it [the program] work for them’ (see Table 11). Participants in this subgroup were complementary of the program and remarked on how its components were valuable. The Daily Practice Problems and Math Talk were specifically mentioned described as “great application of mathematical thinking for kids”. Nonetheless, participants acknowledged that they were not implementing all program features as they were intended and had no plans to change their adapted routine in the immediate future; they were pleased with how things were going. Many of the teachers in this subgroup mentioned the lack of time as a primary reason behind their inability to implement all of the components that the lesson offers.

Table 11

*Subgroup 2 Concerns and Corresponding Adaptations*

<b>Subgroup 2 Concerns According to the CBAM Interpretations</b>	<b>Subgroup 2 Adaptations</b>
<ul style="list-style-type: none"> <li>• participants might have intense personal concerns about the innovation and its consequences for them</li> <li>• although these concerns may reflect some uneasiness about the innovation, they do not necessarily indicate that participants are resistant to the innovation</li> <li>• participants that have low Stage 1 and high Stage 2 concerns may be negative toward an innovation and not necessarily open to information about it</li> </ul>	<ul style="list-style-type: none"> <li>• teachers made adaptations to ‘make it [the program] work for them’</li> <li>• teachers see the value in specific components of the program such as Daily Practice Problems and Math Talk, but acknowledge that they are not implementing it as it was intended and are not planning to change their adapted routine in the immediate future</li> </ul>

### ***Subgroup 3 Results***

#### ***Review of Subgroup 3 Profile***

Five teachers with Peak Levels at Stage 5 or Stage 6 were selected to be in Subgroup 3. According to the *Guidelines for Profile Interpretation of SoC Questionnaire Data* found in the Manual (2006, pg. 52-54), participants with a high Stage 5 may have concerns about working with others in relation to using the innovation. The CBAM interpretations (2006, pg. 52-54) suggest that person who scores high on Stage 5 is likely to be an administrator. A high Stage 6 could indicate a person who has become frustrated because management concerns have not been resolved and as a result has developed strongly held ideas about how the situation should be changed. Generally, a high Stage 6 score indicates that the person has ideas about how to change an innovation or situation from their point of view.

#### ***Subgroup 3 Perceived Strengths of the Program***

The five teachers in this subgroup are mostly experienced teachers who have been through extensive training in evidence-based mathematical practices. Teachers in this subgroup recognized the mathematical strengths and evidence-based mathematical practices that are found within the lessons. Teachers valued the suggestions provided in the lessons for modeling a concept, the opportunities for concrete learning followed by an explicit teach, opportunities for guided practice and breaks for independent practice. One teacher from this subgroup shared:

I have been helped by the staff development that has been designed with Math Expressions. It's been very helpful. When we actually walk through different lessons and different skills, we actually practice daily routines.

The Daily Routines are a bear to implement. They take longer than it says.

I can see the value but it's just a challenging thing to do. I know of two

trainings specifically, where we actually practice them as teachers and presented them to each other because they are so specific. Every time you do them you think, oh I missed a step, when you see someone else do it, you think, oh, I forgot to do that. So we actually practiced them and presented them. That was invaluable.

### ***Subgroup 3 Perceived Concerns of the Program***

All five teachers who peaked at stage 5 or 6 are regularly supplementing the *Math Expressions* program to compensate for the concerns they perceived. “Students do not have enough opportunities for real world practice,” “kids aren’t moving enough,” and “there’s not enough vocabulary,” were some concerns. Teachers in this group have experienced significant training on educational strategies in their building and when teachers shared how they are compensating for their concerns, all of them spoke to the building-wide initiatives that they had been a part of.

I think vocabulary is a critical piece of math but I also have ESL students in my building. Teaching the vocabulary and emphasizing the vocabulary and having lots of methods of going over the vocabulary is huge. We even differentiate our tests; they’ve been modified based on our ESL kids. At this level, if they don’t have some of the vocabulary terms, one the state assessments are going to kill us, because they have to know what the words mean.

### ***Subgroup 3 Adaptations***

The adaptations mentioned from teachers in this subgroup took the form of a strategy that was inserted instead of a tangible adaptation, such as a worksheet. Rather than following what

the book says, these teachers pull from practices that they have developed based on their training and successful experiences with children.

In one building, there was extensive training on the constructivist approach to teaching math. The emphasis with constructivist teaching is in providing opportunities for students to construct their own learning through inquiry. One teacher from this building remarked,

I think of how kids learn best, in my experience, is by doing. Everything we've learned about developmental education, in psychology, and I think to plop worksheets in front of kids goes against that. I certainly feel like when I want my kids to be motivated and engaged that, it's critical and to have it make sense. And I am the type of learner that boy, if I have to read it all from a manual, forget it. But if someone shows me and I can practice it in real life, it clicks and in way less time. And my feeling is if we do it right in the first place and have a strong solid base then you have less need for intervention. And if you just cover it and do worksheets and don't teach it well where it connects for kids, using all their senses, then they are going to need interventions. We could save a lot of money, time, effort and headache by letting kids experience, experience, and experience.

Two teachers with intense levels of concern at Stage 5 or 6 are from a building with a high percentage of students who are learning the English language. These teachers felt like they were following the text very closely, but both were supplementing with instructional strategies that have proven to be effective with students of limited English proficiency. One of these teachers had this to share, "First of all, I think vocabulary is a critical piece of math but I also

have ESL students in my building. Teaching the vocabulary and emphasizing the vocabulary and having lots of methods of going over the vocabulary is huge. We even differentiate our tests; they've been modified based on our ESL kids. At this level, if they don't have some of the vocabulary terms, one the state assessments are going to kill us, because they have to know what the words mean." These teachers have been trained in cooperative learning structures and believe its effectiveness:

One of the main adaptations that I make all the time is the use of cooperative learning. Even though [*Math Expressions*] suggests to use groups, there isn't a lot of support in the system for how to use cooperative learning (CL) structures. That is a piece that is missing. It assumes that you know how to do that. But if a teacher doesn't know how to do that, it's not going to happen. I use CL a lot in the classroom with [*Math Expressions*]. Because I've had extensive training in it, and that really helps. Even though teaching Reading/LA is my favorite part of the day when you ask students what their favorite part of the day is, they will say will say math. And I know it's because of how we do it and it's at 9:00 am. It's motivating for them. There's more individual accountability. They help each other, often they listen to each other and talk to each other but they don't hear when I tell them.

Lastly, most the teachers in this group remarked about the involvement of their co-teacher, team or teaching partner. They frequently used "we decided" or "my co-teacher and I decided" when describing the rationale for instructional adaptations.

Collaboration at our school has been given to *Math Expressions*. This year more than last year, that's been good. We've been given time to do our unit walks, talk through units and collaborate with our co-teachers. And co-teaching is an adaptation that has really helped. It's been invaluable. Math Expressions can wear you out as a teacher because you have to plan for daily routines and the lesson and handle homework and handle remembering pages. It really helps to have another grown up in there.

### ***Subgroup 3 Connection between Concerns and Adaptations***

The CBAM interpretations (George, 2006, pg. 52-54) were referenced to help me understand the results of the *Stages of Concern Questionnaire*. According to the interpretations, teachers with concerns in Stage 5 or Stage 6 may have concerns about working with others in relation to using the innovation, participants likely to be an administrator, and participants might become frustrated because management concerns have not been resolved and as a result has developed strongly held ideas about how the situation should be changed. Furthermore, the participants might have ideas about how to change an innovation or situation from their point of view. The findings showed that (see Table 12) participants are inserting strategies on a regular basis that they have found effective or have had extensive training on teachers recognize the evidence-based practices found in the program as beneficial and claim to be implementing these practices because of their known effects on achievement teachers in this subgroup were not administrators, but many were teacher leaders, had provided professional development to peers or served on curriculum committees. They also seemed, as predicted, more concerned about student learning unlike the teachers from other subgroups who were concerned about time or management, for example.

Table 12

*Subgroup 3 Concerns and Corresponding Adaptations*

<b>Subgroup 2 Concerns According to the CBAM Interpretations</b>	<b>Subgroup 3 Adaptations</b>
<ul style="list-style-type: none"> <li>• participants may have concerns about working with others in relation to using the innovation</li> <li>• participants likely to be an administrator</li> <li>• participants might become frustrated because management concerns have not been resolved and as a result has developed strongly held ideas about how the situation should be changed</li> <li>• participants might have ideas about how to change an innovation or situation from their point of view</li> </ul>	<ul style="list-style-type: none"> <li>• participants are inserting strategies on a regular basis that they have found effective or have had extensive training on</li> <li>• teachers recognize the evidence-based practices found in the program as beneficial and claim to be implementing these practices because of their known effects on achievement</li> <li>• teachers in this subgroup were not administrators, but many were teacher leaders, had provided professional development to peers or served on curriculum committees</li> </ul>

## CHAPTER 5: DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

The research questions that guided this study were:

1. What concerns do teachers have about the program, its components, or district expectations for implementation?
2. How do a teacher's concerns about the program affect the adaptations they make to the program?
3. How do teacher's perspectives, intuition, and understanding of their student's needs affect their instructional decisions, specifically decisions that mark an adaptation from the curriculum?

In this section I will first summarize my findings as answers to each question. Then I will describe how my own generalizations and pre-conceived understandings of adaptations as a negative phenomenon have evolved. Next, the concept of adaptations on a continuum is introduced. To expand on this idea, I continue with an analysis of the adaptations collected through this study as they relate to the aforementioned continuum. Suggestions for professional development based on the teacher behaviors examined in this study are provided as well as suggestions for future study.

### **Teacher Concerns about the Program, its Components, or District Expectations for Implementation**

In this study, data about teachers' concerns about Math Expressions came from two sources: the CBAM data and the interviews. In the interviews, teachers frequently commented on the 'amount of paperwork' involved with this innovation, *Math Expressions*. Each lesson has several hand-outs that accompanied it and the extensive time spent grading student work throughout the week was a concern. Teachers shared that some components of the lesson were

challenging to implement for various reasons. In several instances, teachers admitted to either omitting Math Talk or adapting it significantly because they were not confident they were implementing it correctly. Teachers also had concerns about the length of the lesson and having enough time to cover what they felt was essential.

While teachers remained appreciative of the district-provided support documents such as the pacing guide, there were concerns regarding the amount of content that was to be covered prior to the state math assessment. Staff understood the necessity but some were concerned speed at which they were expected to cover the content was insurmountable.

### **How do Teacher Concerns about the Program Affect the Adaptations They Make to the Program**

The CBAM results indicated that teachers would have concerns regarding the effect of the innovation on student learning and regarding the management of materials. The CBAM data were supported by the interviews. During the interviews, many of the teachers shared concerns about the vast amount of paperwork or worksheets involved with the program are using techniques that alleviate the need for extra worksheets. For example, staff will provide each student with a whiteboard and an erasable marker. The teacher will assign practice problems for the students to complete on their whiteboard and monitor progress by observing as the students work. Many teachers actually carry clipboards and record scores or anecdotal notes as they observe students.

Math Talk or the Daily Review were typically omitted from the lesson or adapted in some way when teachers felt they were short on time. Although teachers seemed to understand the value of both Math Talk and Daily Review for students, these components were ‘time intensive’ when time was not available.

In response to their concern about the vast amount of content they need to cover during the school year, teachers have frequently reorganized the sequence of the program to fit their needs. Teachers shared that they appreciated the pacing guide and the district's willingness to provide teachers with a list of priority lessons. Nonetheless, several teachers admitted to modifying the pacing to meet their needs.

### **Teachers Base their Instructional Decisions on their own Perspectives, Intuition, and Understanding of their Student's Needs**

The findings from my study support research surrounding how teachers make instructional decisions. The research indicates that teachers will ultimately decide their curriculum and they will base these decisions on their own perspectives, past experience, and the needs presented by students.

Fortunately, I was able to involve teachers with a span of professional experience in this study. Every participant shared their perceived concerns of the program and how they adapted to meet their student's needs. In general, teachers with less than ten years of experience based their instructional decisions on experience, the advice of more experienced colleagues, or the methods presented by the program. Furthermore, teachers with more than ten years of experience base on their instructional decisions on experiences, research, or professional development.

### **An Evolved Understanding of Adaptations**

I began this study with the idea that adaptations during *Math Expressions* instruction likely resulted in detrimental effects on student learning. I assumed that when teachers made adaptations to the program it was likely because they were uncomfortable with the lesson and strategies therein or did not have buy-in with the program. I jumped to the conclusion that I could 'fix' what I judged to be problematic behavior, teachers deviating from the adopted math

program. Through professional development, in my mind, when teacher's deviated from the program, or didn't implement the program 'with fidelity,' student achievement would be affected adversely. After conducting the study, however, it has become clear that adaptations do not necessarily occur because the teacher needs more professional development or instruction of how to implement the program. On the contrary, adaptations seem to occur on a continuum from minor adjustments teachers make in their daily routines to more significant adaptations that actually mark a potentially detrimental modification to the program. Furthermore, when teachers make these adaptations of varying significance, the rationale they gave seemed to correspond with experience or training.

Professionally, my goals have evolved since completing this study. Obviously novice teachers need training on how to implement the program as it was designed. However, the professional development we provide to teachers should also aim to equip teachers with tools and strategies to access when the need to adapt or adjust instruction presents itself. We can only hope that through professional development, teachers can grow in their ability to predict ahead of time or immediately recognize when a student is struggling and access appropriate alternative teaching methods as needed.

### **Adaptation on a Continuum**

It would be highly unlikely to find a teacher who stood in front of the class and read the Math Expressions 'script' word for word to student. There is an expectation, however that teachers refer to the program materials prior to instruction and adhere to learning objectives and suggested instructional strategies provided. The precise language that teachers use during the lesson is expected to be different from teacher to teacher. The learning objectives, however, remain a constant throughout the district.

In their ‘teaching as design’ framework, Brown & Edelson describe a continuum of curriculum use by teachers (2003). The spectrum included ‘offloads,’ ‘adaptations,’ and ‘improvisations’ (Brown & Edelson, 2003). An offload is when the curriculum is delivered as is; the teacher relies on the instructional decisions provided by the text or program. With improvisation, the teacher makes creative decisions, deviating to an extent from what the text suggests, borrowing strategies from other sources based on experience; the teacher essentially retrofits the lesson to meet the needs of the students. An adaptation is the midpoint in the continuum (Brown & Edelson, 2003).

In their work, Brown and Edelson cautioned that teacher effectiveness should not be a reflection of performance on the continuum (2003). An example would be if a teacher, with little pedagogical or methodological understanding offloaded a strategy and their limited understanding of how students learned prevented them from accommodating students as needed. While an experienced, strong teacher applied the same offloaded strategy, but knew to walk around the room and provide immediate feedback to students.

In her article, “A Continuum of Adaptive Behaviors,” Leonora Cohen speaks of a developmental continuum that spans the creativity of childhood to the creativity found in adults. She claims that the ability to adapt behaviors along this continuum are related to the perceived purpose, novelty, value, speed, and structure of the concept (1989). As we began the process of implementation of Math Expressions, I wonder how well we prepared staff to think in terms of the value provided in program. While many teachers were involved in the textbook adoption process and professional development has been extensive for two years, we have focused less on the research and methodology supporting the design of the program and more on the logistics of

implementation. Perhaps we should evaluate whether teachers understand the value of the program and its design from a more pedagogical perspective.

### **Concerns Data Revisited**

Given that the participants in my study had the most intense concerns, or the most unanswered questions in the Awareness Stage, perhaps they feel as though they may not have the information needed to be fully aware of the innovation and the expectations for implementation. Teachers had concerns of similar intensity at Stages 1, 2, and 3 indicating that they were moderately concerned about getting more information, how the innovation would affect them, and how they would manage the innovation. Teachers concerns at Stage 6, the Refocusing Stage are more intense indicating that they are refocusing and concerned about implementing the program more effectively.

### **A Continuum of Adaptations to *Math Expressions*: Offloading, Adaptation, or Improvisation**

Teacher's adaptations were similar across all subgroups. Many teachers referenced the state learning standards for mathematics, specifically the standards that students would be tested over on the yearly state math assessment. Teachers referenced these standards when deciding what content could be omitted from the program and what content must be taught to mastery. Prioritizing the appropriate content in the resource alone would not be considered an example of offloading, adaptation, or improvisation according to Brown and Edelson (2003). What marks the offload, adaptation or improvisation really takes place during the instruction or as the teacher determines which strategies to use during instruction. Perhaps the tendency of teachers to rearrange the sequence of content is best described as a modification to the pacing.

Teachers have a variety of strategies they use to determine if students are learning or need more assistance, but this seems to vary with experience. Again, in order to classify this occurrence as an adaptation, per the descriptions provided in Brown and Edelson's work (2003), it would have to be assumed that the teacher at least began instruction offloading the provided lesson only to find the need to adapt in some way based on how the students reacted. Teachers are supplementing with strategies not suggested in the book (improvising), usually because the strategies have been successful for the teacher in the past. Improvisation, at least according to my findings, occurs among teachers, but those who improvise, for the most part were basing the decision on years of training, expertise, and/or positive instructional experiences.

#### **“Walk Before You Run”; Offload, Adapt, and Reflect Before Improvisation**

When reflecting on the work of Brown and Edelson, it seems as though my fear of adaptations by teachers is really a fear of ill-informed improvisation. I assumed, inaccurately, that teachers would opt to omit portions of the lesson or skip entire lessons because they felt like their own teacher-generated materials were better. I found, however, that teachers are doing the best they can to implement the program as it was intended. Modifications that teachers shared were typically in response to student needs and included evidence-based practices. Professional development for novice teachers and teachers new to the program should support teachers in their attempts to offload the lesson, encourage teachers to reflect on student performance, and adapt instruction as needed. In addition to professional development centered on the organization and methodology of the program or text, training should focus on how students learn and what good instruction looks like.

### **Addressing the Stage 0 Concerns through Professional Development**

It was interesting that 24 of the 55 teachers who completed the questionnaires had intense concerns at Stage 0. Interpreting the Stage 0 description would indicate that these 24 teachers were not concerned with the innovation or that they'd had intense concerns that other things were more important than this innovation. The information gathered during interviews may suggest that professional development be committed to reviewing the expectations for using the textbook, the features of the text, and reviewing the pacing guide so teachers can see how they will teach all of the assessed standards. These teachers were vocal about what content was missing from the book, and the need they have found to supplement with their own resources. Teachers seem to fear the state assessment and do not trust in the current textbook to “get us there.” Having designed the curriculum documents and pacing guides for this program, I know that the content is all there.

At Stage 0, teachers may not really know what the innovation involves. It is concerning that teachers have needs in this stage that have not been addressed especially when considering that this is the second year of implementation. Given the amount of professional development provided, it could be assumed that all teachers know about and are concerned with this innovation that they are responsible for teaching. It was evident during my interviews that the participants knew that *Math Expressions* was the innovation in question. All participants were able to elaborate on their perceived strengths and concerns of the program which was indicative of their familiarity with the program.

Teachers in the school district indicated that many of the Stage 0 statements (see Table 13) were ‘true of them at this time’. It is reasonable to me that teachers would agree with the last statement, ‘at this time, I am not interested in learning about this innovation,’ because we have

just finished the second full year of professional development designed specifically to support the implementation of *Math Expressions*. It seems possible that teachers may have interpreted the second question, 'I am not concerned about this innovation' to be somewhat threatening and teachers may have been fearful that agreeing with this statement would be like admitting that they are concerned about their ability to teach this program.

It would be interesting to further investigate teacher's concerns in this stage. One suggestion might be to use an evaluation during the professional development sessions that allows teachers to reflect on all of their concerns and what they involve. It would be helpful to know what the teachers are concerned about, maybe another content area or behavior of students, for example, if their concerns are not related to the math program. Also, recent changes in the Language Arts program and new district expectations may be causing increased stress and concern for teachers. As a result, concerns they once had about their math program have now been transferred to the reading program.

In my own experience, implementing a program begins with an outside trainer, typically a representative from the textbook publisher. Teachers are pulled out of their classrooms for a half-day in-service opportunity with the trainer and are presented with an overview of how the textbook is organized, the features it provides, any ancillary materials, supplemental resources available on the textbook's website, and so on. A lot of time is usually dedicated to the Teacher's Manual and reviewing the detailed lesson plans compiled in these colorful, easy to read, guides and organized using evidence-based structures such as the "Before, During, After" lesson plan design for math (Wilburne & Peterson, 2007). One of the many reasons why teachers involved with this study selected Math Expressions was because of the Teacher's manual; they appreciated the layout of the lessons, the lesson plan design, suggested strategies for re-teaching

and extending concepts, suggested strategies for reaching learners with special needs and the general user-friendliness it offered. Many on the textbook adoption committee felt that the teacher's manual provided with *Math Expressions* would be especially helpful for novice teachers or teachers who were new to a grade level because the lessons are almost scripted.

Written instructions are provided for the teacher but in an easy to read format with text-features that help the teacher navigate through the lesson components and illustrate essential questions and concepts. Math Expressions also contains prompts for discussion of mathematical concepts (called Math Talk), addressing misconceptions, and background information for the teacher.

While all of these features are available and were, in fact, an influencing factor in the decision to adopt the program last year, informal observations of instruction in elementary math classrooms throughout the Lawrence School District indicate that many of these popular features suggested in the program are not being used.

It would be rare to see a teacher in any classroom stand in front of the class and read the entire script provided in many of today's lesson plans, and as a curriculum supervisor, I would not expect to see teachers following all of the prompts and suggestions for teaching that many programs readily provide in their ancillary materials. However, I would argue that the lessons provided in the program, complete with objectives and strategies in the lessons make up the integrity of the lesson. My advice to teachers has always been that adaptations from the lesson plan sometimes become necessary, but that in planning for adaptations, teachers should be careful not to take away from the integrity of the lesson. The integrity of the lesson is connected to the written curriculum, the standards, the content that teachers are required to teach at their grade level. In addition to the written curriculum provided to teachers, there is the 'taught'

curriculum (English, 1980), that is, the content that the actually learn about students learn about and the instructional strategies actually used during the delivery of that content.

These teachers concerns about getting the tested indicators cause them to bypass the textbook and go straight to what they need to do for assessment preparation.

### **Administer the Stages of Concern Questionnaire Next Year to Measure Change**

The *Stages of Concern Questionnaire* is used across the business industry, the field of education, and in other circles to assess, evaluate and plan for training. The data collected through the *Stages of Concern Questionnaire* and subsequent interviews will be very helpful when planning for future math professional development. The professional development ought to be targeted on specific concerns that teachers have as evidenced during their interviews. After several opportunities for meaningful professional development, the *Stages of Concern Questionnaire* could be used a second time to see if teachers concerns still reside in the same stages with the same intensities. Leaders who plan for professional development have referred to the *Stages of Concern Questionnaire* as an assessment to use before and after professional development to measure a decrease in concerns among staff (James & Lamb, 2000; Marsh C. J., 1987; Hargreaves et al., 2002; Ward, West, & Isaak, 2002).

### **Differentiated Professional Development**

During interviews, teachers shared an appreciation of how professional development was structured, planned, and facilitated during the first two years of implementation. I asked many of them to describe an effective professional development opportunity they've had. The response was unanimous; teachers appreciated time to talk to other teachers and collaborate. Teachers want to see how other teachers teach and how they organize their classrooms and materials. One of our master teachers commented on a need to give teachers more time to walk through lessons,

role play and anticipate challenges together before they present the lesson before kids. When we've provided hands-on, lesson walk through sessions like this, teachers felt prepared to teach the lessons with their children. On the other hand, there were teachers who wanted more of an open, unstructured forum with colleagues.

When designing professional development in the future, we need to be mindful of what kinds of experiences will be the most meaningful for teachers and how to best differentiate for experience and interest because teachers have different needs. It's important that we survey teachers after the sessions to gauge how effective the session was for them. As the literature suggests and as I found through this study, teachers are not only influenced by their colleagues, they also feel that the most beneficial professional development would include more time for them to work with these colleagues.

### **Conclusion**

In my literature review, I provided several factors that might influence a teacher's decision to adapt curriculum. The teachers own experiences, professional development, collaboration with colleagues, leadership in the school, participation in a curriculum committee, students, and the day to day situations that emerge also influence how the teacher plans for and conducts instruction. Teachers might refer to the written curriculum they are provided as they teach, but it is likely that what and how a teacher instructs will be influenced by more than just a written curriculum.

The results from my study not only support the existing literature on this topic but also enhance the body of knowledge available. Teachers in my study also reflected on how their individual training on an instructional strategy such as 'cooperative learning' influences their teaching. Teachers provided many examples of how they collaborated with colleagues to plan for

instruction. In addition, my results include examples of how teachers reflect on and react to student performance throughout instruction.

Teachers were asked to discuss what they believe are the strengths of Math Expressions. The responses were limited to features of the program. For example, the Math Talk, or opportunity for student discourse and leadership was a popular favorite. However, the Math Talk was also an element of the program that many teachers mentioned as something that they probably weren't implementing quite right. This leads me to believe that teachers know what good math instruction is and recognize the sound instructional strategies provided in the program, but they need support with how to implement it correctly.

In conclusion, this study served to identify the types of concerns teachers have about the innovation, Math Expressions, and provided an opportunity for teachers to explain how they adapt their teaching each day to compensate for their perceived concerns. It is inevitable that teachers will adapt their instruction and based on students' improved performance on state assessments in recent years, one could argue that whatever the teacher is doing during instruction, is working. Maybe "teacher knows best" after all.

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## Appendix

*Approved by the Human Subjects Committee University of Kansas,*

## The Effects of Teacher Concern on Implementation and Adaptation of Curriculum

<p><b>Approved by the Human Subjects Committee University of Kansas, Lawrence Campus (HSCL). Approval expires one year from 11/20/2011. HSCL #19723</b></p>
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### INTRODUCTION

The Department of Education Leadership and Policy Studies at the University of Kansas supports the practice of protection for human subjects participating in research. The following information is provided for you to decide whether you wish to participate in the present study. You may refuse to sign this form and not participate in this study. You should be aware that even if you agree to participate, you are free to withdraw at any time. If you do withdraw from this study, it will not affect your relationship with this unit, the services it may provide to you, or the University of Kansas.

### PURPOSE OF THE STUDY

After all of the time, energy, and money devoted to curriculum review, textbook adoption and ongoing professional development, we owe it to ourselves to determine how comfortable staff are with the curriculum, how likely they are to change the curriculum or deviate from it completely, and the reasons why they change the curriculum. The purpose of this study is to measure the levels of implementation among a group of teachers who have recently adopted a textbook and seek to understand why teachers who were once committed to the adoption of a particular program chose to make adapt the program during daily instruction.

Specifically, this study seeks to answer the following questions:

1. What concerns do teachers have about the program, its components, or district expectations for implementation?
2. How do a teacher's concerns about the program affect their level of implementation of the program?
3. How do teacher's perspectives, intuition, and understanding of their student's needs affect their instructional decisions, specifically decisions that mark an adaptation from the curriculum?

### PROCEDURES

Participants in the follow-up interview will be asked questions using the CBAM Levels of Use Interview protocol. The Levels of Use Interview includes questions about the program; strengths, weaknesses, and explores how the program is being used by the teacher and why.

### RISKS

No names or other potentially identifying information will be used when reporting findings during this study.

## BENEFITS

Participation in this study will benefit teachers. This is an opportunity to communicate specific concerns, feedback and strengths related to Math Expressions. The results of this study will be analyzed and aggregate data will be shared with USD 497 curriculum specialists as they design relevant, targeted professional development for staff. The names of all participants will be kept confidential and great care will be taken to maintain anonymity of all participants.

## PARTICIPANT CONFIDENTIALITY

Your name will not be associated in any publication or presentation with the information collected about you or with the research findings from this study. Instead, the researcher will use a study number or a pseudonym rather than your name. Your identifiable information will not be shared unless required by law or you give written permission.

Permission granted on this date to use and disclose the information you share remains in effect indefinitely. By signing this form you give permission for the use and disclosure of your information for purposes of this study at any time in the future.

## REFUSAL TO SIGN CONSENT AND AUTHORIZATION

You are not required to sign this Consent and Authorization form and you may refuse to do so without affecting your right to any services you are receiving or may receive from the University of Kansas or to participate in any programs or events of the University of Kansas. However, if you refuse to sign, you cannot participate in this study.

## CANCELLING THIS CONSENT AND AUTHORIZATION

You may withdraw your consent to participate in this study at any time. You also have the right to cancel your permission to use and disclose further information collected about you, in writing, at any time, by sending your written request to: Anne Hawks, 12600 Summertree Lane Olathe, KS 66062.

## QUESTIONS ABOUT PARTICIPATION

Questions about procedures should be directed to the researcher listed at the end of this consent form.

## PARTICIPANT CERTIFICATION:

I have read this Consent and Authorization form. I have had the opportunity to ask, and I have received answers to, any questions I had regarding the study. I understand that if I have any additional questions about my rights as a research participant, I may call (785) 864-7429 or (785) 864-7385, write the Human Subjects Committee Lawrence Campus (HSCL), University of Kansas, 2385 Irving Hill Road, Lawrence, Kansas 66045-7568, or email [irb@ku.edu](mailto:irb@ku.edu).

I agree to take part in this study as a research participant. By my signature I affirm that I have received a copy of this Consent and Authorization form.

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Type/Print Participant's Name

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Date

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Participant's Signature

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## Stages of Concern Cover Letter

Concerns Based Systems International Southwest Educational Development Laboratory

### Stages of Concern Questionnaire

**Name (optional):** \_\_\_\_\_

The purpose of this questionnaire is to determine what people who are using or thinking about using various programs are concerned about at various times during the adoption process.

The items were developed from typical responses of school and college teachers who ranged from no knowledge at all about various programs to many years' experience using them.

Therefore, **many of the items on this questionnaire may appear to be of little relevance or irrelevant to you at this time.**

For the completely irrelevant items, please circle "0" on the scale. Other items will represent those concerns you do have, in varying degrees of intensity, and should be marked higher on the scale.

For example:

This statement is very true of me at this time. 0 1 2 3 4 5 6 7

This statement is somewhat true of me now. 0 1 2 3 4 5 6 7

This statement is not at all true of me at this time. 0 1 2 3 4 5 6 7

This statement seems irrelevant to me. 0 1 2 3 4 5 6 7

Please respond to the items in terms of **your present concerns**, or how you feel about your involvement with **this** innovation. We do not hold to any one definition of the innovation so please think of it in terms of your own perception of what it involves. Phrases such as "this approach" and "the new system" all refer to the same innovation. Remember to respond to each item in terms of your present concerns about your involvement or potential involvement with the innovation.

Thank you for taking time to complete this task.

## Concerns Based Systems International Southwest Educational Development Laboratory

<b>0</b>	<b>1</b> <b>2</b>	<b>3</b> <b>4</b> <b>5</b>	<b>6</b> <b>7</b>
Irrelevant	Not true of me now	Somewhat true of me now	Very true of me now

Circle One Number For Each Item

1. I am concerned about students' attitudes toward the innovation.	0	1	2	3	4	5	6	7
2. I now know of some other approaches that might work better.	0	1	2	3	4	5	6	7
3. I am more concerned about another innovation.	0	1	2	3	4	5	6	7
4. I am concerned about not having enough time to organize myself each day.	0	1	2	3	4	5	6	7
5. I would like to help other faculty in their use of the innovation.	0	1	2	3	4	5	6	7
6. I have a very limited knowledge of the innovation.	0	1	2	3	4	5	6	7
7. I would like to know the effect of reorganization on my professional status.	0	1	2	3	4	5	6	7
8. I am concerned about conflict between my interests and my responsibilities.	0	1	2	3	4	5	6	7
9. I am concerned about revising my use of the innovation.	0	1	2	3	4	5	6	7
10. I would like to develop working relationships with both our faculty and outside faculty using this innovation.	0	1	2	3	4	5	6	7
11. I am concerned about how the innovation affects students.	0	1	2	3	4	5	6	7
12. I am not concerned about the innovation at this time.	0	1	2	3	4	5	6	7
13. I would like to know who will make the decisions in the new system.	0	1	2	3	4	5	6	7
14. I would like to discuss the possibility of using the innovation.	0	1	2	3	4	5	6	7
15. I would like to know what resources are available if we decide to adopt the innovation	0	1	2	3	4	5	6	7
16. I am concerned about my inability to manage all that the innovation requires.	0	1	2	3	4	5	6	7
17. I would like to know how my teaching or administration is supposed to change.	0	1	2	3	4	5	6	7
18. I would like to familiarize other departments or persons with the progress of this new approach.	0	1	2	3	4	5	6	7

0	1	2	3	4	5	6	7
Irrelevant	Not true of me now		Somewhat true of me now			Very true of me now	

Circle One Number For Each Item

19. I am concerned about evaluating my impact on students.	0	1	2	3	4	5	6	7
20. I would like to revise the innovation's approach.	0	1	2	3	4	5	6	7
21. I am preoccupied with things other than the innovation.	0	1	2	3	4	5	6	7
22. I would like to modify our use of the innovation based on the experiences of our students.	0	1	2	3	4	5	6	7
23. I spend little time thinking about the innovation.	0	1	2	3	4	5	6	7
24. I would like to excite my students about their part in this approach.	0	1	2	3	4	5	6	7
25. I am concerned about time spent working with nonacademic problems related to the innovation.	0	1	2	3	4	5	6	7
26. I would like to know what the use of the innovation will require in the immediate future.	0	1	2	3	4	5	6	7
27. I would like to coordinate my efforts with others to maximize the innovation's effects.	0	1	2	3	4	5	6	7
28. I would like to have more information on time and energy commitments required by the innovation.	0	1	2	3	4	5	6	7
29. I would like to know what other faculty are doing in this area.	0	1	2	3	4	5	6	7
30. Currently, other priorities prevent me from focusing my attention on the innovation.	0	1	2	3	4	5	6	7
31. I would like to determine how to supplement, enhance, or replace the innovation.	0	1	2	3	4	5	6	7
32. I would like to use feedback from students to change the program.	0	1	2	3	4	5	6	7
33. I would like to know how my role will change when I am using the innovation.	0	1	2	3	4	5	6	7
34. Coordination of tasks and people is taking too much of my time.	0	1	2	3	4	5	6	7
35. I would like to know how the innovation is better than what we have now.	0	1	2	3	4	5	6	7

*Interpretations for High and Low Scores for Stages of Concern (George, 2006, pg. 52-54)*

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<b>Stage 0: High and Low Scores</b>	
High Stage 0	Indicates a person who is not concerned about the innovation
High Stage 0 and High Other Stages	Suggest intense involvement in the innovation
Low Stages 0-3	Indicates an experienced user who is still actively concerned about the innovation
<b>Stages 1 and 2: High and Low Scores</b>	
High Stage 1	Indicates a person who wants more information about the innovation
Low Stage 1	Indicates respondents who feel they already know enough about the innovation
High Stage 2	Suggests that respondents have intense personal concerns about the innovation and its consequences for them. Although these concerns reflect uneasiness regarding the innovation, they do not necessarily indicate resistance
Low Stage 2	Indicates that the person feels no personal threat in relation to the innovation
High Stage 1 – Low Stage 2	Suggests that the person needs more information about the innovation. These respondents generally are open to and interested in the innovation
Low Stage 1- High Stage 2	Indicates a person who has self -concerns. These individuals may be more negative toward an innovation and generally are not open to information about it.
<b>Stages 3 and 4: High and Low Scores</b>	
High Stage 3	Indicates concerns about logistics, time and management
Low Stage 3	Suggests that the person has minimal to no concerns about managing use of the innovation
High Stage 4	Indicates concerns about the consequences of use of the innovation for students
Low Stage 4	Suggests that the person has minimal concerns about the effects of the innovation on students
<b>Stage 5: High Scores</b>	
High Stage 5	Suggests concerns about working with others in relation to use of the innovation. A person scoring high on Stage 5 and low on all other stages is likely to be an administrator, coordinator or team leader. Coordinating others is a priority
High Stage 5 with Some Combination of Stages 3, 4, and 6 Also High	Suggests concerns about a collaborative effort in relation to the other stages with high scores
High Stage 5 and High Stage 1	Suggests a desire to learn from what others know and are doing, rather than a concern for leading the collaboration
<b>Stage 6: High Scores</b>	
High Stage 6 – Low Stage 1	Indicates a person who is not interested in learning more about the innovation. The person is likely to feel that he or she already knows all about the innovation and has plenty of ideas for improving the situation
High Stage 6 – High Stage 3 – Low Stages 0-2	Indicates a person who has become frustrated with not having management concerns resolved and has developed strongly held ideas about how the situation should be changed. The high stage 6 score indicates that the person has ideas about how to change the innovation or situation from his or her point of view
Stage 6 Tailing-up for Nonusers	Suggest the person has strong ideas about how to do things differently. These ideas may be positive, but are more likely to be negative toward the situation.

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## Stages of Concerns Questionnaire Results

ID Number	Stage 0	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
10052	94	43	39	34	11	36	11
10192	31	23	25	23	8	10	26
10198	99	84	83	73	71	25	77
10056	91	69	48	80	38	9	69
10174	81	37	45	56	43	55	60
10167	81	54	59	69	19	28	34
10168	94	40	52	65	54	28	73
10223	97	48	55	65	16	10	38
10096	97	63	57	94	43	84	73
10211	75	60	63	56	71	28	42
10179	55	45	52	43	21	28	38
10150	99	72	87	83	38	64	73
10216	69	48	63	39	11	22	17
10135	97	75	67	47	8	5	60
10199	96	51	55	39	48	25	90
10111	69	45	63	39	59	52	42
10191	75	66	59	60	7	36	17
10175	98	34	59	85	24	68	60
10248	96	16	31	7	8	68	17
10091	94	54	45	56	38	40	57
10086	91	45	31	34	33	40	57
10151	75	63	67	60	38	52	30
10105	99	63	48	73	33	44	30
10120	81	51	45	9	13	68	17
10259	31	57	45	23	33	40	17
10070	87	88	80	60	71	52	81
10077	40	54	59	43	38	25	30
10089	22	75	94	83	43	84	69
10099	31	45	52	39	16	25	22
10184	61	84	99	88	86	84	94
10137	81	90	97	83	48	88	69
10090	40	12	41	15	7	19	14
10245	69	63	72	69	48	59	57
10260	55	54	48	60	19	40	30
10238	69	57	52	92	59	44	69
10088	55	43	67	80	21	25	11
10254	55	45	48	60	30	36	52
10194	22	60	85	92	66	36	87
10050	31	30	21	65	48	40	60
10138	48	66	63	92	27	16	69
10160	91	40	72	95	66	31	87
10188	31	45	45	56	66	28	65
10182	48	27	25	43	11	72	34

10152	55	34	39	11	21	64	20
10106	55	63	55	23	54	76	20
10190	55	80	91	18	43	93	57
10187	69	72	87	77	33	95	87
10112	69	80	91	77	90	93	84
10193	75	84	87	69	76	52	96
10069	31	34	57	56	71	40	81
10085	7	12	17	9	16	12	22
10196	14	45	70	94	66	14	99
10093	48	34	25	52	59	55	60
10195	48	72	87	77	43	4	92
10197	87	34	28	47	66	40	94