Departmentalization and Twenty-First Century Skills

Toy Coles Watts

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DEPARTMENTALIZATION AND TWENTY-FIRST CENTURY SKILLS

by

Toy Coles Watts

Abstract of a Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy
The University of Southern Mississippi

May 2012
ABSTRACT

DEPARTMENTALIZATION AND TWENTY-FIRST CENTURY SKILLS

by Toy Coles Watts

May 2012

The purpose of this study was to investigate the relationship between school organizational style and student outcomes. The research questions that guided this study were, “Is there a difference in mathematical performance of fourth graders who receive departmentalized instruction as compared to fourth grade students who receive self-contained instruction?” Does the number of years of implementation affect academic outcomes in a departmentalized organizational style?” “Are teacher attitudes toward a departmentalized organizational style influential on the academic outcomes of the students?” and “Does teacher preparation in their area of instruction affect testing outcomes?”

The results of this study indicated no significance in any of the areas tested by the research questions. However, there was no negative impact on student outcomes as a result of a departmentalized organizational style. Also, teachers had a positive attitude toward departmentalization, which indicates that teachers enjoy teaching in that format.
DEPARTMENTALIZATION AND TWENTY-FIRST CENTURY SKILLS

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Toy Coles Watts

A Dissertation
Submitted to the Graduate School of The University of Southern Mississippi in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

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May 2012
DEDICATION

This dissertation is dedicated to the two people who planted a seed and could not be here to see it grow, Thomas Olander Coles and Josie Robinson Coles.
ACKNOWLEDGMENTS

The completion of this research was made possible because I was surrounded by people who cared about my progress as a student. Thank you, Dr. Ronald Styron, for chairing my committee and sending out those many emails that kept me on track for my deadlines. Your professionalism and concern inspired me to continue moving forward.

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I would like to give special thanks to my family and friends for being supportive and encouraging during this process. To my parents, Kim Coles and Russell Fairconnetue, and my in-laws, Hezzie and Malinda Watts, I am grateful for your love and willingness to support my endeavors.

To my daughter, Josie, Momma loves you. I pray that my journey will inspire you to do great things. To my phenomenal husband, Cory Monét Watts, thank you for being my comic relief, my magic mirror, and my hype man. I am my best self with you. I love you.
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CHAPTER I
INTRODUCTION

The employers of the 21st century have made information public concerning the quality of employees they are receiving from the country’s high schools. Some major players in the global society have come together to assist with this mission. The Partnership for 21st Century Skills, comprised of the business community, educational leaders, and policy makers, has created a vision to promote student success as citizens and employees of the 21st century (Partnership for 21st Century Skills, 2006a).

The push from the stakeholders was driven by some statistics gathered by a national survey of company human resource officials. The results found that

1. Almost 70% believe that high school graduates fall short in critical thinking skills
2. Eighty-one percent believe high school graduates are deficient in written communications
3. Almost a third said they will reduce their hiring of employees with just a high school diploma
4. Forty-two percent said they will hire more people with advanced degrees.

(Partnership for 21st Century Skills, 2006a p. 1)

The president of the partnership commented, “When employers are finding the skills of high school graduates so very lacking, the implications for the large numbers of students who never make it to graduation in the first place are truly sobering” (Partnership for 21st Century Skills, 2006a, p. 1).
The partnership focuses on infusing 21st century skills into the current curriculum of the schools. The framework is designed to encompass core subjects, 21st century content, learning, and thinking skills, information and communications technology (ICT), literacy, and life skills. The expected place for integration for all of these factors is in the schools, beginning at the elementary level (Partnership for 21st Century Skills, 2006b).

An advantage of teacher specialization is that it allows teachers to teach where they feel most comfortable and most competent. Teachers in self-contained classrooms are forced to teach subjects they do not enjoy nor feel comfortable teaching (Chan & Jarman, 2004). “Teachers need not be Jacks of all trades but can be masters of their fields” (Chan & Jarman, 2004, p. 70). Supporters of departmentalization believe that teachers teaching where they are skilled will result in better teaching due to an in-depth body of knowledge held by the specialized teacher. Students become the beneficiaries of a wealth of knowledge that could not be matched in a self-contained classroom (Chan & Jarman 2004; Gerretson, Bosnick, & Schofield, 2008; Reys & Fennell, 2003).

Resources in every field are fully utilized because a specialized teacher will know how to use them effectively. Facilities in a departmental setting are easily managed because every subject has its own place within the plan of the school. Classrooms are not congested because there is ample space to accommodate a subject-oriented classroom. No subject should fall prey to neglect because specific provisions are made for every subject and activity in a departmental plan (Chan, Terry, & Bessette, 2005).

Personal growth on behalf of the student is a concern when organizing or restructuring a school. Departmentalization allows students the opportunity to explore several personalities throughout the instructional day. With increased opportunities to be
exposed to different personalities, the student will have multiple opportunities to find a teacher to bond with (Chan & Jarman, 2004). According to Perlstein (2003), a departmentalized setting will help students develop their survival skills as they transition from the egocentrism of childhood to a group-centered learning environment.

School connectedness, an environment in which students feel that teachers care about them and their learning and about them as individuals, can assist with the move from ego-centrism to the group environment of a departmentalized school. When students experience positive, respectful relationships with adults, they are more likely to achieve more academically because some of their basic emotional needs are being met (Blum, 2005). A study by a panel of researchers from the National Research Council and Institute of Medicine (2004) found that experiential learning, hands-on opportunities, and a variety of instructional methods increase a student’s feeling of connectedness in school.

Few studies have been conducted in the area of departmentalization and academic achievement. Harris (1996) noted that most of the research done on departmentalization and elementary students was conducted prior to 1980. In many of these studies there is evidence to support or refute both plans, departmental and self-contained. One such study conducted by McGrath and Rust (2002) noted that self-contained children gained more academically in total battery but that their Reading, Mathematics, and Social Studies showed no difference academically.

It is becoming increasingly difficult to find teachers to fill positions in tested grades. Good teachers are growing weary of the pressure and they avoid carrying the weight of the school by not applying for those grades (Delviscio & Muffs, 2007).
Statement of the Problem

Teaching has changed tremendously in the post No Child Left Behind (NCLB) era. Frustration overwhelms instructors as they attempt to deliver a rigorous curriculum in every subject. School organization styles have changed over the years to reflect the changes in education. It is possible that the departmentalized organization used in middle school would work in the upper elementary grades as well. It seems logical that one teacher could do a better job with the planning and delivery of one subject than if he or she had the responsibility of all five of the tested areas. Differentiated instruction has been introduced to try to address the growing needs of the upper elementary grade classrooms; however, this adds more stress as it requires even more planning in each subject (Valli & Buese, 2007).

The Partnership for 21st Century Skills (2006) gives another take on this study. According to The Partnership, teaching to the test seems to be getting in the way of producing quality graduates. One of the components of the 21st Century Skills target areas is problem solving. That foundation in problem solving can be analyzed as early as elementary school. Fourth-grade mathematics scores could be a significant area to begin research on departmentalization.

Finding an organizational model that supports in-depth delivery of instruction and the production of quality graduates would be a major contribution to the field of education. Administrators are looking for the best methods of instructional delivery for their students. They are also looking for ways to offer the staff alternatives that help reduce their frustrations. Consistency in teaching staff is beneficial to administration, staff, and students.
Purpose of the Study

In this study the researcher examined schools that have implemented the departmentalized organizational structure at the fourth-grade level. The goal was to do a study to compare student math scores in grade 4 for students in a self contained classroom to a departmentalized classroom. The researcher checked to see if the length of implementation time at the school, attitudes toward the school’s organizational method and the teacher preparation influenced the test scores.

Research Questions and Research Hypotheses

The following research questions guided this study:

1. Is there a difference in mathematical performance of fourth graders who receive departmentalized instruction as compared to fourth grade students who receive self-contained instruction?
2. Does the number of years of implementation affect academic outcomes in a departmentalized organizational style?
3. Are teacher attitudes towards a departmentalized organizational style influential on the academic outcomes of the students?
4. Does teacher preparation in the area of mathematics affect testing outcomes?

Definition of Terms

Departmentalization - Departmentalization is the classroom organizational style that groups students in classes by department or subject area. Generally, the students move from one classroom to another in this model of instruction (Chan & Jarman, 2004).
**Self-Contained (Traditional) Classroom** - In a self-contained classroom, students are in class with one teacher all day with the exception of special activity classes such as physical education and art (Chan & Jarman, 2004).

**MCT2** - The Mississippi Curriculum Test number 2 (MCT2) is the standardized assessment in the state of Mississippi based on the curriculum taught to Mississippi’s school children (Mississippi Department of Education, 2011).

**Specialization** - Specialization is when a teacher has a content area that is his or her “special” area of focus. In some cases, that teacher is “highly qualified” in that area by coursework studied in college courses (Delviscio & Muffs, 2007).

**Common Core Standards** - “The Common Core State Standards Initiative is a state-led effort coordinated by the National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO). The standards were developed in collaboration with teachers, school administrators, and experts, to provide a clear and consistent framework to prepare our children for college and the workforce” (Common Core Standards Initiative, 2010, p. 1).

**21st Century Skills** - Twenty-first Century Skills are a set of skills that are expected for students to compete in a global economy. The focus is on critical thinking and problem solving, communication, collaboration, creativity, and innovation (Partnership for 21st Century skills, 2011).

**Upper elementary grades** - Upper elementary grades are generally considered to be grades 3-5.
Delimitations

Only fourth-grade test scores were analyzed for this study. The results cannot be generalized for other grade levels. Teacher training and attitudes were covered; however, no administrator or parent attitudes were included. This limited the effectiveness of the results where attitudes were reviewed. The study was limited to one school district. There is a possibility that the school district location could have influence the study results. Therefore, the results cannot be generalized to other school districts. The study looked at the length of time departmentalization had been implemented. In some schools, that covered the time period the students were assessed by MCT1 as well as by the MCT 2. The two tests measure students differently, and this may have skewed the interpretation of significance.

Assumptions

It was assumed that the demographics of the schools within the school district were similar. It was assumed that all schools in the study participate in the standardized state testing using the Mississippi Curriculum Test (MCT). It was assumed that the administration supported the organizational structure that was in existence.

Justification

Since the publication of *A Nation at Risk*, the United States has been increasing the level of accountability for school districts serving the nation’s children. With increased accountability comes standardized testing. A surge in accountability came with the No Child Left Behind (NCLB) Act of 2001. With NCLB, teachers are required to be highly qualified in the subjects they teach. For grades 7-12, that means a specific endorsement in the subject area the teacher is teaching. For elementary grades, a teacher
with a K-8 license can teach in any classroom configuration for grades K-6 (Important Facts).

As accountability increases, the subject areas of upper elementary grades are also being scrutinized. Elementary curriculum is considered the foundation to higher-level courses; therefore, there has been a surge in the attention given to subject area testing at the elementary level. Elementary test scores are receiving national attention and are frequently compared to the progress of elementary students in other countries (Gonzales, Williams, Jocelyn, Roey, Kastberg & Brenwald, 2008).

Teachers at the elementary school level are expected to deliver rigorous instruction in as many as five core subjects (reading, language arts, mathematics, science, and social studies). The possibility of someone being effective in all subject areas is highly unlikely (Valli & Buese, 2007). It seems sensible that when teachers teach subjects in which they feel better prepared, they will deliver better instruction.

Administrators at the district and building level need information on how to produce academic gains. The literature points out that there is currently a downward trend in academic achievement in America. The self-contained model of instructional organization is the most common method of instruction found at the elementary level. If there is a statistical difference between students in a departmentalized setting compared to those in the traditional model, schools could entertain major changes at the elementary level that could give the improvements sought.

Summary

Students in America are falling behind their global peers. Accountability has risen in the reauthorization of the Elementary and Secondary Education Act (ESEA)
referred to as “No Child Left Behind” (Bush, 2001). Stakeholders have come together to try to figure out what needs to change in the way our students are prepared for higher education and the workforce. One of the areas identified by the Partnership for 21st Century Skills is problem solving (Partnership for 21st Century Skills 2006).

Developing critical thinking skills requires in-depth instruction from teachers beginning at the elementary grades. Currently, the most common organization at the elementary level is the self-contained classroom. One possibility for addressing the need for depth is changing the current organizational structure at the elementary level (Chan et al., 2009).

This study evaluated the effectiveness of mathematics instruction at the elementary level. The researcher compared the results of a standardized assessment for fourth-grade students in a self-contained classroom with students of a departmentalized classroom. As teachers are a fundamental part of instruction, their attitudes toward the organization of their school and their individual preparedness were also being considered.
CHAPTER II
REVIEW OF RELATED LITERATURE

Introduction

Several sources were identified as contributors to the framework of this study. The literature reviewed for this study include the guiding theories for the organizational styles that deliver instruction at the elementary level, the historical views on school organizational styles, accountability in government intervention, content knowledge, and problem solving skills, teacher attitudes, and general instruction as compared to specialized instruction. The researcher used the literature to support several factors that affect a school’s decision on a specific organizational structure.

Theoretical Framework

While exploring what would best serve the students and teachers to positively affect student achievement, a school’s organizational structure was considered. This study specifically looked into the effects of a departmentalized schedule as compared to a traditional, self-contained classroom. The basic areas of theory that were considered in this study were Vygotsky’s Sociocultural Theory and Maslow’s hierarchy of needs.

When looking at the teachings of Vygotsky’s sociocultural theory, the writer noted his belief that social interactions promote the development of cognitive gains. Vygotsky (1978) stated:

Every function in a child’s cultural development appears twice: first, on the social level, and later, on the individual level; first between people (interpsychological) and then inside the child (intrapsychological). This applies equally to voluntary...
attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relationships between individuals. (p. 57)

Using the beliefs of Vygotsky, a student could benefit from a departmentalized setting. The departmentalized setting allows the student to experience multiple social situations. The student would have multiple opportunities to interact with peers. The student would also be exposed to more adult personalities. (Vygotsky, 1978; Chan & Jarman, 2004).

Vygotsky’s (1978) theory also addresses how to increase a student’s cognitive development. His term, zone of proximal development (ZPD), addresses the manner in which a teacher can increase cognitive growth. According to Vygotsky, a student should be presented with problems to solve that are challenging. The student should be capable of solving the problem with guidance from the teacher whose role should be more like a facilitator (Vygotsky, 1978).

A teacher who teaches one or two subjects would have more time to adequately plan the learning experiences suggested by Vygotsky (1978). If a teacher teaches in his or her area of specialty, he or she will be equipped with the content knowledge to provide skill appropriate opportunities for learning. The teacher in a departmentalized setting would have time to create experiences in which the teacher has a role that is more facilitative in nature. The depth of knowledge the teacher has in the subject would allow the teacher time to assess an accurate skill level of a student in order to provide a prescripted problem that falls in the students’ ZPD (Vygotsky, 1978).

Theodore Roosevelt said, “Nobody cares how much you know, until they know how much you care” (Brainy Quote, 2011). Some supporters of the traditional classroom
share the belief that a student’s psychological needs are met. Examining Maslow’s hierarchy of needs reveals that following physical needs, one of the most basic needs for people is safety. The diagram supports that elementary students in a traditional setting feel safe; therefore, their needs are met and they are in a better place to learn. In Maslow’s opinion, it is more important that the student be in a classroom with a nurturing teacher rather than a knowledgeable teacher. Following the quote by Roosevelt, the security of the classroom is more beneficial to learning than the knowledge possessed by the teacher (Maslow, 1970).

**Historical Background**

The early colonists decided that the only way to continue their existence in the New World was to educate their young. In the beginning, it was left to parents to educate their children. The church was the driving force for education at this time and the colonists decided that parents were not being diligent in their duty to educate. Therefore, two laws were enacted that began the mandates for general education. The Massachusetts Law of 1642 established that all children must be taught to read. After a review of the 1642 law, the policy makers of the time realized that they had not provided enough leadership in the establishment of this general education. Thus, the Massachusetts Law of 1647 was passed. It stated:

1. That every town having 50 householders should at once appoint a teacher of reading and writing, and provide for his wages in such manner as the town might determine; and
2. That every town having 100 householders must provide a (Latin) grammar school to fit youths for the university, under a penalty of £5 for failure to do so. (Cubberley, 1919, p. 18)

By 1750, the schools expanded into other areas of instruction. Educators realized the need for specialization in some subjects. The first modification was the writing schools that taught writing, reckoning, and merchant’s accounting. The classes were taught by teachers who specialized in the subject they were teaching. They had arithmetic teachers who only focused on teaching mathematics and a scrivener (a scribe, or person who writes) to teach the students writing. Eventually, the schools became known as the 3-R’s school, Readin, Ritin, and Rithmetic (Cubberley, 1919).

Teachers’ views about the self-contained classroom flaws date as far back as the beginning of the public schools. In 1959, George Ackerlund (1959) stated:

Those who maintain that self-contained classroom needs re-evaluation argue that it requires teachers to be with children all day on a sustained basis without providing for the much-needed breaks permitted in other lines of work. They also believe that the subject-matter knowledge and skill in methods required to teach all subjects in elementary school are greater than can be adequately achieved by all who enter the field. Expecting all teachers to like to teach all subjects, they claim, is unrealistic—it ignores the factors of aptitude and interest and the scientific fact that people do better work when doing what they like and enjoy. (Ackerlund, 1959, p. 283).

Education in America became the center of attention after the Russian 1957 launching of Sputnik. The world’s leader in innovation had begun to show signs of
losing its edge (Lemonick, 2006). After the release of *A Nation at Risk* (1983), which painted a dismal picture of America’s future based on test scores, the United States began to pay even more attention to academic achievement in public schools. In addition to administrators looking into test scores, psychologists began looking into the emotional well being of elementary students as another potential factor for academic achievement. Psychologists have argued that students in the lower elementary age group benefit from a more nurturing environment found in a self-contained classroom with one teacher (generally a woman) providing the matriarchal dynamic that children are most familiar with at that age (Gardner, 1983; Maslow, 1970).

In 1992, Garner and Rust wanted to find out if students fared better in a self-contained environment as compared to a departmentalized setting. The basis for the research was the idea that a child-centered classroom would promote better academic success for students in the intermediate grades. The departmentalized classroom would be classified as subject-centered. In that study, they found some degree of support for the self-contained classroom. The students of the self-contained classroom excelled on three sections of the test—Language, Science, and Total Battery. The other sections, Reading, Mathematics, and Social Studies showed no significant difference (Garner & Rust, 1992).

McGrath and Rust (2002) followed up on this research with a second study and included another factor in the equation. They conducted a study comparing the academic achievement of fifth- and sixth-grade students in a self-contained classroom to a departmentalized setting. In addition to the parameters set by the first study, this study included the possible loss of instructional time imposed by changing classrooms. As with the first study, they found that the self-contained classroom showed statistically
significant gains in the Science, Language, and Total Battery scores. They also noted that there was no significant difference in Math, Reading, or Social Studies scores on the standardized test (McGrath & Rust, 2002).

When the Council of Chief State School Officers (CCSSO) met with the State Higher Education Executive officers to align K-12 standards with higher education, they found that both areas blame the other for the unprepared graduates who exit American high schools each year. The executive director of CCSSO, Gene Wilhoit, shared that principals blame unprepared high school graduates on unprepared educators. Paul Lingenfelter, president of the SHEEO, reported that college professors say they spend a large amount of their time remediating ill prepared high school graduates (Lederman, 2010).

Raising the Bar: NCLB, American Competitiveness, 21st Century Skills, Common Core Standards and Race to the Top

President Bush issued the reauthorization of the Elementary and Secondary Education Act in 2001, known as No Child Left Behind (NCLB), in an effort to raise the bar on public education in America (Bush, 2001). Many people in public education complained about the strenuous requirements of NCLB. Realizing that several schools across the country were not going to meet the requirements outlined by the deadlines in NCLB, President Obama agreed to give flexibility waivers to districts that were working towards producing college- and career-ready students (U.S. Department of Education 2011a).
Obama stated,

To help states, districts and schools that are ready to move forward with education reform, our administration will provide flexibility from the law in exchange for a real commitment to undertake change. The purpose is not to give states and districts a reprieve from accountability, but rather to unleash energy to improve our schools at the local level. (U.S. Department of Education, 2011a, p1).

The Department published a flexibility request document that expires in March 2012. The goal of the Obama administration is to give states the opportunity to develop programs that are specifically designed to fit the needs of individual states (U.S. Department of Education, 2011b).

In February 2006, President George W. Bush and the Domestic Policy Council Office of Science and Technology Policy released the American Competitiveness Initiative (ACI) in an effort for America to maintain its competitive edge in the world. The President committed $5.9 billion dollars to increase professional development for teachers, attract new teachers to the field of K-12 education, develop research-based curricula and provide resources to train America’s workforce (Domestic Policy Council, 2006).

In order for America to continue in the direction of global leadership, it has to increase its advancements in the area of mathematics and science. The new generation has to embrace and pursue advanced education in the areas of science, technology, engineering, and mathematics (STEM). The emphasis in these areas is placed on problem solving and analytical skills (Domestic Policy Council, 2006).
There have been huge advancements since the implementation of No Child Left Behind (NCLB) in 2001. However, the United States has recognized that there are some gaps in education that need to be filled. In an effort to further improve our academic gains, the Academic Competitiveness Initiative (ACI) proposed the creation of a Math Now program which includes a National Mathematics Panel patterned after the National Reading Panel (Domestic Policy Council, 2006). The push for improvements came after the government reviewed some of the statistics published in the 2003 Trends in International Math and Science Study (TIMSS) (Gonzales, Guzman, Partelow, Pahlke, Jocelyn, Kastberg and Williams, 2004). According to that study, students in America are performing below their international peers in the areas of mathematics and science. The 2003 TIMSS published that only seven percent of fourth and eighth graders performed at an advanced level on the test compared to the students in Singapore who had 38% of the fourth graders scoring advanced and 44% of their eighth graders also at that advanced level (Gonzales, et al., 2004).

In 2007, the TIMSS reported that Hong Kong and Singapore were again the top-performing countries in the area of mathematics achievement. The highest achievement in eighth grade was headed by five Asian countries: Chinese Taipei, Korea, Singapore, Hong Kong SAR, and Japan. There was a huge drop to the next highest set of scores by Hungary, England, the Russian Federation, and the United States. Forty-one percent of the fourth graders tested from Singapore scored advanced. Hong Kong was a close second with 40% of their tested students scoring advanced. Eighth grade results were similar for these Asian countries. Chinese Taipei, Korea and Singapore, had between 40% and 45% of their eighth graders scoring advanced (Gonzales, et al., 2008).
Although these numbers make the U.S. look really behind, Americans can be proud of the progress. The initiatives associated with the No Child Left Behind Act have moved the United States up in the global ranks in the area of mathematics. In 2003, the fourth grade was ranked 12th out of 25 countries. By the 2007 test, the eighth grade had moved to 11th out of 36 countries. The eighth grade was ranked 15th out of 45 in 2003, and ninth out of 48 in 2007(Gonzales, et al., 2004 & Gonzales, et al., 2008). Because the competitiveness grant came about in 2006, prior to the 2007 TIMSS test, it can be assumed that the United States is trying to be proactive with legislation to continue making gains as seen with the implementation of NCLB (Gonzales, et al., 2008).

The American Competitiveness Initiatives plans to improve mathematical education in the United States by recruiting mathematics and science professionals to become adjunct teachers in public schools. The initiative realizes that there are very few mathematical specialists at the elementary level and suggests that teachers on that level need to be highly qualified at that level. The council realizes that it will take years to get specialists in the classrooms and suggest that the process makes it easier for retired scientists and engineers to obtain a teaching license based on their professional expertise (Domestic Policy Council, 2006).

The term, 21st Century Skills is a label that has been linked to many areas of education. It has been linked to technology skills, interpersonal skills, and any other skill linked to today’s workforce. Silva (2009) says it is an “emphasis on what students can do with the knowledge, rather than what units of knowledge they have” (p. 630). She also notes that the name 21st Century is misleading because the need for these skills has always been necessary. In her words, “21st-century skills, then, are not new, just newly
important” (p. 631). She brings up the idea that there is a need to come up with a better assessment for these skills beyond standardized tests. However, she does say that standardized tests are currently incorporating more critical thinking questions (Silva, 2009).

In an effort to address the declining status of U.S. students, a group of business leaders, K-12 school leaders, members of higher education, and government entities have come together to create the partnership for 21st century skills. These groups recognized the need for the entire nation to come together on one accord to improve the education our students are receiving in preparation for their membership in what has become a more global society. They began with a vision of what it would take for students to be successful and they devised a list of six key elements that summarize 21st century learning:

1. Core Subjects: The authors reaffirm the importance of the core subjects identified by No Child Left Behind (NCLB) but challenge schools and policy makers to expand their focus beyond basic competency to understanding the core academic content at much higher levels.

2. Learning Skills: “To cope with the demands of the 21st century,” the report states “students need to know more than core subjects. They need to know how to use their knowledge and skills by thinking critically, applying knowledge to new situations, analyzing information, comprehending new ideas, communicating, collaborating, solving problems and making decisions.”
3. **21st Century Tools**: Recognizing that technology is, and will continue to be, a driving force in workplaces, communities, and personal lives in the 21st century, “Learning for the 21st Century” emphasizes the importance of incorporation information and communication technologies into education from the elementary grades up.

4. **21st Century Context**: Experiences that are relevant to students’ lives, connected with the world beyond the classroom, and based on authentic projects are central to the sort of education the Partnership for 21st Century Skills defines as the appropriate context for learning in the information age.

5. **21st Century Content**: The report’s author’s believe that certain content essential for preparing students to live and work in a 21st century world is missing from many state and local standards.

6. **New Assessments that Measure 21st Century Skills**: “As pervasive as assessment seems to be today,” the report says, “it remains an emerging and challenging field that demands further study and innovation.”

   Recommendations include moving beyond standardized testing as the sole measure of student learning, balancing traditional tests with classroom assessments to measure the full range of students’ skills; and using technology-based assessments to deliver immediate feedback. (Salpeter, 2003, p. 1)

   Some feel that NCLB focuses on the basics. Proponents of 21st Century Skills instruction agree that the content required for NCLB is not enough to prepare the students with the critical thinking skills they need to compete in the world. The director for the
Technology Information Center for Administrative Leadership gave a summation of current classroom practices,

Let’s be honest, we can get some initial gains on tests by teaching to the test and practicing test taking skills. Ultimately, though, we’re going to hit an achievement wall. The irony here is that the teachers are most likely to drill basic skills even harder in their effort to keep getting new achievement gains when, in fact, it may only be through engaging kids in higher-order thinking activities that they have any chance of breaking through those subsequent achievement barriers. (Salpeter, 2003, p. 3).

October 4, 1957, changed the American view on the importance of science in the classroom. After the Soviet Union successfully launched Sputnik, congress realized a need for more scientists, mathematicians, and engineers and they passed the National Defense Education Act in 1958 to help attract more people to these professions by offering financial college assistance (Dean, 2007). There is still concern that there will not be enough engineers in the future of this country. To spark this interest, Ellis, Jackson, and Wynn (2009) proposed that engineering be infused into K-12 classrooms with a focus on problem-based learning that extends across the curriculum (Ellis, Jackson & Wynn, 2009).

The Director of Education and Human Resources at the American Association for the Advancement of Science, Dr. Shirley Malcolm, is quoted as saying, “We lived many years off the investment of the race for space, but today is a kind of complacency” (Dean, 2007, p. 1). When Dr. Malcolm continued to discuss the issue of the need for more scientists, she blamed the delivery of science education in the classroom. In her opinion,
too much focus is placed on terminology and not on the exploratory nature of inquiry-based learning that replicates actual science practice. Malcolm believes that the U.S. is lowering its standards while other countries are raising theirs (Dean, 2007).

*Time* magazine (Lemonick, 2006) noted that America is losing research scientists. According to the article, scientists are moving to jobs that require less research but allow more opportunities for benefits and leadership opportunities. Some say that federal leadership is to blame for this. There have been consistent cut backs in federal financial support for research in exchange for projects that produce quicker results. Private corporations are experiencing the same changes as they attempt to produce profits for investors (Lemonick, 2006).

To add to the issue, public schools are experiencing challenges in the areas of mathematics and science. American colleges are receiving fewer students who major in the STEM areas. In the past, America has been fortunate to fill the research gap with students from other countries. Now those students come to America for their education and take their expert knowledge back home (Lemonick, 2006).

*Time* magazine (Wallis, Steptoe, & Miranda, 2006) featured an article on how to bring U.S. schools into the 21st century. Wallis, Steptoe, and Miranda (2006) describe U.S. schools as “throwbacks” because they have not changed the methods by which they educate students. They criticize NCLB as a focus on basic literacy and cap on expansion in the areas of education that will make students more competitive in a global society. According to them, children need to be able to transfer the information they learn to other disciplines. American education frameworks have historically focused on acquiring lists of data and the mastery of a multiplicity of basic skills. Wallis et al. (2006) communicate
that students need to focus more on using teamwork and interpreting and analyzing data to solve problems (Wallis et al., 2006).

In their article, Wallis et al. (2006) give testimonials from schools that have transformed their educational delivery methods. One school in Seattle, John Stanford International School, puts its focus on problem solving with global inclusion. All students at this school take either Spanish or Japanese. Every year they learn the history of other cultures. Students as young as six years engage in technological learning, such as Internet and PowerPoint presentations. The administrator added these curricular features after polling business leaders to determine what skills they felt were necessary for tomorrow’s employee (Wallis et al., 2006).

The International Baccalaureate is gaining popularity. The number of American schools offering this diploma more than doubled from 350 to 682 in just six years. This diploma requires a student to be able to write and speak another language with a degree of proficiency. This degree also focuses on writing proficiency as well as real-world problem solving, both with the incorporation of international perspectives (Wallis et al., 2006).

The National Governor’s Association Center for Best Practices and the Council of Chief State School Officers (CSSO) collaborated to create common core standards. Currently, 36 states and the District of Columbia have agreed to adopt these standards in an effort to make education in America standard. The government has appropriated $4.35 billion in funds for the Race to the Top initiatives that encourage the states to produce quality graduates.
These standards define the knowledge and skills students should have within their K-12 education careers so that they will graduate high school able to succeed in entry-level, credit-bearing academic college courses and in workforce training programs. The standards:

1. Are aligned with college and work expectations;
2. Are clear, understandable and consistent;
3. Include rigorous content and application of knowledge through high-order skills
4. Build upon strengths and lessons of current state standards;
5. Are informed by other top performing countries, so that all students are prepared to succeed in our global economy and society; and

Currently the focus is on English/Language Arts (ELAR) and mathematics. The national curriculum would provide common expectations, focus, efficiency, and quality assessments. When compared to state standards, the Common Core standards shift the emphasis from memorization and lower-level cognitive applications to a demonstration of understanding by the student (Porter, McMaken, Hwang & Yang, 2011).

One purpose of the common cores standards is to adequately prepare students for college and the 21st century work force (Blackburn, 2011). Setting standards is not enough to raise the quality of the education that is delivered. The level and method of implementation will determine the effectiveness of the new standards. The common core moves away from how things are taught to how things are understood (Blackburn, 2011).
According to these standards, the subject matter taught in upper grades is being moved to lower elementary grades (Common Core Standards, 2010; U.S. Department of Education, 2009). Intense planning and instructional delivery are key components to raising the level of understanding by students (Blackburn, 2011).

The Consortium for Mathematics and Its Applications (COMAP Inc.) organized a conference called *Moving Forward Together: Curriculum & Assessment and the Common Core Standards for Mathematics* (CCSM). The members of the conference concluded with 20 recommendations on how to make a successful transition to the common core standards. Upper elementary and middle grade mathematics is specifically mentioned in recommendation 10: Focus attention to content changes at the middle grades. The group notes that there is a “substantial” shift in the goals of the common core standards from the current curriculum frameworks. They suggest intense professional development with an emphasis on the change in the “weight” of certain topics at the different grade levels (Garfunkel, Hirsch, Reys, Fey, Robinson & Mark, 2011).

The *Moving Forward Together* conference also suggested a meeting with representatives from the K-12 mathematics and the post-secondary groups. Currently there are differences in expectations between these two groups. The suggestion is that the focus of this meeting should lead to a better alignment of curriculum and an established criterion for moving toward credit bearing courses would be the goal of this meeting (Garfunkel et al., 2011).

An experienced mathematics instructor presented a commentary on what she believes it would take to ensure the successful implementation of the common core
Sybilla Beckmann (2011) praised the common core standards but gives the credit of successful implementation to the teacher. She said, “The standards will not teach themselves” (p. 3). Beckmann begins by bringing attention to the lack of “excellence” in mathematics instruction in the United States. The absence of collaborative and professional groups has weakened the expansion of mathematics education. Sharing and collaboration promote deeper levels of understanding as one colleague’s ideas build on another (Beckmann, 2011).

In the United States, many mathematics teachers are expected to teach elementary mathematics with minimal mathematics instruction. Beckmann (2011) teaches a group of bright teacher trainees for 27 credit hours, and she feels that this is not enough preparation to effectively implement the common core standards on the elementary level. She says, “Mathematics that the very youngest children learn is surprisingly deep and intricate. Children deserve to be taught by teachers who have studied such intricacies, inner workings and subtle points that are involved in teaching and learning mathematics” (p. 6). She projects that if there are not changes to the current teacher preparation curriculum, then teachers who graduate will not be ready for the depth of understanding required by the common core (Beckmann, 2011).

Content Knowledge and Problem Solving Skills

Algebraic thinking has been mostly reserved for older students. The goal of initiatives such as the American Competitive Initiative is to help all students to be proficient in Algebra by the end of middle school (Office of Science and Technolgy, 2006). These initiatives suggest that to reach this goal, the teaching of algebraic concepts must begin in the earlier grades. David Carraher and his colleagues conducted a study on
the algebraic knowledge of students in grades 2 through 4 using lessons they developed followed by student interviews discussing the thought processes involved in arriving at the student answers. They found that students as young as seven years of age could work on problems involving algebraic concepts and these students could also explain their reasoning (Carraher, Schliemann, & Brizuela, 2006).

In Virginia, they examined the curriculum standards for third and fifth grades and found that there is a concentration of higher order cognitive skills in the elementary science classroom. One of these skills reflects problem solving with higher order questioning in science and mathematics (Buoncristiani, 2006). A basic understanding of problem solving will not be enough; teachers need to have an in-depth conceptual knowledge of questioning techniques in order to prepare the students adequately for the transference of these skills. Questioning skills found in science and mathematics courses require a different pedagogical approach than what is required for history or reading. The person teaching these skills should be prepared in depth to deliver instruction to the elementary student. This student will need a good foundation in this area to progress further in the latter years of education (Buoncristiani & Buoncristiani, 2006).

Problem-solving skills are covered in mathematics and science classrooms. Reasoning and thinking analytically are of high priority in the current global society (Meisels, 2010). Classes that fall in the STEM (Science, Technology, Engineering and Mathematics) category are gathering attention as the nation gauges its rank in the worldwide race to be innovative (Meisels, 2010). Since innovation steers the economy, this is a matter of extreme importance. Meisels (2010) a chemist, believes that the ability to reason is the dividing line in the job market. According to him, people who do not
possess this ability end up with jobs that do not offer much promise for advancement. He also believes that thinking critically reaches beyond the classroom and job market and reaches into citizenship. In his experience, elementary teachers have a difficult time fostering a love for science and mathematics in their students because the teachers struggle with some higher analytical concepts. He notes that professional development for a million or more elementary teachers will not solve the problem because the teacher’s basic attitudes toward these subjects will still interfere (Meisels, 2010).

When discussing effective mathematics instruction, the content knowledge of the teacher is part of that discussion. Hill, Rowan and Ball (2005), at the University of Michigan, conducted a study on the effects of a teacher’s mathematical knowledge on student achievement. Using a combination of surveys and student data they evaluated the mathematics education of student cohorts starting in kindergarten and third grade. In an attempt to improve overall instruction, each of the schools in the study was using a packaged reform model such as Success for All and the Accelerated Schools Project. Controlling for socioeconomic status (SES), absenteeism, teacher certifications, teacher experience, and the length of the math lessons, they found that a significantly positive relationship existed between a teacher’s mathematical knowledge and student growth in mathematics. This relationship existed in both age brackets, which surprised the researchers. The assumption was that lower-level mathematics taught did require a complex understanding of mathematical concepts. Therefore, content knowledge in mathematics proved to be beneficial in the lower grades as well as in the upper elementary grades (Hill et al., 2005).
This same group did another study on what it means to really know mathematical content that is delivered in the classroom. They noted that many students at the elementary level are receiving instruction from teachers who were taught by people with a general mathematical knowledge. They point out that the depth of knowledge is missing and has been missing for a long time because the cycle continues with the way in which elementary teachers are prepared for instruction. They developed an instrument to compare the depth of understanding possessed by teachers. They included math problems on a test to see if it would require professional knowledge in mathematics to teach it on an elementary level. In discussing error analysis they concluded that teachers need to be fluent in mathematical terms so that they can convey the correct conceptual understanding to students in early grades (Hill et al., 2005).

John Hopkins University hosts an annual Education Summit. At the 3rd annual summit, a research team presented reform ideas to increase achievement in the areas of mathematics and science. Their goal was to offer suggested reforms to improve education in these areas in order to better prepare students for college. One of the three areas discussed in the reform was classroom instruction. They agreed that students must be able to do more than computation. They offered that students should also be able to understand the conceptual foundations found in mathematics. Instruction on a conceptual level should begin in early grades so that higher concepts can be taught in later grades. Yearly instruction should veer away from “heavy review” and move toward more instruction on new material and concepts that are of a higher level (McPartland, Ruby, Hill & Jones, 2006).
With these recommendations comes the understanding that restaffing an elementary school with math specialists would be a difficult and expensive venture for the United States since it is not producing many mathematics education teachers. Schools are competing with industry for math specialists. One suggestion to satisfy the need for the math specialist, while controlling the costs associated with more personnel, was to have a specialist that could operate in a semi-departmentalized format. That specialist could rotate to several classes teaching weekly lessons that explore the depth needed in the elementary classrooms. The math specialist could also offer professional development and training for the other teachers (McPartland et al., 2006).

There are several comprehensive school reforms that have been tested, such as Success for All; they have been typically geared toward reading and language arts (Ross, Nennery, Goldgeder, McDonald, RachoR, Hornbeck, & Fleischman, 2004). A study conducted in the Jefferson County School District of Louisville, Kentucky, used the Different Ways of Knowing (DWoK) model of reform. This model used Social Studies as the basis with integration to address the other subjects. At the conclusion of this study, the students made significant gains in all areas except science and mathematics (Munoz, Ross, & McDonald, 2007).

**Attitudes Toward Change**

There are varying degrees in relationships among educators within a school. This can range from vigorously healthy to dangerously competitive (Barth, 2006). The strength and nature of these relationships influence professional practice (Barth, 2006). The nature of relationships among the adults within a school has a greater influence on the character and quality of that school and on student accomplishment than anything else
School is full of non-discussables—the definition of a non-discussable: an issue of sufficient import that it commands attention but is so incendiary that it cannot be discussed in polite society (Barth, 2006). It is like the elephant in the living room. Non-discussables can carry so much power that change is more than difficult, it can become impossible (Barth, 2006).

Teachers carry a wealth of knowledge. The veterans have years in the trenches that have taught them just as much, maybe even more, as published research (p. 10). Barth (2006) calls this “craft knowledge (p.10).” This knowledge is lost with the retirees, and the cycle of on-the-job training starts again with the new recruits (Barth, 2006). An administrator who consults teachers before making changes would have a powerful experience base contributing to the change. In the South Heights School, the administrator used a leadership team to assist with the introduction and implementation of the CHILD program. Five years after its implementation, the South Heights Elementary school exceeded state goals and was selected as a National School Change Award winner (Barth, 2006).

In Cyprus, a study was conducted to evaluate factors that affect teacher satisfaction. The researchers found that teaching at the elementary school level, school climate, and a teacher’s degree of attainment are significantly linked to teacher job satisfaction. The study suggests that administrators take a look at giving teachers attainable goals and offering more opportunities to participate in decision making. An elementary departmentalized setting would give the administrator an opportunity to offer an attainable goal by allowing teachers to focus on one or two areas. It also provides the teachers the opportunity to work in a grade level they prefer with the possibility of
providing an opportunity for shared decision making through collective planning
(Menon, Papanstasiou, & Zembylas, 2008).

After conducting a study on the use of time at two middle schools, Fisher and Frey (2007) concluded,

While there are many variables we cannot change, especially when it comes to the learning needs and achievement of our urban youth, there are a number of variables that are under our control. The way we use instructional time and the consistency with which we implement instructional strategies are two of the variables that we have direct influence over. (Fisher & Frey, 2007, p. 210)

Consideration for all stakeholders involved is a primary concern when implementing any school change. The principal is seen as a major change agent in school reform. In Larocque’s (2007) study, the principal was described as “collaborative and respectful (p.159).” By inviting everyone to the table to assist with the changes in the school, the principal advanced the school from a D to a B on the Florida Comprehensive Achievement Test in just three years. A principal considering changing the school structure from traditional to departmentalized would want to consider using this leadership design. Inviting everyone to participate and using data to drive the decisions proved effective in this case (Larocque, 2007).

After extensive research in the area of school connectedness, Blum (2005) noted that the degree to which students feel connected in a school depends on the classroom teacher and the administration. He credits the classroom teacher because that person sets the tone for the classroom community. The classroom teacher is the first line of defense as the person in charge of setting expectations. In his research, he found that an effective
teacher makes a classroom connected by having expectations and making learning “meaningful and relevant” to the students (Blum, 2005, p.18).

Blum (2005) also discussed the importance of good administration for creating a connected school. A teacher is powerful over the classroom but has little influence on the community perception of the entire school. A supportive administration would ensure that a teacher can give sufficient support to the students (Blum, 2005).

In 2004, the National Research Council and the Institute of Medicine conducted a study to determine which factors most influence a student’s feeling of belonging to a school. These findings support the idea that teachers and administrators have the power to provide a comfort zone where students can experience success. Some of the characteristics they list include setting high standards and giving opportunities for students to engage in hands on learning and exposing students to a wide array of instructional strategies (NRCIM, 2004).

Vermont realized that it needed to help the educational generalists of the elementary classroom increase their fundamental understanding of mathematics. Through the Vermont Mathematics Initiative, the University of Vermont, state education agencies and business leaders decided to offer a master’s degree in teaching elementary mathematics comprised of a three-year, ongoing program. This program was designed to teach the teachers the mathematical concepts behind the curriculum. The teachers have to focus on four major components of the program to earn the degree: learning complex math content, using effective teaching practices, completing an action research project, and building leadership skills (Galley & Jacobson, 2004).
The Vermont Mathematics Initiative uses mathematicians to facilitate group problem-solving methods with the teachers to give instruction on the complex mathematics often avoided by elementary teachers. It also uses mentors who follow the teachers throughout the program to evaluate the teachers’ lesson preparation, and lesson deliveries. The teachers are empowered to deliver effective mathematical instruction. One teacher stated, “I didn’t say the same thing louder and slower. I had several directions at which I could approach them. I understood what the kids needed to know” (Galley & Jacobson, 2004, p. 2). The teachers in this program are prepared to deliver a deeper understanding of mathematics in their instruction (Galley & Jacobson, 2004).

Perceptions play a major role in change. Liu (2011), an instructor at Wichita State University, conducted a study concerning preservice teacher attitudes toward departmentalization. The classes (over two semesters) were comprised of a total of 62 students—majority female, Caucasian, and in their early 20’s. Using the discussions on the Blackboard online teaching systems, the professor was able to obtain access to detailed discussions between the students in reference to prompts he posted concerning departmentalization at the elementary level (Lui, 2011).

Advantages expressed by the participants included teacher’s enthusiasm about the subject, focused attention on one area, and an easier transition to junior high school. One teacher stated, “A person’s preference for a subject will show through in how it is taught and therefore teachers should be focusing on a subject they actually enjoy and understand” (p. 45). The preservice teachers also noted that a teacher teaching one subject (where they felt comfortable) would allow for more in-depth activities and the
teacher would have more opportunities to make real-life connections with the material (Lui, 2011).

One other bonus cited by the participants was the more focused planning time. Participants also expressed the need for departmentalization at the elementary level because of the lack of time given to subjects such as social studies and science. They stated that a departmentalized schedule would ensure that “no subject would be slighted” (Lui, 2011, p. 46).

When responding to specific questions concerning math instruction, the teachers proposed that people who consider themselves math people would excel better with mathematics instructions. They noted that some self-contained teachers experience a high level of anxiety toward teaching mathematics. They commented further that this could be hugely detrimental to students who inherit that anxiety from their teachers (Lui, 2011).

The disadvantages discussed included limited personal relationships, lack of integration, stress on young students, and the loss of instructional time with class changes. Most of the participants in the study stated that if they had the ability to choose, which they would prefer, most of them would choose to have one class for the entire day. They felt that the strong personal relationships developed would foster academic success.

The participants felt that integrations would provide better comprehension and depth in the subjects taught. They felt the departmentalized setting would not allow for that integration. One teacher gave the example,

Right now, in my classroom we are studying apples. We are reading stories about apples, experimenting with apples, counting/graphing/patterning with apples and
having fun with art related apple activities. The more time we spend on this
subject in many area/activities, the more the students are connecting it in some
way to their personal experiences. (Lui, 2011, p. 47)

After taking sides in the earlier prompts, the preservice teachers were presented
with the idea of a middle ground in this debate/discussion. The middle ground discussed
was a form of departmentalization, team teaching. They agreed that the team teaching
model highlights the best of both departmentalized and self-contained settings. The team
teaching model gives teachers fewer subjects to focus on and allows time for
collaboration and the integration of subjects (Lui, 2011).

Teacher working conditions affect the degree of successful implementation of any
program. Even though there are many stakeholders influencing the education of students,
the teacher is the primary source of effectiveness for the delivery of education.
Leithwood (2006) was commissioned by the Teachers’ Federation of Ontario to conduct
a study of what conditions motivate teachers. In his study he found that pedagogical
content knowledge was one of the key points for teacher performance (Leithwood, 2006).

In Leithwood’s (2006) work he found that teachers work over 50 hours each
week. An instructional day only accounts for half of that time. Teachers are stressed
about the time involved in the profession but tend to have a more positive outlook when
they have adequate time for instructional preparation and when they are allowed to
participate in school-level decisions.

Generalist vs. Specialist

Barth (2006) describes a traditional classroom as teaching in isolation. He coined
the phrase parallel play to describe what transpires in an elementary school with self-
contained classrooms. He noted that the teachers are all playing, just not together. They exist in isolation, avoiding conflict and sacrificing growth that comes with collaboration (Barth, 2006). Middle school (vs. junior high) is considered to be better suited for adolescents because they have a need to belong and feel that a middle school configuration is more secure (Beane & Lipka, 2006).

In the traditional classroom, the teacher is expected to differentiate instruction to meet the needs of all learners in the class. All students are expected to master the standards handed down by government agencies. In order to meet the needs of all learners, the teacher has to consider the content (subject) he or she is covering, the processes involved in that subject, and the product expected from every student who is in that class. Along with those areas, the teacher is also expected to address all ability levels, learning styles, and interests of the students. For a classroom generalist, differentiating would have to take place for each subject taught by that teacher (Levy, Pasquale, & Marco, 2008).

The differentiated instruction advocates backward design planning. McTighe and Brown (2005) presented that differentiated instructions can take the students to a deeper level of understanding. Differentiated instruction requires a connection to individual experiences and critical thinking (McTighe & Brown, 2005).

Although differentiated instruction is supposed to be the answer to the generalist’s problem of meeting the needs of all students, this is not an easy task. VanSciver (2005) described it as, “time-consuming, resource-intensive and complex” (VanSciver, 2005, p. 39). Differentiated instruction requires the teacher to be flexible with grouping and focuses on individual student outcomes for every subject (Cox, 2008).
The differentiated design advocates backward design planning. McTighe and Brown (2005) presented that differentiated instructions can take the students to a deeper level of understanding. Differentiated instruction requires a connection to individual experiences and critical thinking.

The Project Child Schools showed an increase in performance from the “specialized” classrooms. At the end of the first year, the students from the departmentalized classrooms outperformed the students from the self-contained classrooms (Butzin, Carroll, & Lutz, 2006).

Chan, Terry, and Bessette (2009) at Kennesaw State University propose that departmentalization is elementary schools is a good segue into the having specialized classes when they enter middle school. They argued that if the students overcome this obstacle in elementary school, that is one less change they will have to navigate that first year of middle school. In their opinion, students will move from the motherly self-contained classroom to be better prepare for the real world, which requires survival skills in the midst of change (Chan et al., 2009).

Gruenert (2005) found that schools that have an atmosphere of collaboration produce higher student achievement. Teachers and administrators working together prove to be a powerful combination. In his study featuring 81 schools in Indiana, he found that students in a culture of collaboration perform well in language arts and mathematics. He measured six factors: collaborative leadership, teacher collaboration, professional development, unity of purpose, collegial support, and learning partnership. Professional development, unity of purpose, and learning partnership displayed the strongest correlation. The schools were grouped into three categories: elementary,
middle, and high. The findings showed that elementary schools had the highest levels in all areas of collaboration. This lends to the argument that the structure found in most elementary schools, self-contained classrooms, provides a better atmosphere for student achievement. However, this study noted that the pressure added by the curriculum mandates by policies such as NCLB is pushing more administrators in the direction of departmentalization. Gruenert (2005) warns administration to keep the importance of the social conditions in mind when making changes as these changes could have a huge impact on teacher relationships and student success.

Large urban areas, such as Baltimore, MD, and Philadelphia, PA, have decided to make changes after dealing with years of poor test scores and unruly behavior. They have selected to return to the K-8 model of structuring classes after trying the 5-8 and 6-8 grade configurations (Beane & Lipka, 2006). Middle school is purported to be a better fit for the needs of an adolescent. Adolescent students need to feel a sense of belonging. They thrive in situations that promote a more family-like atmosphere (Beane & Lipka, 2006).

In Kentucky, the Henderson County School district decided to change its structure after years of decline. Their scores were low, their students were poor, and they blamed all of the usual factors (poverty, lack of parental involvement, discipline, and teacher attrition) for their problems. They moved from the lowest ranks to a high performing district after changing their structure of their school. They decided to try the Project CHILD design. Teachers were assigned a subject to teach and they taught the same students for three years in that subject. This design diminished the time teachers lose reviewing at the beginning of each year and the down time after testing is completed.
This redesign allowed the teacher to use the time after the test to begin covering concepts required in the next year’s skills (Butzin, et al., 2006).

When the new state tests requirements for Tennessee were made public, Memphis City Schools expected a drop in performance. The first year that Algebraic concepts would be included on the fifth-grade level was in 2009. Of the district’s 351 fifth-grade teachers, none had majored in math. The superintendent of Academic Operations for the district, Irving Hammer, stated, “So, that means the teaching of Algebra at grade 5 will most certainly be done by people who don’t have extensive math preparation” (Hood, 2010, p. 13). This administration decided that in order to cover higher order math skills, departmentalizing fifth grade might ensure that the students at this level are being taught by the most capable math teachers (Hood, 2010).

Principal Raychellet Williamson inherited a school with a departmentalized fifth grade. She felt that the high-poverty, high-minority school could benefit from departmentalization in other grades. Because the fifth grade experienced gains, she extended that configuration to third and fourth grades. Her rationale was that her teachers could focus on one or two subjects. Although some schools showed growth with the change in configuration, the Memphis City School District has not made its change district wide (Hood, 2010).

In Denver, the process of departmentalizing is called “platooning.” (p. 13) This districts’ students begin changing classes as early as first grade. Steve Peha, an education consultant, noticed a change in his audience. He stated that 15 years ago, only five percent of elementary schools departmentalized their schools. Currently, departmentalizing seems more popular as that number has grown closer to 20%. He
predicts that there will continue to be an increase in the number of schools that choose to departmentalize because of the increase in the subjects and grade levels that are being tested (Hood, 2010).

The Chief Academic Officer of Palm Beach County, Florida, Jeffrey Hernandez, has been departmentalizing instruction for many years. He began departmentalizing instruction because as principal, one of his elementary schools had attained a “D” on the states’ rating scale and needed some help. Hernandez realized that he had a staff filled with brand new teachers, and he felt they needed to master their content. He chose to let the teachers focus on one area of expertise. It proved to be a good decision because his school quickly climbed to an “A” on the state scale. His success moved him up the continuum of curricular positions offered in the state. From principal, he moved to a position as a regional administrator in Dade County schools where he again implemented departmentalization in 40 schools. Success was evident, as the students of these schools made a marked improvement on the standardized test scores. According to Hernandez, the students adapt well to the changes. Students have an opportunity to be exposed to different teaching styles (Hood, 2010).

When Hernandez discussed changing his elementary schools to a departmentalized format, he noted that the first two months of implementation are a challenge because of the resistance from teachers. He also noted that this subsides as the teachers become familiar with the change and begin to collaborate on instruction. He stated, “They kill you in the process, and they kill you if you put it back” (Hood, 2010, p.16).
Teachers are pushed to maximize their lessons in the time allotted (Hood, 2010). Professional development can be developed and targeted to subject areas. Teachers have the opportunity to become experts in the subject they teach. Some teachers prefer the departmentalized model because they can spend time with a subject they like. In a traditional classroom, teachers who spend time on the subjects they like may be tempted to slack in the other areas of instruction. Some teachers also prefer the departmentalized structure in an elementary setting because it is more like a partnership. Each child has a team of teachers working for his or her success (Hood, 2010).

Departmentalization has special benefits for student socialization. Students are not subject to the personality of one teacher throughout the school day. This is especially beneficial for Special Education students who tend to need more opportunities for movement (Hood, 2010).

Older research studies on the transition to middle school and its organizational structure argue that adolescents are not ready to be a part of the departmentalized setting offered by middle schools. One study conducted by Audra Parker (2009) at the University of South Florida, provided contradictory evidence to this argument. In her study, she examined the fifth-grade classrooms of two elementary schools and their transition to a middle school for sixth grade. The two schools had different organizational structures, one offered a self-contained fifth-grade structure and the other offered a departmentalized option with a teacher for each subject. Parker found that both sets of students provided very similar answers when surveyed on their self-concept. The students who experienced the self-contained structure in fifth grade reported a slightly higher score in the area of independence whereas the students from the departmentalized
structure had higher scores in physical appearance. Parker suggested that perhaps the
organizational structure at the elementary level is not a huge factor in the adjustment of
an elementary student to the middle school environment (Parker, 2009).

Parker (2009) was a part of another study that evaluated the preparation teachers
who teach the elementary grade leading to the middle school transition. She found that
there were different types of departmentalization, some within the same district. In this
study, three elementary schools feeding into the same middle school offered three types
of departmentalized structures in an effort to prepare their students for the transition.
One school offered a semi-departmentalized organization. In this school, there were
three fifth-grade teachers. All of the teachers taught writing, and then the students went
to one teacher for math, one for science/social studies, and the other for reading. The
second elementary school offered a departmentalized structure where the teachers were
divided into teams. Both teachers in the team taught reading and language arts to their
homeroom class. After the homeroom instruction, the students would swap classes for
one class of mathematics and then a separate class for science/social studies. The third
school had a fully departmentalized structure with a different teacher for each of the core
subjects. After a combination of interviews, field notes, and archival data, Parker (2009)
found that the pretransition teachers were overly pressured to prepare students for the
next level. This pressure led the teachers to neglect the needs of the children at their
current level (Parker 2009).

When it comes to adolescent development, the traditional, self-contained
classroom is considered the most nurturing environment for a student of that age
(Vygotsky, 1978; Blum, 2005). Ainley (2006) conducted a study addressing what a
school might consider when trying to figure out how to keep students in school. He concluded that as long as a school is engaging, it will retain more students. Students, especially adolescents, want to belong. So, according to his study, the organizational structure of the school should not matter if the students are engaged and feel connected to the school (Ainley, 2006).

Some schools have tried departmentalization coupled with other practices such as looping. A small school in Newburgh, New York, decided to try this combination. Using three teachers to teach third, fourth, and fifth grade in a looping/departmentalized format, it found that test scores on the Iowa Test of Basic Skills (ITBS) were positively affected by the change. The school gave credit to the shared burden of teaching the tested area, in this case, fourth grade. The principal documented several factors that contributed to the increased academic success. One was that the teachers developed a deeper understanding of the subject they were teaching because they had to learn the state required content for three grades instead of one. Also, the teachers exhibited enthusiasm toward the change and expressed an interest in spending more time with the subjects that they perceived as more interesting. This method also saved time because the teachers did not have to waste time giving pretests and reviewing at the beginning of the year (Delviscio & Muffs, 2007).

Some professors conducted a study in the Duval County school district to evaluate the use of elementary teacher specialists in the area of mathematics. Using a survey instrument, they were able to gather information on the schools’ reason for use, procedures, and results as they relate to specialized instruction at the elementary level. When they compiled the survey results, they found that the majority of the elementary
schools were using a team teaching model for their instruction. The principals chose this model to give teachers more time for preparation and to allow teachers to focus. This decision was based on the belief that this focus would improve achievement in the area of mathematics. Most elementary teachers have a general education degree (i.e., K-4, K-8) and do not have specialized endorsements. Therefore, many of the teachers selected to teach mathematics were either self-selected or selected by the principal because of their past performance in that area (Gerretson et al., 2008).

When discussing the positives of using a team teaching model, the principals noted a marked change in teacher attitudes. Administrators reported that the teachers had time to concentrate on their instructional planning. Professional development could be streamlined according to the discipline being taught. This prescription approach would make professional development targeted and more meaningful. Also, the reduced workload allowed the teachers to address the subjects with more depth and creativity. Teachers reported feeling less stressed with the change in the workload, and administrators believed this would positively assist with attrition rates commonly found in many urban districts (Gerretson et al., 2008).

This study did not use actual standardized test scores as a part of the research. Instead, the administrators and teachers were asked how they felt the use of team teaching was affecting student achievement. The teachers reported that they could see gains in routine classroom assessments and portfolios (Gerretson et al., 2008).

Administrators discussed problems with changing the school structure to the departmentalized, team teaching format. They expressed that pairing the teachers requires some attention because the teachers’ philosophies and teaching styles should be
similar, or the teachers must be able to respect different philosophies and styles.

Replacing an elementary teacher in a specialized organizational structure could also be a task as most elementary teachers are trained to be generalists. Scheduling adequate time for each subject in one school day is also challenging with elementary students. Many states require an allotted time for reading at the elementary level, which leaves a reduced instructional time for the rest of the core subjects. Although these problems were noted, the administrators agreed that the team teaching model provide far more benefits than the generalist classroom structure (Gerretson et al., 2008).

The National Council of Teachers of Mathematics (NCTM) has been reviewing the use of mathematics specialists and coaches and their effectiveness in instructional improvement. In a bulletin published on its website, the Council surmised that there is not enough research to draw a definite conclusion on the direct impact these specialists and coaches have in educational outcomes. One reason cited by the group was that specialists and coaches are usually implemented as a part of an overall educational reform model that makes it difficult to ascertain if only the specialist or coach has made the difference. They also noted that the model of the coaching program is also relevant in the judgment of the programs impact on academic achievement (McGatha, 2009).

Francis (Skip) Fennell, former president of the NCTM, argued that the need for specialists had become more relevant. He suggested that “a student’s view of what it means to know and do mathematics is shaped in the elementary school; yet in the United States, elementary teachers are, for the most part, generalists” (p. 1). He further pled his case by noting that elementary teachers have not been exposed to a comprehensive mathematics curriculum during their undergraduate matriculation (Fennell, 2006).
After designing a set of standards for training mathematics specialists, the Association of Mathematics Teacher Educators (AMTE), along with the NCTM, the Association of State Supervisors of Mathematics (ASSM), and the National Council of Supervisors of Mathematics (NCSM), joined together to give a formal statement on their support for mathematics specialists at the elementary level. Their position:

The NCTM, AMTE, NCSM, and ASSM recommend the use of Elementary Mathematics Specialists (EMS professionals) in pre-K–6 environments to enhance the teaching, learning and assessing of mathematics to improve student achievement. We further advocate that every elementary school have access to an EMS. Districts, states or provinces, and institutions of higher education should work in collaboration to create (1) advanced certification for EMS professionals and (2) rigorous programs to prepare EMS professionals. EMS professionals need a deep and broad knowledge of mathematics content, expertise in using and helping others use effective instructional practices, and the ability to support efforts that help all pre-K–6 students learn important mathematics. Programs for EMS professionals should focus on mathematics content knowledge, pedagogical knowledge, and leadership knowledge and skills. (AMTE, 2010, p. 1)

McGrath and Rust (2002) extended a previous study by Garner and Rust (1992) to find if there was an academic difference between students in a self-contained class compared to students of a departmentalized classroom. In the original study, they only looked at standardized scores of the two classes. In the second study, they included a new factor, instructional time. The theory was that the loss of instructional time due to
changing classes would have an effect on the academic gains of students in a
departmentalized setting (McGrath & Rust, 2002).

Both studies found that the increased academic achievement for students in a self-
contained setting extended to Language, Science, and Total Battery. They did not find
any significant academic differences in Reading, Mathematics, and Social Studies.

Summary

The theorists Vygotsky and Maslow provide a foundation for organizing an
elementary school that best supports learning. Vygotsky’s theory supports a student
developing socially from exposure to several teachers in a departmentalized setting.
Maslow would probably agree with a self-contained setting that addresses a student’s
basic need for a safe environment with one teacher who fits the parent-like role most
familiar to elementary children.

Historically, elementary classrooms have evolved into what is seen in the 21st
century. From one-room school houses to the “Readin, Ritin and Rithmetic” schools to
the self-contained elementary classroom, the organization of elementary schools has been
a constantly changing process.

Increases in accountability through government requirements have changed the
way in which schools are run. American students have been moving in a downward trend
compared to students from other countries. To address the decline, several stakeholders
have come together to attempt to improve America’s place in the global society.

Teachers are on the front line of the battle in education. The attitudes of the
teachers play a vital role in the success of students. Some administrators have realized
that teachers’ inclusion in decision making can make or break programs implemented for improvement.

Some teachers are not math people, and some do not have adequate preparation to cover mathematics and problem-solving skills at a deeper level. Yet, many schools across the country are expected to teach all subjects with the same level of depth and mastery required by the new standards. One way to address the depth of knowledge required by teachers is to give them the opportunity to specialize.
CHAPTER III

METHODOLOGY

Introduction

After NCLB, a regular K-8 certification would not suffice in a middle school classroom. Following its inception, all middle school teachers were required to be highly qualified in the area in which they were delivering instruction. The policy makers of that time believed that a teacher teaching middle schools core subjects should be well versed in the subjects he or she was teaching. The natural scheduling fit for teachers teaching core subjects is the departmentalized organizational structure. It allows teachers the opportunity to narrow their focus and to positively affect student achievement (Gerretson et al., 2008).

The purpose of this study was to determine if there is indeed a relationship between student achievement and classroom organizational styles. This study specifically evaluated the impact of the departmentalized classroom compared to a self-contained classroom on student problem solving skills. This study included scores from the Mississippi Curriculum Test 2 (MCT2) as well as information from a survey of the teachers (Appendix A).

Research Design

A causal-comparative design was used to see if there is a statistical difference in mathematical test scores on the MCT2 of students who receive instruction in a self-contained classroom setting as compared to students who receive instruction in a departmentalized classroom. This was a quantitative analysis of data. The study evaluated the test scores of students and other variables such as teacher certification,
number of years the current organizational style has been in place, and teacher attitudes toward the current organizational style used in the school.

Participants

The researcher received written confirmation from the superintendent of a large southern Mississippi school district that the request for permission to conduct this study had been granted (Appendix B). According to the 2008-2009 district report card furnished by *The Children First Annual Report*, this school district has an enrollment of 7,124. Seventy-one percent of those students are on free and reduced lunch, and 56% of those students are minority (46.52% African American, 9.6% Hispanic). (Mississippi Department of Education, 2011).

This study focused on fourth grade math scores. The district has 11 elementary schools with fourth-grade classes. The researcher used the MCT2 data sheets provided by the administrator with individual student scores on the mathematics portion of the test.

This study examined the mathematics scores on the MCT2 for the fourth-grade classes of the elementary schools of this large southern school district. Schools that are self-contained in the fourth grade were compared to the students of the fourth grade in the departmentalized classrooms. All fourth-grade mathematics teachers took part in a survey concerning their preparation and attitudes toward departmentalization.

Instrumentation

To compare student achievement, the study used the results of the 2010-2011 MCT2. The mathematics portion of the test was the area of focus. This addressed research question #1: Is there a difference in mathematical performance of fourth graders
who receive departmentalized instruction as compared to fourth-grade students who receive self-contained instruction?

The researcher developed a survey based on a survey found in a doctoral study entitled *Comparison of Fifth-Grade Students’ Mathematics Achievement as Evidenced by Georgia’s Criterion-Referenced Competency Test: Traditional and Departmentalized Settings* completed at Liberty University (Williams, 2009). The researcher retained the basic demographic questions but changed them to reflect Mississippi certification. The researcher then added five questions on a Likert Scale that are intended to measure teacher attitudes toward departmentalization. Since this was a new survey, the researcher conducted a pilot study using the instrument to test for reliability and validity. The Cronbach’s alpha for questions 10-14 was .877.

The survey instrument gathered information concerning the implementation of departmentalization at the school and the attitudes of teachers toward departmentalization. Questions 2-6 of the survey instrument addressed research question 4: Does teacher preparation in the area of mathematics affect testing outcomes? Question 16 addresses research question 2: Does the number of years of implementation affect the success of a departmentalized organizational style? The information solicited by this question provided information about the implementation of departmentalization at the school. Questions 10-14 addressed research question 3: Are teacher attitudes towards departmentalized organization style influential on the academic outcomes of the students? These target teacher attitudes toward departmentalization.
Procedures

Prior to beginning the data collection for this study, the researcher obtained written permission from a large southern school district superintendent. Following that approval, the researcher petitioned approval from the Institutional Review Board (IRB) of the University of Southern Mississippi (Appendix D).

After both approvals were complete, the researcher contacted the principals of the participating elementary schools by telephone call to briefly explain the study and to request a meeting. The researcher met with each principal to give a follow up letter to the telephone conversation (Appendix C). A part of the request was a MCT2 summary testing sheet on each fourth grade student tested during the 2010-2011 school year. After the meeting, the researcher gave the principal surveys for each fourth grade teacher. The researcher left postage paid envelope in the front office for all requested materials.

To conduct the study, the researcher proposed to use the fourth grade MCT2 scores from the 2010-2011 school years. Because problem-solving is one of the main areas identified in the list of skills required for the 21st century, the study only examined the mathematics portion of the test. The test scores were linked to the teacher attitude surveys. Participation in the survey was voluntary but the response rate was critical to the study. The researcher offered an incentive for surveys completed by an established date.

Data Analysis

The researcher used exploratory data analysis to evaluate the demographics of the teachers and schools in the survey. Demographical information included the number of
years departmentalized, the number of mathematics classes taken by the teachers, teacher licensure, and professional development in mathematics.

Following the exploration of the demographical data, the researcher conducted statistical tests comparing the student achievement test data to the demographical data to test for a statistical difference in the mathematics scores of the self-contained group to the departmentalized group. The researcher also tested teacher attitudes toward departmentalization to see if teacher attitudes influenced test scores.

Summary

The study was designed to measure the achievement of students in a departmentalized classroom with those of students from a self-contained classroom. The researcher considered other factors, besides classroom organizational style, that may have influenced the achievement outcomes of these students. Some of the other factors included teacher preparation, teacher attitudes toward the departmentalized organizational style and the number of years the school had been departmentalized.
CHAPTER IV

ANALYSIS OF DATA

Introduction

The purpose of this study was to investigate the difference in fourth grade scores on the mathematics portion of the MCT2 between students in a self-contained classroom and students in a departmentalized classroom. A survey was distributed to all fourth-grade teachers in a large, southern school district to see if teacher attitudes towards departmentalization, teacher preparation, and length of implementation of a departmentalized organizational style influenced student test scores. A combination of statistical tests was used to answer the research questions outlined in this study.

The findings of this study were collected to answer the following research questions:

1. Is there a difference in mathematical performance of fourth graders who receive departmentalized instruction as compared to fourth grade students who receive self-contained instruction?

2. Does the number of years of implementation affect academic outcomes in a departmentalized organizational style?

3. Are teacher attitudes towards a departmentalized organizational style influential on the academic outcomes of the students?

4. Does teacher preparation in their area of mathematics affect testing outcomes?

Demographics

The survey was distributed to 21 fourth-grade teachers in a large, southern school district. Of the 21 participants, 12 teachers were matched with student MCT2 scores
from the 2010-2011 school year. The participants of this study included 12 fourth-grade teachers matched with the data from their students from the 2010-2011 school year. Of the 12 classrooms, seven were departmentalized and five were self-contained. In each case, the teacher completing the survey was an instructor for a fourth-grade class during the 2010-2011 school year.

Of the 12 teachers surveyed, 16.7% had less than five years of experience in the classroom. Four teachers, 33.3%, had between five and 10 years of experience. Two teachers, 16.7% had between 11 and 15 years of experience and four teachers, 33.3% had over 16 years of experience. In regard to years experience teaching fourth grade, half of the teachers taught that grade level between five and 10 years. Four teachers, 33.3%, taught fourth grade less than five years. One teacher, 8.3%, had been teaching fourth grade between 11 and 15 years and one other teacher had been teaching fourth grade more than 16 years (Table 1).

Table 1

*Frequency and Percentages of Demographic Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Teaching Experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 5 years</td>
<td>2</td>
<td>16.7</td>
</tr>
<tr>
<td>5 – 10 years</td>
<td>4</td>
<td>33.3</td>
</tr>
<tr>
<td>11 – 15 years</td>
<td>4</td>
<td>33.3</td>
</tr>
</tbody>
</table>
Table 1 (continued).

<table>
<thead>
<tr>
<th>Experience teaching fourth grade</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5 years</td>
<td>4</td>
<td>33.3</td>
</tr>
<tr>
<td>5 - 10 years</td>
<td>6</td>
<td>50.0</td>
</tr>
<tr>
<td>11 – 15 years</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>16+ years</td>
<td>1</td>
<td>8.3</td>
</tr>
</tbody>
</table>

In the area of preparation, one-fourth of the teachers had a single A teaching license, which is equivalent to a bachelor’s degree. Fifty percent of the teachers obtained a masters’ degree and held a double A certification. One teacher, 8.3%, completed a specialist degree and obtained a triple A license. Eight teachers, 66.7%, had taken between four and seven college-level courses in mathematics. Four teachers, 33.3%, had taken three or less college courses in mathematics. Half of the teachers had between four and seven workshops in the area of mathematics instruction. The other half had attended eight or more workshops in the area of mathematics (Table 2).
Table 2

*Frequency and Percentages of Demographic Variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certificate Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>3</td>
<td>25.0</td>
</tr>
<tr>
<td>AA</td>
<td>8</td>
<td>66.7</td>
</tr>
<tr>
<td>AAA</td>
<td>1</td>
<td>8.3</td>
</tr>
<tr>
<td>AAAA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of college courses completed in math</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 3</td>
<td>4</td>
<td>33.3</td>
</tr>
<tr>
<td>4 - 7</td>
<td>8</td>
<td>66.7</td>
</tr>
<tr>
<td>Workshops and trainings completed in math</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 – 7</td>
<td>6</td>
<td>50.0</td>
</tr>
<tr>
<td>8+</td>
<td>6</td>
<td>50.0</td>
</tr>
</tbody>
</table>

**Descriptive Statistics Criteria**

The following findings are associated with questions 10 through 14 of the survey. These questions were asked to gauge teacher attitudes toward departmentalization. According to the results of the survey, the teachers have a positive attitude toward departmentalization. Question 11 received the best response with a mean of 4.25. Most teachers believe that their lesson delivery is better in a departmentalized setting (Table 3).
Table 3

*Descriptive Statistics of Survey Questions 10 - 14*

<table>
<thead>
<tr>
<th>Questions</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being departmentalized gives me more planning time.</td>
<td>3.25</td>
<td>1.22</td>
</tr>
<tr>
<td>My lesson delivery is better in a departmentalized setting.</td>
<td>4.25</td>
<td>.97</td>
</tr>
<tr>
<td>It is easier for me to differentiate instruction in a departmentalized setting.</td>
<td>3.67</td>
<td>1.44</td>
</tr>
<tr>
<td>My students learn better in a departmentalized setting.</td>
<td>3.58</td>
<td>1.38</td>
</tr>
<tr>
<td>Teaching is less stressful in a departmentalized setting.</td>
<td>3.5</td>
<td>1.38</td>
</tr>
</tbody>
</table>

Overall Attitude 3.65 1.06

Scale 1=strongly disagree to 5 = strongly agree.

Performance in a Departmentalized vs. Self-Contained setting

*Is there a difference in mathematical performance of fourth graders who receive departmentalized instruction as compared to fourth grade students who receive self-contained instruction?*

The researcher conducted a t test to determine if classroom organizational style affected student MCT2 scores in the area of mathematics. The results indicate that classroom organizational style had no significant difference in student scores in a departmentalized setting as compared to the scores in a self-contained setting, $t(213) = 1.24, p = .216$ (See table 4).
Table 4

*t-Test based on Organizational Style and Student Scores*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Departmentalized Score</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>152.48</td>
<td>8.62</td>
</tr>
<tr>
<td>Yes</td>
<td>150.89</td>
<td>9.73</td>
</tr>
</tbody>
</table>

Analysis of Variance Based on Years of Implementation

*Does the number of years of implementation affect academic outcomes in a departmentalized organizational style?*

The researcher conducted an analysis of variance on Research Question 2. The results of the test indicated that the number of years a school had implemented the departmentalized organizational style did not have a significant impact on student scores. $F(2, 9) = .573, p = .615$ (See Table 5).

Table 5

*Analysis of Variance of Years of Implementation*

<table>
<thead>
<tr>
<th>Years of Implementation</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 -2 years</td>
<td>151.67</td>
<td>8.89</td>
</tr>
<tr>
<td>3+ years</td>
<td>149.11</td>
<td>5.21</td>
</tr>
</tbody>
</table>
Attitudes Toward Departmentalization

*Are teacher attitudes toward a departmentalized organizational style influential on the academic outcomes of the students?*

A Pearson correlation was conducted to determine if the teacher attitudes toward a departmentalized organizational style would influence student outcomes on the MCT2 in the area of fourth-grade mathematics. The results of the test indicate that there is not a significant impact on student test scores based on teacher attitudes toward a departmentalized organizational style, $r(12) = -.024$, $p = .941$.

Teacher Preparation

*Does teacher preparation in the area of mathematics affect testing outcomes?*

A Pearson correlation was conducted to determine if teacher preparation in the area of mathematics would influence student outcomes on the mathematics portion of the MCT2. Based on the results of the test, teacher preparation did not significantly influence student mathematics test scores, $r(12) = .165$, $p = .609$.

Summary

This chapter presented the statistical tests that were used to determine if departmentalized instruction influenced fourth grade mathematics scores on the MCT2 during the 2010-2011 school year. Surveys were used to collect data on teacher attitudes toward departmentalization, teacher preparation, and number of years of implementation of the departmentalized structure. The results of the statistical tests performed showed no significant influences on student scores from any of the areas measured by the survey.
Public education has changed quite a bit over the last few decades. The United States is shining a light on America’s schools as they continue to lose ground in national rankings. How to best prepare students to compete in a global economy is a constant discussion at all levels of government. Big industry employers have come together to try to correct what is lacking in the nation’s high school and college graduates.

America’s students are being criticized for their lack in the area of critical thinking. Analytical thinking cannot be addressed by just teaching from the textbook. Teachers will be required to teach their subjects at a deeper level. This is challenging at the elementary level where teachers are required to deliver quality instruction in every subject.

Administrators are struggling to find a way to best meet the needs of students while operating under the spotlight of accountability. Teachers are overwhelmed with the idea of delivering instruction at the required levels of rigor in every subject. Since the implementation of No Child Left Behind, administrators are having greater difficulty finding adequate staff to deliver the instruction required by its guidelines. Teachers are not applying for jobs to teach tested areas to avoid the pressure associated with those areas of instruction (Delviscio & Muffis, 2007).

In an effort to ensure rigorous delivery of content, administrators have tried departmentalization in the upper grades at the elementary level. Allowing the teachers to specialize assures focused planning time to prepare lessons that include depth and analytical thinking. Some psychologists disagree with departmentalization at this age.
because the students are not mature enough to handle the shift in their security base
normally found in a self-contained elementary classroom.

Summary of Findings

The purpose of this research project was to determine if a certain organizational
style at the elementary level promotes 21st century skills. Since mathematics employs
several analytical skills in the area of problem solving, the researcher specifically looked
at student mathematics scores on the MCT2 and conducted a survey to investigate teacher
variables that may have also contributed to the student outcomes. The following research
questions were addressed in this study:

1. Is there a difference in mathematical performance of fourth graders who
   receive departmentalized instruction as compared to fourth grade students
   who receive self-contained instruction?

2. Does the number of years of implementation affect academic outcomes in a
departmentalized organizational style?

3. Are teacher attitudes towards a departmentalized organizational style
   influential on the academic outcomes of the students?

4. Does teacher preparation in the area of mathematics instruction affect testing
   outcomes?

The researcher used quantitative data to answer the research questions outlined in
the study. Student scores on the mathematical portion of the MCT2 were used to
determine performance in the area of problem solving. The researcher also used a survey
to gather information about the degree of implementation in the schools as well as teacher
attitudes and preparedness.
In the data collection process, the researcher found that there is no significant difference in student outcomes from students who are taught in a departmentalized classroom when compared to students taught in a self-contained classroom. Teacher attitudes toward departmentalization, teacher preparation, and years of implementation of a departmentalized organizational style also failed to show any significant contribution to student outcomes on the mathematical portion of the MCT2.

These findings indirectly reveal to any administrator looking at departmentalization as an option that student outcomes are similar to those in a school where students are self-contained. So the motivation to try an alternate organization of elementary grades would be if it works best for the school. If departmentalization allows the teacher adequate planning and the possibility of alleviating some stress on behalf of the teacher, then it may be an option to allow the administrator to retain good teachers. Chan, et al. (2009) advocated that this would be a good time to familiarize students with specialized teachers and changing classes before they have to deal with the other transitions that go along with adolescence.

To further discuss the findings, each research question is summarized in the following paragraphs:

Research Question 1: *Is there a difference in mathematical performance of fourth graders who receive departmentalized instruction as compared to fourth grade students who receive self-contained instruction?*

Some urban school districts mentioned in Chapter IV expressed some gains when they began to departmentalize schools at the elementary level. In Memphis administrators were considering taking it district wide after showing some gains in the
first few schools (Hood, 2010). In Denver and in Palm Beach county Florida, the
districts have seen much success and are increasing the number of elementary schools
using departmentalization each year (Hood, 2010).

Other studies showed some support for the self-contained classroom. In a study
conducted by Garner and Rust (1992), the students of the self-contained classroom did
better on three sections of the test—Language, Science, and Total Battery. The other
sections, Reading, Mathematics, and Social Studies, showed no significant difference. In
a similar study 10 years later, McGrath and Rust (2002) included the possible loss of
instructional time imposed by changing classrooms in the study. As with the first study,
the researchers found that the self-contained classroom showed statistically significant
gains in the Science, Language, and Total Battery. Also noted, there was no significant
difference in Math, Reading, or Social Studies scores on the standardized test (McGrath
& Rust, 2002).

The research studies by Garner and Rust (1992) and McGrath and Rust (2002)
support the findings of this study. In this study, there was no significant difference in the
mean scores of students in a departmentalized classroom when compared to students in a
self-contained classroom. In their studies, they also found no significant difference in the
mathematics scores of students in departmentalized classrooms when compared to
students in self-contained classrooms.

Research Question 2: Does the number of years of implementation affect
academic outcomes in a departmentalized organizational style?

Change is difficult. For teachers, change seems ongoing. Teachers who have
been in education a long time have developed a “wait it out” mentality. A best practice
for administrators considering change should be to involve all stake holders in the change (Larocque, 2007). In this study, the survey indicated that the number of years a school has been departmentalized had no significant effect on student outcomes on the MCT2 mathematics test. The student scores were comparable to the scores of the students in the self-contained class; thus, the results of the survey indicate that the teachers were not opposed to the change to a departmentalized organizational style.

Research Question 3: Are teacher attitudes towards a departmentalized organizational style influential on the academic outcomes of the students?

After conducting a study on the use of time at two middle schools, Fisher and Frey (2007) concluded,

While there are many variables we cannot change, especially when it comes to the learning needs and achievement of our urban youth, there are a number of variables that are under our control. The way we use instructional time and the consistency with which we implement instructional strategies are two of the variables that we have direct influence over. (Fisher & Frey, 2007, p. 210)

The results of this study support the idea that teacher attitudes can influence the success in a school. In this case, the teachers had a positive attitude toward departmentalization. Although the positive attitude toward departmentalization showed no significant influence over increasing student outcomes on the MCT2, nor did the departmentalized schools show a decline in scores. This is evidence that self-efficacy plays a role in student outcomes. In each case, if the teacher believed that the organizational style was working, then the student scores reflected the teacher’s beliefs.
Research Question 4: *Does teacher preparation in the area of mathematics affect testing outcomes?*

Chapter IV discussed a study in Virginia where researchers examined the curriculum standards for third and fifth grades and found that there is a concentration of higher order cognitive skills in the elementary science classroom (Buoncristiani & Buoncristiani, 2006). A basic understanding of problem solving will not be enough; teachers need to have an in depth conceptual knowledge of questioning techniques in order to prepare the students adequately for the transference of these skills. Questioning skills found in science and mathematics courses require a different pedagogical approach than what is required for history or reading. The person teaching these skills should be prepared on an in-depth level to deliver instruction to the elementary student. This student will need a good foundation in this area to progress further in the latter years of education (Buoncristiani & Buoncristiani, 2006).

Over 80% of the teachers in this study have more than five years of experience. More than 67% have over five years of teaching fourth grade. The majority held a master’s degree, and about half of them had taken several classes and workshops in mathematics. According to this study, teacher preparation did not have a significant influence over student scores on the MCT2 in the area of mathematics.

Discussion

Students in America are falling behind their global peers. Accountability has risen in the reauthorization of the Elementary and Secondary Education Act (ESEA) (U.S. Department of Education, 2010). Stakeholders have come together to try to determine what needs to change in the way students are prepared for higher education
and the workforce. One of the areas identified by the Partnership for 21st Century Skills is problem solving (Partnership for 21st Century Skills, 2006a).

Developing critical thinking skills requires in-depth instruction from teachers starting at the elementary grades. Currently, the most common organization at the elementary level is the self-contained classroom. One possibility for addressing the need for depth is changing the current organizational structure at the elementary level (Chan et al., 2009).

An advantage of departmentalization is that it allows teachers to teach where they feel most comfortable and most competent. Teachers in self-contained classrooms are forced to teach subjects they do not enjoy nor feel comfortable teaching (Chan & Jarman, 2004). “Teachers need not be Jacks of all trades but can be masters of their fields,” (Chan & Jarman, 2004, p. 70). Supporters of departmentalization believe that teachers teaching where they are skilled will result in better teaching due to an in-depth body of knowledge held by the specialized teacher. Students become the beneficiaries of a wealth of knowledge that could not be matched in a self-contained classroom (Chan & Jarman, 2004; Gerretson et al., 2008; Reys & Fennell, 2003).

The results from this study indicate that there is no significant difference in the mathematics scores on the MCT2 of fourth graders who received instruction in a departmentalized classroom when compared to students in a self-contained classroom. That lack of difference does indicate that departmentalizing at this age did not prove to be negative in terms of student achievement. Some opponents of departmentalizing in elementary grades feel that students will not perform well because they do not have the security they need to grow. This study actually shows that the students in a
departmentalized classroom perform comparable to their peers in self-contained classrooms.

Chan and Jarman (2004) have expressed some ideas that appear to be in line with the results of this study. Departmentalization allows students the opportunity to explore several personalities throughout the instructional day. With increased opportunities to be exposed to different personalities, the student will have multiple opportunities to find a teacher to bond with. According to Perlstein (2003), a departmentalized setting will help students develop their survival skills as they transition from the egocentrism of childhood to a group-centered learning environment. Since the students showed no significant difference in test scores, this may indicate that introducing students to a departmentalized setting at this age may be beneficial with their transition to middle school.

Limitations

The researcher delivered surveys to 10 of 11 elementary schools in a large southern school district. Twenty-one fourth-grade teachers completed the survey. Of the 21 participants, 12 teachers were matched with student MCT2 scores from the 2010-2011 school year. The participants of this study included 12 fourth-grade teachers matched with the data from their students from the 2010-2011 school year. Of the 12 classrooms, seven were departmentalized and five were self-contained. In each case, the teacher completing the survey was an instructor for a fourth-grade class during the 2010-2011 school year.

Several of the schools the researcher visited had a change in staff from the previous year. Nearly half of the surveys and half of the scores collected from all fourth-grade students in the district could not be used because the scores could not be linked
with a current teacher who also taught the previous year. The results were limited to the 12 teachers who taught fourth grade last year. The small sample size could have contributed to the lack of significance indicated by the statistical tests.

Recommendations for Policy or Practice

Teacher working conditions affect the degree of successful implementation of any program. Even though there are many stakeholders influencing the education of students, the teacher is the primary source of effectiveness for the delivery of education. In a study for the Teacher’s Federation of Ontario, Leithwood (2006) found that teachers work over 50 hours a week. An instructional day only accounts for half of that time. Teachers are stressed about the time involved in the profession but tend to have a more positive outlook when they have adequate time for instructional preparation and when they are allowed to participate in school-level decisions (Leithwood, 2006).

The results of this study indicate no significant difference in performance for students in departmentalized classrooms when compared to students in self-contained classrooms. However, the teachers surveyed had an overall positive attitude toward departmentalization. The teachers believed their instructional delivery is better in a departmentalized setting. If the teachers are behind departmentalizing, a building-level administrator may consider departmentalizing to give the teachers a voice and to show support for their contribution to the school climate.

A superintendent that has several elementary schools, as with the schools in this study, may choose to give autonomy to a school with regards to a choice to departmentalize at the elementary level. It would be important for the schools to have support from the superintendent as well as the school board. The superintendent could
use the transition to departmentalization as segue into a conversation about the changes in education, namely the Common Core Standards.

The state department may want to consider a new endorsement for teachers in upper elementary grades. The office of educator licensure recently sent an email reminding teachers that because of federal guidelines, the K-8 certificate is only valid for teaching grades K-6 (Appendix E). The Mississippi Department of Education might contemplate adding subject specific endorsements to the 4-8 elementary license to encourage specialization at the elementary level. This will give administrators an actual certification to consider when staffing a departmentalized elementary school.

Recommendations for Future Research

Teaching has changed tremendously in the post No Child Left Behind (NCLB) era. Frustration overwhelms instructors as they attempt to deliver a rigorous curriculum in every subject. School organization styles have changed over the years to reflect the changes in education. It is possible that the departmentalized organization used in middle school would work in the upper elementary grades as well. It seems to be logical that one teacher could do better with the planning and delivery of one subject, than if he or she had the responsibility of all five of the tested areas. Differentiated instruction has been introduced in an attempt to address the growing needs of the upper elementary grade classrooms but this adds more stress as it requires even more planning in each subject (Valli & Buese, 2007).

This study focused on the scores of the students in the two types of classrooms, implementation time of the organizational style, teacher preparation, and teacher attitudes toward departmentalization. The researcher chose to use one large southern school
district for the study. Further studies may include more school districts in varying regions to give a larger sample of scores and surveys.

The researcher only included fourth-grade student scores in this study. Another study on this subject may want to include third- and fifth-grade students, which are also considered upper elementary. In addition to including these grade levels, a future study may also want to explore different degrees of departmentalization such as team teaching and modified scheduling that include some self-contained and some specialized instruction.

Teacher attitudes toward departmentalization were evaluated in this study. Teachers in general had a positive attitude toward departmentalization. A future study may consider the attitudes of the administrators overseeing the implementation of departmentalization.

Conclusion

The world is changing rapidly. The students in the United States will continue to be measured against other students in different parts of the country. Elementary school, as past generations experienced it, will never be that way again. The future of this nation may very well depend on the changes made at the elementary level.

The results of this study showed no significance in the difference in the education received by students in a departmentalized classroom when compared to students in a self-contained classroom. The results did indicate that the teachers had a positive attitude toward departmentalization and saw themselves as better instructors in a departmentalized setting. Even though this positive attitude did not reflect positively in the student scores, it gives administrators a way to better meet the needs of their teachers.
APPENDIX A

SURVEY INSTRUMENT

This questionnaire will be used as part of a research study to determine if teacher attitude toward departmentalization and college preparation affect student outcomes on standardized tests. Your participation is completely voluntary and any data you provide will be kept confidential. Only the researcher and advisors will have access to your survey. Your time and effort will be greatly appreciated.

Traditional – (One teacher) – Traditional refers to the elementary structure where one teacher is responsible for teaching all the required core subjects (Language Arts/Reading, Mathematics, Science, and Social Studies) to one group of students for the complete academic year. This structure is often called a self-contained classroom. Departmentalization - (Core subjects taught by different teachers) – Departmentalization is an organizational structure where two or more teachers share the responsibility of teaching the core subjects (Language Arts/Reading, Mathematics, Science, and Social Studies) for all general students (not special education) during separate time blocks. General education students change classrooms or teachers change classrooms during the school day for core subject instruction by different teachers. Any structure that varies from a self-contained setting is considered a departmentalized option.

1. ___ Check here to indicate you have read the above information explaining your voluntary participation and confidentiality rights.

2. How many years of teaching experience do you have? (Click one)
   ___ LESS THAN 5 YEARS
   ___ 5 - 10 YEARS
   ___ 11 - 15 YEARS
   ___ 16+ YEARS

3. How many years have you taught fourth grade? (Click one)
   ___ LESS THAN 5 YEARS
   ___ 5 - 10 YEARS
   ___ 11 - 15 YEARS
   ___ 16+ YEARS

4. What is your teaching certificate level? (Click one)
   ___ A
   ___ AA
   ___ AAA
   ___ AAAAA
5. How many college-level courses have you completed in the area of math?
   ____ 0-3
   ____ 4-7
   ____ 8+

6. How many specific workshops or trainings have you had in the area of math?
   ____ 0-3
   ____ 4-7
   ____ 8+

7. Rank the core subject areas from (1) the one you MOST ENJOY teaching to (4) the one you LEAST ENJOY teaching.
   ____ READING /LANGUAGE ARTS
   ____ MATHEMATICS
   ____ SCIENCE
   ____ SOCIAL STUDIES

8. Rank the core subject areas from (1) the one you feel MOST QUALIFIED to teach to (4) the one you feel LEAST QUALIFIED to teach.
   ____ READING /LANGUAGE ARTS
   ____ MATHEMATICS
   ____ SCIENCE
   ____ SOCIAL STUDIES

9. What is your preference for the classroom organizational structure for fourth-grade students? (Click one)
   ____ TRADITIONAL (one teacher who teaches all core subjects to a group of students for an entire school year)
   ____ DEPARTMENTALIZATION (more than one teacher for core subjects where students change classes among teachers)

10. Being departmentalized gives me more planning time.
    ____ I strongly disagree
        ____ I disagree
        ____ I neither disagree or agree
        ____ I agree
        ____ I strongly agree

11. My lesson delivery is better in a departmentalized setting.
    ____ I strongly disagree
        ____ I disagree
        ____ I neither disagree or agree
        ____ I agree
        ____ I strongly agree
12. It is easier for me to differentiate instruction in a departmentalized setting.

____ I strongly disagree
____ I disagree
____ I neither disagree or agree
____ I agree
____ I strongly agree

13. My students learn more in a departmentalized setting.

____ I strongly disagree
____ I disagree
____ I neither disagree or agree
____ I agree
____ I strongly agree

14. Teaching is less stressful in a departmentalized setting.

____ I strongly disagree
____ I disagree
____ I neither disagree or agree
____ I agree
____ I strongly agree

15. Did your initial college training adequately train you to teach all subjects at the fourth-grade level?

____ I do not feel that I was adequately prepared to teach all subjects at the fourth grade level
____ I feel I was somewhat prepared to teach all subjects at the fourth grade level
____ I was adequately prepared to teach all subjects at the fourth grade level
____ No

16. How long has your school been departmentalized?

____ Less than one year
____ 1-2 Years
____ 3+ Years
____ My school is not departmentalized
Dear Superintendent:

My name is Toy L. Watts. I am a doctoral candidate at the University of Southern Mississippi. I have completed all course work and will be conducting a research project in conjunction with my dissertation in the near future. The topic of this dissertation will be *Departmentalization and Fourth Grade Problem Solving Skills*. The study will focus on the problem solving skills of fourth grade students in a departmentalized setting compared to fourth grade students in a self-contained setting during the 2010-2011 school year. I would greatly appreciate the opportunity to use your district in the study.

During the data collection process the researcher will be looking at the scores in the problem solving domain for the Mississippi Curriculum Test 2 (MCT2) for all fourth grade students in the district. The teachers of the fourth grade students would also be asked to complete a short survey concerning their teacher preparation, preference for classroom organizational structure and other demographical information related to teaching.

Participant responses will not be totally confidential. The researcher will have to match the teacher’s questionnaire with his/her student scores. However, the researcher will not use teacher or student names in the data analysis. No one beyond the committee members and the researcher will view the data collected in this process. I would like to meet with the building principals to review the coding process for the surveys to ensure the principal’s comfort with the process.
Once the dissertation is complete, the researcher will gladly share the findings with you and your designee(s). I would like to thank you for your time and consideration for this study.

If you choose to grant the researcher permission to conduct this study in your district, please sign the attached form and fax it to the following number as soon as possible. I will gladly answer any questions you have by email, phone or in person.

Thank you,

Toy L. Watts
twatts@bwsd.org
228-206-4478 home
404-840-6449 cell
228-467-5575 fax
Date: ______________________________

By signing and returning this form, I give Toy L. Watts permission to conduct a research study in the ________________________ school district. Toy L. Watts will meet with each administrator to view MCT2 scores from the 2010-2011 school year and to request the distribution of the questionnaire to all fourth grade teachers.

________________________________
Superintendent’s Signature
APPENDIX C

LETTER TO PRINCIPAL

Dear Principal,

My name is Toy L. Watts. I am currently a student in the doctoral program at the University of Southern Mississippi. This survey is a part of a study entitled *Departmentalization and 21st Century Skills*. I am looking at the problem solving skills of 4th grade students in a self-contained class and comparing them to students in a departmentalized class. The superintendent has approved this study.

There are two major components that require assistance from you: student test data and teacher surveys. I need a copy of the individual 4th grade student scores in mathematics on the MCT2 test from 2011 grouped by teacher. I need the total score and the breakdown of the sub-categories because I am trying to isolate problem solving as a skill in this study.

I also need your fourth grade teachers to complete a short survey. I am facing some stiff deadlines so I need these surveys back today. I will come back before the end of the school day to collect them. Please put completed surveys (in sealed envelopes) in the large envelope provided.

My statistician and I are the only two people that will see this survey. At the end of the study all documents will be shredded. The results of the study will be shared with the school district upon request. **No** identifying information will be shared. Only generalized results will be published in the study.

Thank you,

Toy L. Watts
NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the “Adverse Effect Report Form”.
- If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 11121505
PROJECT TITLE: Departmentalization and Twenty-First Century Skills
PROJECT TYPE: Dissertation
RESEARCHER/S: Toy L. Watts
COLLEGE/DIVISION: College of Education & Psychology
DEPARTMENT: Educational Leadership
FUNDING AGENCY: N/A
IRB COMMITTEE ACTION: Expedited Review Approval
PERIOD OF PROJECT APPROVAL: 01/17/2012 to 01/16/2013

Lawrence A. Hosman, Ph.D.
Institutional Review Board Chair
>> Lisa Hinson 2/10/2012 9:31 AM >>>

Good Morning,
We were asked to share this information with our Elementary teachers that hold the 117 license for Elementary Education 4-6. See below for copy of e-mail received from the Office of Educator Licensure with MDE.

Superintendents:

Please share this information with your Elementary teachers that hold the 117 license for Elementary Education 4-6. The Office of Educator Licensure is receiving lots of calls and emails about the recent change in this license and we want everyone to be clear about the reason for this change. Until recently, the 117 license for upper Elementary had been for grades 4-8 but was changed to grades 4-6 to get in compliance with No Child Left Behind (NCLB) federal guidance.

In 2002, No Child Left Behind (NCLB) guidance mandated many changes to education. At that time, all Elementary Education licenses in Mississippi were K-4 and 4-8. However, NCLB defined a highly qualified Elementary teacher as K-6. Our Elementary programs in the state and the nation made changes to Elementary Education programs and to licensure to comply with federal guidance. We began granting K-6 licenses for all Elementary Education majors in May of 2007. However, we never changed the Elementary 4-8 license to comply with NCLB guidance at that time.

Many of our Master of Arts in Teaching alternate route programs offer an upper level Elementary Education track for grades 4-8, so we were still issuing the 117 for grades 4-8 although for almost ten years now, we have told teachers that complete this program that they are only highly qualified for grades 4-6. Any teacher certified for Elementary grades 4-8 could only teach grades 4 – 6. If they teach above the 6th grade, they needed additional subject area endorsements to be reported as a highly qualified teacher. The State Board recommendation to change the 117 license endorsement for Elementary Ed 4-8 to Elem Ed 4-6 was to comply with federal regulations. It was to make this license much clearer to those that hold the license so that they are actually certified and highly qualified in exactly what they are licensed to teach. The Certification Commission considered this recommendation originally in May of 2011. The Commission approved this recommendation at the July 8, 2011 Commission meeting and recommended this license change to the State Board for approval in August of 2011. The State Board approved this recommendation from the Commission and it went out for public comment for 30 days and was sent out to all districts. There were no comments, so the board gave final approval in September of 2011. The process for this change was about 6 months and the recommendations were posted per state law.
It seems that many teachers that hold the 117 feel that their licenses have been reduced in some way. However, they have not lost anything from their licenses with this change. Since 2002 (10 years) they have not been able to teach grades 7-8 without additional endorsements. I hope this explains the reason the license was changed. Thanks for your help in passing this along.

Cindy Coon, Director
Office of Educator Licensure
Mississippi Department of Education
P. O. Box 771
Jackson, MS 39205-0771
REFERENCES


