A Critical Analysis of the Implementation of Depth of Knowledge and Preliminary Findings Regarding Its Effectiveness in Language Arts Achievement

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A CRITICAL ANALYSIS OF THE IMPLEMENTATION
OF DEPTH OF KNOWLEDGE AND PRELIMINARY
FINDINGS REGARDING ITS EFFECTIVENESS
IN LANGUAGE ARTS ACHIEVEMENT

by

Carol Elizabeth Ferguson Viator

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 Education

May 2010
ABSTRACT

A CRITICAL ANALYSIS OF THE IMPLEMENTATION
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Mississippi implemented its new curriculum standards with depth of knowledge (DOK) goals in 2007, but successful educational reform requires effective professional development that prepares teachers to make the needed instructional changes. This study evaluated whether there were statistically significant relationships among professional development duration, frequency, type of training, utilization of training in instruction and assessment, and teachers’ perceptions of instructional and assessment implementation practices and language arts achievement for third, fourth, and fifth graders as measured by the MCT2 language arts assessment. The study also evaluated teacher perceptions of the implementation of depth of knowledge in instruction and assessment and how these perceptions relate to student achievement.

The project was conducted in 3 months and involved third, fourth, and fifth grade teachers in 63 elementary schools in 31 districts throughout the state of Mississippi. Multiple regression analysis was used to identify statistically significant relationships among dimensions of professional development and language arts achievement in the specified grades. The study showed that the factor most closely associated with student achievement was the student’s socioeconomic status, but the study also indicated a
statistically significant relationships between student achievement and the duration of training, the amount of training received by teacher, the level of teacher accountability, and teachers’ perceptions of adapting assessment practices that require DOK levels. This study did not yield a statistically significant relationship with student achievement among the variables of implementation practices, teacher perception of implementation of new strategies during instruction and assessment, and teacher perception of the use of cognitive levels of DOK when designing assessment practice.
DEDICATION

This work is dedicated to my parents, Julian A. Ferguson, Jr. and Alice W. Ferguson, for instilling in me a drive for excellence, a thirst for knowledge, and a spirit of determination. Although they are no longer with me physically, they were behind me spiritually guiding me all the way.
ACKNOWLEDGMENTS

The writer would like to thank the committee chair, Dr. Michael Ward, for his demand for excellence, his constant support, and his hard work chairing this committee. He is the best! I would also like to thank the other members of my dissertation committee, Dr. Richard Mohn, Dr. Gaylynn Parker, and Dr. Rose McNeese. A special thanks to Dr. Mohn for always challenging me to think, meeting with me, and promptly replying to all of my questions sent via email which allowed me to learn a great deal. I would like to thank Dr. Parker for her guidance and Dr. McNeese for guiding me toward important research that was a critical piece of my study. Appreciation is also given to Dr. John Smithson for giving me permission to use and adapt the survey instrument.

I cannot say thank you enough to my family and friends for the love and support they have given me in every aspect of my life. Thank you to my husband, Danny. He is the love of my life for over 33 years. God could not have given me a better partner. I could not have achieved this without him. My son, Justin, has edited every paper I wrote during my National Board Certification process, Master’s, Specialist, and Doctoral program. I cannot thank him enough. Along with reading and providing editing and feedback, my son, Matthew, always has a way of keeping life in perspective. I thank him for always keeping me grounded. A heart felt thanks also goes to my sisters, Rose Anne Kimbell and Karen D’Avignon, for always being there to cheer on their baby sister. Their support is immeasurable. My friends, Jean Miller, Jeanne Marie Baker, and Jennifer Pope, have prayed for me, listened to me, and encouraged me on a daily basis. Thanks for being such great friends. Finally, thank you to the Ocean Springs School District, Magnolia Park, and especially my fourth grade team for their inspiration and support.
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CHAPTER I
INTRODUCTION

This chapter introduces the study and provides a statement of the problem and purpose for the study. Background information is given to establish the need for this study. The research questions, delimitations, and assumptions of the study are addressed in this chapter. Definitions of related terms are given to assist the reader, and the chapter concludes with a justification for the study.

During the last decade, the concept of standards-based educational reform has been a driving force behind national, state, and district policies that specify learning objectives and assessment practices in an attempt to guarantee a high-quality education for all children (Cohen & Hill, 2001; Florian, Hange, & Copeland, 2000; Porter & Smithson, 2001a). A great deal has been written about teacher training including core and structural features that researchers have identified as crucial elements of high-quality professional development associated with changes in teaching practices (Desimone, Porter, Garet, Yoon, & Birman, 2002). Previous research by Putman, Smith, and Cassady (2009) and Boyle, Lamprianou, and Boyle (2005) identified traditional professional development as one-shot, short-duration activities that lack follow-up or focus on classroom implementations as doing little to change instructional practices. Although a moderate relationship was found between frequency and MCT2 language arts achievement, this study showed frequency of training as having a negative statistically significant relationship with MCT2 language arts student achievement for third through fifth graders. This lack of improvement in achievement was consistent with the previous literature on the effect of frequent short-termed professional development activities.
The bulk of prior research has been conducted on mathematics and science implementation standards and professional development that researchers define as high quality because of the link between the increase in teachers’ pedagogical and content knowledge and increases in student achievement (Guskey, 2003; Porter & Smithson, 2001b). Guskey (2003) wrote, “Whether the same is true for achievement in language arts, social studies, or other subject areas has yet to be thoroughly investigated” (p. 749). A decade-long study of California’s reform movement designed to improve mathematics instruction found that legislative action alone will not provide the outcome of gains in student achievement that states and districts are trying to achieve without providing the extensive professional development training that allows teachers optimal learning opportunities (Cohen & Hill, 2001). Cohen and Hill (2001) stated, “Few policy makers argue for [professional development training opportunities], and fewer still have tried to create them” (p. 10). District and school leadership teams are the key players in the implementation of new standards-based curriculum used to increase student academic performance because they bear the responsibility for the academic gains of their students (Graczewski, Knudson, & Holtzman, 2009; Porter, Smithson, Blank, & Zeidner, 2007). The purpose of this study was to add to the body of knowledge of effective implementation practices for standards-based reform in language arts and its effect on student achievement by investigating whether there is a relationship between professional development and implementation of new standards-based language arts curricula for third through fifth grade students in Mississippi public schools. The study determined whether the implementation of depth of knowledge (DOK) has improved student performance in elementary language arts assessment as measured by the Mississippi Curriculum Test,
Second Edition (MCT2) during the 2008-2009 school year. The study assessed whether the level of professional development training for the 2006 standards-based curriculum adoption adequately prepared teachers to implement DOK during language arts instruction and assessment. This study determined if relationships existed between language arts professional development and DOK implementation as it pertains to instruction and measured by the MCT2. The study determined if there was a relationship between teacher accountability and implementation of depth of knowledge in instruction and assessment. Finally, the study determined if there was a relationship between teacher perception of training, implementation, and accountability and the actual MCT2 assessment results for elementary language arts scores in selected districts.

The study followed The University of Southern Mississippi protocols in its organizational structure. Chapter I introduces the study, provides a statement of the problem, purpose for the study, background information, research questions, delimitations, assumptions, definitions of related terms, and justification for the study. Chapter II is a review of literature that pertains to specific areas of interest addressed in the study, as well as the theoretical framework for the study. Chapter III describes the methodology, identifies the population, defines the procedures used, the statistical tests that were conducted, the instrument that was used, and the instrument validation. Chapter IV presents the results and data analysis of the statistical tests. Chapter V discusses the findings, conclusions, and any implications for policy, action, and future research.

Statement of the Problem

In her letter to Dr. Hank Bounds, Mississippi Superintendent of Education, Dr. Kerri Briggs (2007), United States Department of Education Assistant Secretary for
Elementary and Secondary Education, informed Dr. Bounds that the peer review of evidence provided by the state of Mississippi indicated a lack of compliance with the statutory and regulatory requirements of Section 1111 (b) (1) and (3) of the Elementary and Secondary Education Act of 1965 (ESEA) for the academic standards and the assessment system. Her letter stated, “the Department cannot approve Mississippi’s standards and assessment system due to outstanding concerns with achievement standards, technical quality, alignment with grade-level content standards, and inclusion for the Mississippi Curriculum Test (MCT)” (¶ 3). Briggs (2007) acknowledged the work the Mississippi State Department of Education performed to revise its curriculum and assessment instruments despite hardships incurred after Hurricane Katrina, but Title I, Part A grant award money for the 2007 fiscal year was conditionally awarded with another peer review of additional data scheduled for September of 2007. To qualify for these federal funds, Mississippi began an aggressive campaign to realign curriculum standards and assessments. During the 2007-2008 school year, the State of Mississippi administered the Mississippi Curriculum Test, Second Edition (MCT2) as part of its compliance effort. This revised test was designed to assess student achievement in language arts and math for third through eighth graders in Mississippi public schools. It was also designed to assess subject area proficiency in secondary education. Kris Kaase, associate superintendent for academic education for the State of Mississippi, stated, “We had a national expert look at our curriculum and our MCT and part of that feedback led us to believe that we need to improve the rigor of the test” (Scallan, 2007, ¶ 7). Kaase went on to say, “Educators believe that making the curriculum more challenging will
improve state scores on the National Assessment of Educational Progress, a test on which
Mississippi students traditionally perform poorly” (Scallan, 2007, ¶ 8).

To align the standards and assessments to the national standards, the state adopted
Norman Webb’s depth of knowledge (DOK) alignment criteria. Webb’s (2007a) depth of
knowledge theory identifies four instructional levels that range from the basic level of
recall to an advanced level of extended thinking. Although Webb (2007a) identified these
four strata as levels of complexity, he did not relate them to cognitive levels of learning.
DOK levels increase in complexity as students advance through the grades, and the DOK
levels are determined based on what the typical student should know or be able to do in a
certain grade. Webb (2007b) identified a two-step process to match standards and
assessments: depth of knowledge standards, and map standards and assessments to
framework. “DOK consistency between standards and assessment indicates alignment if
what is elicited from students on the assessment is as demanding cognitively as what
students are expected to know and do as stated in the standards” (Webb, 2007b, p. 11).

Even as states like Mississippi make efforts to improve curriculum, Wright and
Palmer (1995) indicated that reform efforts do not place enough emphasis on acquiring
stakeholder acceptance of new and innovative programs. Anderson (1996) labeled the
lack of gaining a consensus from stakeholders as a barrier to reform. Not using care and
sensitivity when creating and delivering the reform message makes implementing the
needed changes more difficult, requiring the language of change to be worded to address
the needs of those affected by the adoption (Mintro m & Vergari, 1998).

In addition to gaining stakeholder acceptance of reforms, Garet, Porter,
Desimone, Birman, and Yoon (2001) stated that success of the reform agenda depends in
large part on the quality and effectiveness of teachers. They stated that teachers are the heart of the reform movement because it is their responsibility to implement high standards to the students they teach. George Scott (2007), Director of the U. S. Government Accountability Office, stated that teachers are, “the single largest resource in our nation’s elementary and secondary education system” (p. 1). Research suggested that since teachers are at the center of educational reform efforts, better learning opportunities should be provided for teachers that enhance instructional practices (Boardman & Woodruff, 2004; Boyle et al., 2005; Cohen & Hill, 2001; Darling-Hammond & McLaughlin, 1995; Desimone, Porter, Birman, Garet, & Yoon, 2002; Garet et al., 2001).

Background of the Study

Firestone, Fuhrman, and Kirst (1991) state, “Crisis is a constant in American education” (p. 233). This crisis led to standards-based educational reform that researchers have referred to as, “the most significant education reform movement in U.S. history” (Florian et al., 2000, p. 3). This reform movement set out to improve student learning through changes in the teaching of concepts, skills, and methodology (Gamoran, Porter, Smithson, & White, 1997; Lawrenz, Huffman, & Lavoie, 2005) through high standards, curriculum frameworks, and alignment of assessments (Desimone, Smith, & Ueno, 2006). This educational reform movement is nothing new. Firestone et al. (1991) cites The Report of the Committee of Ten in 1893, The Cardinal Principles of Secondary Education in 1918, and The American High School Today in 1959 as early educational reform movements. These early calls for educational reform had specific agendas. Firestone et al. (1991) state that the 1950s reforms were designed to increase scientific leaders, the 1960s were aimed at racial equality, and the 1970s encouraged the
humanization of education. After the release of the report *A Nation at Risk*, standards-based education reform began to flourish. *A Nation at Risk* emphasized increased academic rigor in major content areas and offered teachers a greater professional role (Firestone et al., 1991). The response from states depended on the cultural and political climate. Although reform was inconsistent and with limited direction, states began to provide greater academic content, but unfortunately they only adopted policies that they considered easily manageable and sustainable after the adoption (Firestone et al., 1991). That changed when the No Child Left Behind (NCLB) Act of 2001 (H. Res. 1, 2002) took the nation by storm.

No Child Left Behind (NCLB) Act of 2001 (H. Res. 1, 2002), the reauthorization of the Elementary and Secondary Education Act (ESEA) of 1965, offers a monetary carrot to entice states to develop standards-based curriculum objectives and assess these objectives through a statewide assessment and accountability instrument. The reauthorization of ESEA through the No Child Left Behind Act of 2001 brought a renewed focus on teacher instructional quality, requiring highly-qualified teachers providing research-based instruction (Desimone et al., 2006; Putman et al., 2009). Boardman and Woodruff (2004) stated that NCLB gave the federal government greater use of accountability systems to measure student gains in mathematics and reading, giving monetary rewards to schools meeting the established accountability goals but withholding funds to states not in compliance. Imposing state-mandated assessments as an accountability feature grew out of the legislature’s fear that public schools were not good stewards of tax dollars and were allowing schools to fail (DeMitchell & DeMitchell, 2003), but Borkowski and Sneed (2006) state that the law falls short of imposing federal
curriculum standards due to concerns about federalism. NCLB requires states wishing to receive certain federal dollars including Title I funding to develop rigorous curriculum standards and gauge student achievement on these standards through yearly assessments (Porter et al., 2007).

NCLB places great emphasis on educational accountability by requiring that students make adequate yearly progress (AYP); students should demonstrate academic growth proportionate to the period of instruction. Borkowski and Sneed (2006) criticized using increased standardized test scores as a compass for school improvement stating that the reform effort seems to be driven more by ideology than research, especially since the standards are not uniform and vary from state to state. Fixsen (2008) criticized the spending of billions of dollars on education without a sound experimental base for the nation’s educational system or the changes made to it, not to mention the impact it has on children. Fixsen (2008) stated, “it’s more about flying by the seat of our pants rather than being directed by data” (p. 12).

This standards-based reform movement during the past decade is considered the most notable trend in education policy pursued by states and districts seeking to ensure a standard or quality level of education for all children (Florian et al., 2000; Porter & Smithson, 2001a). Borkowski and Sneed (2006) quoted Representative Robert Ethridge’s response to government criticism of inadequate funding to achieve sustained school reform when they wrote, “Tough reform without resources amounts to cruelty to our children” (p. 516). Howard and Rice-Crenshaw (2006) described NCLB as refocusing education on the business of teaching and learning through standard alignment that promotes critical thinking skills. Positive aspects of this law include creating
opportunities for academic challenges for all children, providing standardized 
assessments that report each child’s progress to stakeholders, assessing each individual 
subgroup’s growth model, and promoting transparency in education (Borkowski & 
Sneed, 2006).

To be in compliance with this federal statute, states are evaluating the alignment 
of curriculum with state assessments with greater urgency (Ananda, 2003a; Porter, 2002). 
Webb (1999) tied curriculum realignment and assessment to federal regulations when he 
stated in a 1999 study,

The U. S. Department of Education’s explanation of the Goals 2000: Educate 
America Act and the Elementary and Secondary Education Act (which includes 
Title I) indicated alignment of curriculum, instruction, professional development, 
and assessments as a key performance indicator of states, districts, and schools 
striving to meet challenging standards. (¶ 1)

Scott (2007) estimated 3 million teachers are responsible for educating over 48 
states, districts, and schools spending on professional development because money 
known about the extent of district spending on professional development because money 
spent on professional development varies greatly from district to district and across 
schools, but researchers have stated that it is the largest expenditure in school reform 
(Desimone et al., 2006). Fermanich (2002) estimated that spending on professional 
development ranges anywhere from 1% to 4% of a district’s budget, but Garet et al. 
(2001) reported that the cost of high-quality professional development averages
approximately $512 per teacher. Fermanich’s (2002) study revealed several reasons why it is difficult to gain a true picture of district spending on professional development. Financing is spread across many different departments and many different funds, and the professional development budget line item in most school budgets does not take into account items such as collaborative planning time, mentoring, or other student-free planning times teachers are afforded during the school day as a cost of professional development.

Researchers (Cohen & Hill, 2001; Desimone, Porter, Garet et al., 2002; Fermanich, 2002; Garet et al., 2001) described professional development as the key component and major emphasis in reform initiatives that should be considered essential for true systemic reform to take root in any school district. Desimone et al. (2006) identify professional development as the key policy instrument responsible for strengthening teachers’ knowledge and pedagogical practices that will lead to improved schools; however, evidence that links professional development to gains in student achievement has not been thoroughly investigated (Desimone, Porter, Garet et al., 2002; Garet et al., 2001; Guskey, 2003; Knight & Wiseman, 2005; Porter et al., 2000). Some researchers have even suggested the importance of using future research studies to determine the effect of standards-based policies on districts and how these policies affect instruction and learning to gain insight into these complex educational reforms since almost all states are implementing standards-based educational reform (Florian et al., 2000). Standards-based educational reform should be implemented with high-quality professional development that is consistent with state reforms (Desimone, Porter, Birman et al., 2002)
Research Questions

The study was designed to determine whether there is a relationship between the level of depth of knowledge (DOK) professional development training for teachers and the degree to which the four levels of DOK during language arts instruction and assessment were implemented. The study also determined whether there is a relationship between the implementation of DOK and student performance in grades 3 through 5 in language arts as measured by the MCT2 state assessment. Finally, the study determined if there were relationships among teacher perception of training, implementation, and teacher accountability and the actual MCT2 assessment results for elementary language arts scores in selected districts throughout the state of Mississippi. The study identified relationships between training and accountability as they relate to successful use of DOK strategies. These relationships may be predictors of future academic growth in the state of Mississippi. The study examined the following research questions:

1. Is there a significant relationship between the utilization of depth of knowledge strategies for instruction and assessment and language arts MCT2 achievement scores for students in grades 3 through 5?

2. Is there a significant relationship between the frequency, duration, or type of training teachers received to implement depth of knowledge strategies for instruction and assessment and the MCT2 language arts achievement scores for students in grades 3 through 5?

3. Is there a significant relationship between teacher accountability for implementation of depth of knowledge in instruction and assessment and MCT2 language arts achievement scores for students in grades 3 through 5?
4. Is there a significant relationship between student achievement on MCT2 language arts scores and teachers’ perceptions of depth of knowledge implementation, instruction, and assessment practices for students in third through fifth grade language arts?

Delimitations

Survey participants were limited to third, fourth, and fifth grade teachers of language arts in Mississippi public schools. The schools were selected from a stratified random selection of districts to ensure selection of schools with a variety of populations and a variety of cultural areas throughout the state of Mississippi. The Mississippi Curriculum Test (MCT) and the Mississippi Curriculum Test, Second Edition (MCT2) for all districts are a matter of public domain. School-level data was retrieved from the Mississippi State Department of Education (2010) website for schools participating in this study. Because the MCT data from the 2006-2007 school year was recorded prior to the implementation of the new standards-based curriculum changes that embedded depth of knowledge levels, this data was retrieved to control for previous learning. MCT2 data from the 2008-2009 school year was retrieved and used as the dependent variable. The study was limited to this specific population, and therefore, generalizations should be restricted to populations of like teacher characteristics.

Assumptions

The researcher assumed that all participants who completed the survey answered it honestly and to the best of their ability. The researcher also assumed that the respondents followed the directions and completed the survey in a manner consistent with its intended purpose.
Definitions of Terms

The following definitions provide meaning, in some instances unique to this research context, for terms used in this study.

90/90/90 – identifies schools where 90% or more students are eligible for free and reduced lunch, 90% or more students are from ethnic minorities, and 90% of the students met academic standards in reading or other areas (Reeves, 2003).

Active learning – opportunities for teachers to become actively engaged in professional development that provides meaningful ways to evaluate a teacher’s teaching and learning.

Administrators – superintendents, principals, assistant principals, lead teachers, academic coaches, and other instructional leaders who make policy and guide school reform within a school or district.

Alignment – the degree to which expectations, standards, assessments, and other important elements in an educational system work in conjunction with one another to guide student achievement (Ananda, 2003b), or the congruence between assessment and curriculum (Webb, 1997).

Authentic instruction – a model for high-quality instruction developed by Newmann and Wehlage (1993) that has five crucial elements: higher-order thinking, depth of knowledge, real world application, communication, and high expectations for achievement.

Assessed curriculum – “refers to the content tested” (Porter, in press, p. 1).

Assessments – used to gauge student achievement, determine if expectations are being met, formulate policy, make comparisons, monitor progress, and make judgments.
Depth of knowledge – four complex levels of recall, skill/concept, strategic thinking, and extended thinking to determine what a typical student should know or be able to do in a certain grade (Webb, 2007a, 2007b).

Enacted curriculum – The “content taught by teachers and studied by students” (Porter, in press, p. 1).

Cofunding – the “contributions of funds from 2 or more programs support the same professional development activity” (Desimone, Porter, Birman et al., 2002, p. 1271).

Coherence – incorporating professional development experiences that are consistent with teachers’ goals, aligned with the state standards and assessments, and designed to encourage professional communication.

Collective participation – groups of teachers from the same school, department, or grade level participating together in professional development training as opposed to individual teachers from many schools attending the training separately.

Content focus – the degree to which the professional development activity is focused on improving and deepening teachers’ content knowledge.

Duration – the total number of contact hours participants are expected to spend in particular professional development trainings or activities as well as the span of time in which the activity will take place.

Efficiency – factors that contribute to teachers’ confidence in their ability to successfully achieve their goals related to classroom instruction.
Expectations – what a student should know and be able to do with that knowledge that is communicated through standards, goals, objectives, frameworks, vision statements, performance expectations, and instructional practices.

Goals – the next level of specific expectations.

Higher-order thinking – a manipulation of ideas, information, or facts to derive meaning in order to hypothesize, synthesize, or generalize to arrive at a conclusion.

Horizontal alignment – the degree in which standards, frameworks, and objectives work together in an educational system.

Intended curriculum – the “content target for the enacted curriculum” (Porter, in press, p. 1).

Objectives – further delineates student expectations that are stated in the goals.

Pedagogy – the art, science, or profession of teaching.

Reform type – professional development activities consisting of study groups, teacher networking, mentoring, committee or task force participation, internship, individual research project or research center, as compared to traditional workshops or conferences.

Standards – a general explanation for subject, grade, and content to be taught.

Standards-based reform – Educational reform that specifically links school policy and student assessment that includes setting high standards, curriculum frameworks, assessments, and alignment of standards to assessment instruments to improve student outcome by improving concepts, skills taught, and teacher instructional practices.

State content standards – a statement of what students are required to know and demonstrate at a specified point in time.
Teaching the test – refers to teachers using a newly learned strategy to prepare students to take the statewide assessment.

Traditional type – professional development usually of short duration and consisting of a workshop or conference.

Vertical alignment – the degree to which elements along the strata of an educational system are aligned with each other and with outside forces.

Justification

Dewett, Whittier, and Williams (2007) noted that new ideas are only beneficial if they are implemented properly. Since most innovations fail after the adoption due to lack of effective implementation (Dewett et al, 2007), a critical analysis of the implementation of depth of knowledge instruction in elementary language arts is an important area of research to examine district and school effort to involve teachers in depth of knowledge (DOK) implementation and training. Evaluation of MCT2 assessment data was also evaluated to determine if the degree of DOK implementation throughout the state shows any relationship with student achievement as operationalized through MCT2. Lawrenz et al. (2005) reported a teacher’s sense of efficiency as an important variable in student achievement. Analysis of primary and archival data determined if there is a relationship between the teachers’ perception and student achievement that could affect future state, district, and school policy of educational reform. Because few studies exist that examined the relationship of professional development and student achievement (Boyle et al., 2005; Desimone, Porter, Birman et al., 2002; Desimone, Porter, Garet et al., 2002; Garet et al., 2001; Guskey, 2003; Knight & Wiseman, 2005; Porter, Garet, Desimone, Yoon, &
Birman, 2000) this study adds to the body of professional knowledge on teaching and learning.

Summary

Standards-based educational reform was launched after the report *A Nation at Risk* was published in 1983. A movement for academic rigor and higher expectations began at that time, but it was not until the reauthorization of the Elementary and Secondary Education Act (ESEA) of 1965, by the No Child Left Behind (NCLB) Act of 2001 (H. Res. 1, 2002) that states began an overhaul of their curriculum standards, standardized student assessments, and alignment practices. This federal law tied financial rewards for compliance and financial punishment for noncompliance. Mississippi hired its own educational expert, Norman Webb, to carry out the evaluation. Out of this evaluation, new curriculum standards were written that use new performance level indicators with increased rigor and specific depth of knowledge goals for each objective. A new state assessment, the Mississippi Curriculum Test, Second Edition (MCT2), was written and administered as part of the state’s compliance effort. Educational reform requires teachers to be knowledgeable of the changes in content and standards and requires effective professional development that prepares teachers to make the needed instructional changes. The success of the reform movement also requires gaining stakeholders’ acceptance of the new curriculum changes. This study determined if there was adequate professional development and teacher accountability to acquire sustainable instructional changes and whether those changes relate to increases in student achievement as measured by the state assessment instrument. The study also evaluated teacher perspectives of the implementation of depth of knowledge in instruction and
assessment and how these perceptions relate to student achievement. The impact of this study may be research-based predictors for future academic growth in the state of Mississippi.
CHAPTER II
REVIEW OF LITERATURE

Introduction

The purpose of this chapter is to offer a review of the literature and research related to this study. A brief historical view of standards-based educational reform and effective professional development training and implementation of reforms established a need for identifying professional development training, implementation, and accountability that will yield the greatest gains in student achievement and promote systemic changes in instructional practices.

Theoretical Foundation

Constructivism

Anderson (1996) explained the constructivist approach to education as one that requires students to construct knowledge and gain meaning from their learning experiences in an active learning environment through modifying, assessing, and connecting that learning experience to prior experiences and being able to transfer that knowledge to future learning experiences. For teachers, this means setting high expectations for student learning and creating this change through changes in curriculum, instruction, and assessment policies (Anderson, 1996).

The use of higher order thinking is not a new concept in education. In the 5th century, Socrates defended one’s ability “to think, to question, and to teach” (Ornstein & Levine, 1993, p. 86). The Socratic Method allows students to construct knowledge through a series of higher order dialogues with the teacher (Ornstein & Levine, 1993).
The constructivist approach continued with the work of John Dewey, Jean Piaget, and Jerome Bruner in the 1900s. These researchers identified learning as taking place through experiences (Slavin, 1991a). Research showed that by creating challenging learning experiences of high interest, a student’s learning is at its peek (Paziotopoulos & Kroll, 2004). Ornstein and Levine (1993) report both Dewey and Piaget as learning through experiences. They state, “Viewing children as socially active human beings, Dewey believed that learners want to explore their environment and gain control over it. In exploring their world, learners encounter both personal and social problems” (Ornstein & Levine, 1993, p. 137). Ornstein and Levine (1993) define this as “the method of intelligent teaching and learning” (p. 137). Ornstein and Levine (1993) wrote, “Piaget believed that children are the primary agents of their own cognitive development in that they shape their conceptions of reality by complex and continuous interactions with the environment” (p. 145). Slavin (1991a) identified Bruner’s constructivist approach as one of the most influential models. He stated, “Bruner suggests that students should learn through their own active involvement with concepts and principles, that they should be encouraged to have experiences and conduct experiments that permit them to discover principles for themselves” (Slavin, 1991a, p. 192).

The 1956 publication of Bloom’s *Taxonomy of Educational Objectives: The Classification of Educational Goals* began the establishment of shared educational language for objectives and assessments used to evaluate curriculum, goals, and objectives with endless possibilities (Hanna, 2007; Krathwohl, 2002; Krathwohl & Anderson, 2010). A team of professors from across the nation led by Benjamin Bloom created a taxonomy of educational objectives that expanded the theories of constructing
knowledge by identifying six discreet cognitive levels organized from basic knowledge to advanced knowledge levels (Krathwohl, 2002; Slavin, 1991b). These levels are not ranked by importance, but organized into progressive developmental stages, and the order was arranged as a hierarchy, assuming that mastery of the previous level was required for mastery of the next more complex level (Krathwohl, 2002). The original Bloom’s Taxonomy is used to evaluate and identify rigor, or lack thereof, of rigor of alignment of test items and objectives across grade levels (Krathwohl, 2002).

Forty-five years later, Bloom’s Taxonomy was revised, moving from a one-dimensional hierarchy to a less rigid two-dimensional approach of knowledge and cognitive processes and adding metacognitive knowledge to the knowledge domain (Krathwohl, 2002; Krathwohl & Anderson, 2010). Like the original Bloom’s, it is arranged in six categories, but two of the original categories, knowledge and comprehension, were renamed as remember and understand. Three other categories were changed to the verb form: apply, analyze, and evaluate. These changes are meant to demonstrate thinking as an active process (Hanna, 2007; Krathwohl, 2002). Evaluation was renamed create and changed places with Synthesis. More emphasis was placed on the cognitive processes sub-categories (Krathwohl, 2002). The revised Bloom’s is used for setting goals, objectives, and standards, and it can assist teachers in the evaluation of their educational practices (Krathwohl, 2002; Krathwohl & Anderson, 2010). As Hanna (2007) writes, “The new taxonomy is a framework for aligning learning objectives, curriculum, and assessment that match the complexity of learning while addressing important aspects of subject matter-specific instruction” (p. 9).
Bloom determined that different levels of instruction are deemed important for different subject items but acknowledged that teachers sometimes forget that students are required to synthesize and apply knowledge of a skill in order to be considered proficient (Slavin, 1991b). Paziotopoulos and Knoll (2004) argued that teachers should allow students the opportunity for synthesis; children who think analytically and creatively will be prepare to live and work in a global society of the future. Prager (1993) described this as authentic instruction.

Authentic instruction encompasses both higher order thinking and depth of knowledge with meaningful dialogue and social support to connect instruction to the outside world. Prager (1993) also wrote that instructional engagement requiring higher order cognitive processes is the cornerstone of learning. Newman, Marks, and Gamoran (1995) stated that authentic instruction increases student achievement regardless of other factors such as race and gender using higher order thinking skills to elicit student manipulation of information to construct knowledge. It requires a deeper understanding of educational concepts, not just recall of presented information.

Implementation of activities is the cornerstone of authentic instruction. How students are given opportunities to construct meaning determines whether the task is trivial, useless, or meaningful (Newmann & Wehlage, 1993). In an authentic classroom, the traditional teacher’s instructional practices are replaced by teaching strategies that encourage inquiry-based learning and problem solving with a greater emphasis on thinking and learning (Zohar & Schwartz, 2005). Doing well in school and achieving high test scores do not guarantee that a student has constructed meaning needed to be functional in the outside world (Newmann et al., 1995).
All of these theorists have a connection to the constructivist approach to education. Newmann et al. (1995) stated, “Constructivism includes many different points of view, but most share certain assumptions: Learning takes place as students process, interpret and negotiate the meaning of new information” (p. 3). This seems to mean that not all schoolwork will consist of activities that align directly to the standards and that some building of background knowledge may be needed before new knowledge can be acquired (Newmann et al., 1995).

**Depth of Knowledge (DOK)**

Norman Webb’s (2002, 2007a) depth of knowledge (DOK) criteria refined Bloom’s original taxonomy to four complex levels of recall, skill/concept, strategic thinking, and extended thinking to determine what a typical student should know or should be able to do in a certain grade. Depth of knowledge varies in complexity depending on the grade level and what a student should know and be able to transfer to a different situation. It also depends on the amount of background knowledge a student possesses and how well the student is able to make generalizations needed to attain higher levels of depth of knowledge (Webb, 1997). This presents a different approach to the organization of knowledge levels. DOK refines the constructivist approach to learning by focusing on what the student knows and is able to demonstrate instead of emphasizing a particular action at each level.

Webb (2002) drew a correlation between what is taught and what is tested when he stated that it is crucial for both objectives within standards and assessment items to be aligned when interpreting and assessing depth of knowledge levels. The number of intellectual demands made on an assessment depends on the number and strength of
connections to the objectives students are required to synthesize and formulate a response to, and the level of reasoning that would allow the student to make generalizations and construct knowledge (Webb, 1997). Webb (2007b) wrote that DOK relates to cognitive levels of instruction and assessment, and he stated, “The true test for alignment is the improvement of student achievement as described by the expectations” (p. 24). Therefore, curricula that incorporate all four DOK levels are aligned with standards. These standards should be aligned with assessment, and advancement in language arts achievement scores should be correlated to curricula changes associated with DOK (Webb, 2002).

Lieberman (1995) wrote that there may have been a failure to realize that teachers learn much the same way that students learn. Darling-Hammon and McLaughlin (1995) concurred stating that teachers do learn in the same ways as their students through active learning, reading, and reflecting. The constructivist approach to teacher training through quality professional development gives teachers the opportunity to process, interpret, and disseminate new information through active learning activities that are cohesive and content focused. The current study examined the significance between frequency, duration, or type of training teachers received and gains in student language arts achievement.

Webb’s (2002) depth of knowledge design in curriculum requires teachers to design lessons that are more rigorous with greater depth of knowledge, and he stated that determining the effects of standards implementation is only possible if standards, assessment, and instruction are aligned. The current study examined the relationship between the utilization of depth of knowledge strategies obtained through professional
development opportunities and the level of language arts achievement. Desimone, Porter, Birman, Desimone, Porter, and Garet (2002) stated that the evaluation of professional development through student outcome increases the quality of professional development. Graczewski et al. (2009) identified that the amount of follow-up after professional development by leadership teams to evaluate and support the implementation of new strategies was associated with the degree of instructional improvement. The current study evaluated the relationship between teacher accountability for implementation of the new standards-based depth of knowledge instruction and language arts achievement. Knight and Wiseman (2005) identified the classroom and more specifically the teacher as the single most important factor in student learning. For this reason, the current study examined the relationship between student achievement and teachers’ perceptions of depth of knowledge implementation, instruction, and assessment practices.

Standards-Based Educational Reform

“The goal of standards-based reform is to create an aligned instructional guidance system that results in classroom instruction aligned to challenging state content standards” (Porter et al., 2007, p. 48). Improving instructional practices is essential to standards-based reform because students’ knowledge gains are greatly affected by teachers’ high expectations that are demonstrated through classroom instructional practices (Birman et al., 2000). Smithson and Collares (2007) stated that the entire standards-based reform movement is centered around students making substantial growth in achievement by being given the opportunity to learn concepts through standards-based curriculum objectives, but they stated that it is important for researchers to first determine
if the content taught is what is tested and then identify if there actually is a relationship between the two.

Porter and Smithson (2001a) identified four characteristics of standards-based educational reform: prescriptiveness, consistency, power, and authority. These researchers described prescriptiveness as the cohesiveness between policy and practice, consistency as alignment between content standards and content assessments, power as the amount of rewards and punishments that are tied to compliance of the reform including the use of high-stakes testing, and authority as the ability to influence teachers’ instructional practices.

The best predictor of achievement, according to researchers Porter and Smithson (2001a, 2001b), is the curriculum. Marzano (2003) stated that a guaranteed and viable curriculum consisting of time and opportunity to learn is attributed with having the greatest impact on student achievement. Porter and Smithson (2001a; 2001b) identified three types of curriculum: intended, enacted, and learned. Intended curriculum drives policy; enacted curriculum is teacher practice; and learned curriculum is what is measured by the state assessment. Marzano (2003) also identified the three types of curriculum as intended, implemented or teacher practice, and attained, or what Porter and Smithson (2001a, 2001b) address as learned curriculum. Marzano (2003) wrote that even using highly structured textbooks does not guarantee curriculum because teachers determine what to teach from the textbook, what not to teach, and to what extent. A guaranteed curriculum is nonnegotiable, and teachers cannot disregard or replace curriculum (Marzano, 2003).
Marzano (2003) drew on 30 years of research when he identified implementation of a guaranteed and viable curriculum as one of the most important challenges facing education today. Identifying this as the most significant and the first order of business for the nation’s schools, Marzano (2003) stated that it is not possible without changes in policy that allow students the opportunity to learn curriculum objectives and sufficient time to learn them. With the average school year of 180 days, and the average school day of 5.6 hours, students spend roughly 13,104 total hours in a classroom by the end of their senior year (Marzano, 2003). Marzano (2003) cited time studies that determine it would take on average 15,465 hours to adequately address the 200 standards and 3,093 benchmarks in 14 subject areas as content that needs to be taught as referred to in state documents. Although this falls short of the 13,104 average classroom hours, it does not take into account the amount of non-instructional time spent at school for socializing, breaks, classroom disruptions, and other scheduled non-instructional activities (Marzano, 2003). Payne (2005) wrote that reorganizing the school day schedule to allow time for providing additional resources to students builds support without adding to the cost of education.

Marzano (2003) listed five steps that districts can take to create a guaranteed and viable curriculum through efficient usage of time and opportunities to learn: reduce content taught, ensure time allotted is sufficient for instruction of essential content, organize and sequence essential content for instruction, ensure essential content is being taught, and protect instructional time. First, reduce the amount of content teachers are required to teach by unpacking the benchmarks and determining what is essential and what is only required for those students needing a post-secondary education. Second,
determine the amount of time needed to effectively address the essential content presented. Third, organize the content in a logical sequence. Categorize the essential concepts into big ideas, create a sequence for concepts to be taught, and provide students ample opportunities to learn the material. Fourth, administrators should be required to monitor the coverage of essential content through evaluation of lesson plans and teacher meetings. Fifth, instructional time should be protected at all costs interrupted only for important events.

State assessments alone cannot measure all that students learn in an educational setting (Resnick & Zurawsky, 2003), and they cannot tell when or how the student acquired the information (Porter & Smithson, 2001a). When focused on quality guided by an alliance between classroom instruction and standardized testing, standards-based educational reform can result in positive changes in education. Valencia and Wixson (2001) considered standards-based reform worth the effort because it raises expectations for all students, but they cautioned that it will not be successful without all stakeholders’ energy and input in the process. To reap the benefits of successful standards-based reform, Valencia and Wixson (2001) suggested that stakeholders should be involved in the reform process.

There is a bit of skepticism when new standards are introduced due to the number of previously implemented programs based only on an educated guess as to the effectiveness of the program (Porter, in press). Lawrenz et al. (2005) recommended from their reform research that evidence should be gathered that indicates the new reform produces positive effects, and if there is no evidence to its effectiveness, changes should not be implement. Adopters base their opinion of reform efforts on the knowledge and
judgment of people with sound knowledge of the advantages and disadvantages of the reform (Mintrom & Vergari, 1998).

Past studies found that teachers’ knowledge of standards-based reform was greatly affected by the amount of required changes to instructional practices (Penuel, Fishman, Gallagher, Korbak, & Lopez-Prado, 2009). There is tremendous support throughout the educational community and from teachers specifically for high teaching standards, but many teachers feel inadequately prepared to implement these high standards (Feldman, 1999; Putman et al., 2009). Shifting from a traditional approach of memorization and lecture to a balanced approach with greater emphasis on getting students to construct knowledge creates a pedagogical shift in teacher understanding (Garet et al., 2001). Without stakeholder buy-in, underlying resentment can prevent proper implementation (Putman et al., 2009). Cohen and Hill (2001) refer to this as the gulf between policy and practice, calling policies, “storms on the oceans’ surface” (p. 189) and practice “the calm beneath” (p. 189).

Teachers and Teaching in Standards-Based Reform

Early reform efforts gave teachers flexibility in achieving educational objectives, but this flexibility has given way to quick fixes and competing policy agendas (Valencia & Wixson, 2001). At the 1996 International Conference of Education, it was reported that reform movements in many countries have led to a weakening of the teaching profession, including increased absenteeism, less than adequate working conditions, and teachers leaving the profession (Day, Elliot, & Kington, 2005).

Researchers agreed that the teacher is the single biggest resource to implement standards-based reform in the nation’s elementary and secondary schools (Garet et al.,
Teachers make the ultimate decision regarding what content is taught in the classroom and at what level (Porter & Smithson, 2001b), making teachers’ knowledge, skill, and ability to adapt the essential traits of teaching (Smithson & Collares, 2007). The judgments a teacher makes in the classroom are based on the teacher’s background and content knowledge (Shavelson & Stern, 1981), which are areas Reeves (2003) identified as a crucial aspect to keep in mind when administrators are making teacher assignments.

A teacher’s influence on students’ academic performance can last well into the future (Desimone et al., 2006), often 2 to 3 years after the student has left the classroom (Kinght & Wiseman, 2005). It is essential that teachers understand current policies so that they can instruct students with the intended curriculum (Porter & Smithson, 2001b). This requires teacher empowerment. Powerful lasting change requires teachers to have the opportunity to grow professionally, not just learn new strategies for teaching; it requires changes within school structures that empower teachers (Anderson, 1996). Empowerment requires more teacher responsibility in the form of broader educational responsibilities. This will increase teacher responsibilities beyond the walls of their classrooms requiring them to participate in decision making and increased interaction with other stakeholders (Day et al., 2005) which may require teachers to become liaisons between other teachers and the administration and infuse reform standards into classroom instruction (Lawrenz et al., 2005).

Accountability for Standards-Based Educational Reform

Lasting systemic reform will only be possible through professional development, accountability, and group norms which will not be possible without a climate and culture
that supports change (Lawrenz et al., 2005). For systemic educational reform to succeed, a higher degree of teacher expectations will have to prevail both in instruction and student achievement (Garet et al., 2001).

There are also important implications for state, district, and school leaders when implementing standards-based reforms. Leadership is central to reform. Without dynamic leadership, implementation and sustainability of educational reforms is difficult (Desimone et al., 2006; Graczewski et al., 2009; Lawrenz et al., 2005). Florian et al. (2000) outlined distinct leadership responsibilities for the state and the district. These researchers stated that the district should develop standards, provide districts with the reform, provide professional development opportunities, and provide funding for implementation through federal flexible funding accounts. Districts should then be required to align curricula standards, build instruction, support teachers, use performance assessments, evaluate teacher practices of implementation and professional development implementation, support collaborative relationships, and align and combine funding to achieve the reform goals.

Accountability for standards-based reform hinges on high-stakes testing. High-stakes tests have created an accountability system of rewards and punishments for schools and districts, and unhealthy districts are the most vulnerable (Porter & Smithson, 2001b). Accountability for gains in student achievement has influenced teachers’ decisions about curriculum implementation by extending time for tested items and shortening time for subjects not tested (Boardman & Woodruff, 2004; Penuel et al., 2009; Porter et al., 2007; Valencia & Wixson, 2001). Boardman and Woodruff (2004) found that high-stakes testing affects all aspects of instruction, and that some teachers limit
creative instruction because they use these assessments to determine the value of innovative teaching. As Boardman and Woodruff (2004) wrote, “What gets measured gets done” (p. 505). The real concern is that although teaching the test is considered unethical by some, Boardman and Woodruff (2004) found that multiple-choice test led to a 97% increase in tested objectives and that 75% of the teachers stopped teaching curriculum items that were not tested. Boardman and Woodruff’s (2004) research indicated that teachers spent a great deal of time preparing students for the test because the culture of the school was to increase test scores which left little time for teachers to implement the new instructional strategies which significantly impacted the implementation process. Their study found that numerous teachers changed grade levels the following year to avoid the pressures associated with testing at that grade level. Reeves (2003) wrote that achievement increases through standards that require engaging, creative thinking, not through hours of test prep.

Standards-based reform is only a beneficial product if it is sustained. As Firestone et al. (1991) stated, “Educational reform is a long-term endeavor that requires many years of consistent effort” (p. 244). Data from the research of Lawrenz et al. (2005) also reported that the long-term process required for the climate of change, and for sustained change, requires schools to continuously modify and change as the data indicate. The only constant should be the agenda of standards-based educational reform: improve teaching and learning through improved curriculum and instruction (Firestone et al., 1991).
Alignment of Curriculum, Instruction, and Assessment

The No Child Left Behind Act of 2001 (H. Res. 1, 2002) focused educators on buzzwords such as accountability, achievement, and closing the achievement gap (Smithson & Collares, 2007). NCLB requires states to annually evaluate elementary and secondary student achievement based on established statewide accountability standards. Although the purpose of this legislation was to increase accountability through assessment of reading and mathematics standards, significant increases in funding did not materialize and left states to cover the cost of this legislation (Borkowski & Sneed, 2006).

To receive federal dollars, Ananda (2003a) wrote that it is in the best interest of states, districts, and schools to ensure that standards and assessments are aligned. Since accountability, standards, and alignment are at the center of standards-based reform aimed at schools (Feldman, 1999; Herman & Webb, 2007; Resnick & Zurawsky, 2003) and schools are being measured by these changing theories and policies through curriculum assessments, it is critical that standards are aligned to the assessment instrument (Herman, Webb, & Zuniga, 2007). Smithson and Collars (2007) suggested that teachers participate in the alignment process by identifying areas of low alignment and increase instructional practices to raise alignment in these areas. Alignment is now beginning to receive a great deal of attention. Reporter Valerie Wells (2006) quoted Webb as saying,

Alignment, as we are thinking about it here, is not new. It’s been around for a number of years. In the broad scope of things we’re trying to get all the pieces of the system working together to achieve student learning. (¶5)
Alignment requires an evaluation of student goal expectations, student success, effects of testing on instruction of content, and effects of standards-based educational reform (Porter & Smithson, 2001b).

Aligning effective standards, curriculum, and assessment has been a priority for policy makers for the past decade (Penuel et al., 2009). Researchers agreed that the concept of alignment is connected to test validity (Ananda, 2003b; Resnick & Zurawsky, 2003; Webb, 1997). Narrowing the range of the standards, such as for a specific grade rather than a cross grade level standard, improves alignment with the standard and enables teachers to focus on the intended curriculum, giving students a fair chance on state assessments (Resnick & Zurawsky, 2003). Without the validity of alignment, accurate inferences cannot be drawn between the constructs and what was measured (Webb, 1997). Alignment is, therefore, an important tool for teachers to track student learning and progress, giving greater authority to standards-based reform (Webb, 1997). Herman and Webb (2007) wrote that a school’s assessment should not be used to diagnose where improvements need to be implemented unless there is an alignment between the assessment, state standards, and instructional practices. They stated that only then can a correlation between assessment and student achievement be drawn. However, this correlation is too often being drawn without true alignment between standards and assessment, creating a legal problem when these correlations result in penalties for districts, schools, teachers, and students (Ananda, 2003b). Webb (1997) cited the 1981 Florida case of Debra P. v. Turlington when discussing the need for curriculum to be aligned to instruction. He stated that the ruling from this court case required high-stakes
tests to be fair by ensuring that content assessed on the testing instrument matches the curriculum and instruction taught.

States are under strict scrutiny to prove standards and assessments are tightly aligned to receive federal funding, and the level of depth of knowledge consistency indicates alignment when the demands of the standards are reflected in the expectations of assessment (Webb, 2007b). Porter (2002, in press) outlined Webb’s (2007b) method of alignment to content standards as involving a set of four criteria that is carried out by the judgment of experts. These four criteria are categorical congruence which determines if there are at least six content items measured per standard; depth of knowledge consistency identifies if there is a correlation between the level of cognitive demand and cognitive demands of the assessment; range of knowledge correspondence is attained if at least half of the standard objectives are measured at least once on the assessment; and balance of representation determines the degree to which objectives are balanced on the assessment; and perfect alignment requires state standards to be assessed the way in which they have been taught (Porter, in press).

Porter (in press) listed three important aspects of alignment. First, a set of standards is used to measure an assessment instrument; second, a set of criteria is established that determines how much alignment is enough, and third, alignment is determined to be a function of content and the content is limited by topics and cognitive demand. In every case, it is the standards that dictate these cognitive demands for every objective (Porter, in press), but Webb (1997) pointed out that judging alignment between expectations and assessment instruments is hard work. Expectations can be scattered through multiple areas of the standards document making it harder to determine a
common thread that describes policy elements (Webb, 1997), but language only has to be sufficient enough to take into account the content that is taught not the distinctions between content objectives or test items (Porter et al., 2007). Webb (1997) also indicated that the changing nature of policy, including policies that constitute the make-up of frameworks, objectives, and standards, makes alignment difficult.

Resnick and Zurawsky (2003) indicated that many states have too many standards to measure adequately. They discussed research studies from Webb and from Achieve, a non-profit Washington based organization, that both indicated the difficulty of locating the full range or depth of knowledge outlined in state curriculum standards and in state assessment instruments. Resnick and Zurawsky (2003) concluded that the higher cognitive demands were not being well tested.

**Predictors of Academic Achievement**

The cognitive demands on students and the measurement provided by assessments allow for the test of alignment which Webb (2007) stated can only be proven by an increase in student achievement. He indicated that alignment of what is taught and what is tested is an important component in determining whether more rigorous state standards that incorporate the four levels of depth of knowledge will enhance student achievement. Smithson and Collares (2007) stated that when students are given an opportunity to learn standards-based content, they will have higher academic gains that should help explain growth in achievement.

Webb (1997) found only moderate alignment between standards and assessments, especially in terms of range and depth of knowledge. Alignment at the state level does not always equate to alignment at the school level, leaving less than adequate curriculum
instruction (Penuel et al., 2009). The danger is that teachers will direct instruction toward tested items if there is a lack of alignment between the standards and the test, giving little attention to the enacted curriculum (Resnick & Zurawsky, 2003). Resnick and Zurawsky (2003) discussed studies by the RAND Corporation, National Board on Educational Testing, and Public Policy studies that found teachers spent the greatest amount of instructional time on tested items which requires states to be extremely careful creating alignment between standards and assessment. Researchers stated that without clear educational expectations for students and teachers, the system breaks down for both, and teaching becomes fragmented and disjointed while the potential for student learning becomes inconsistent, allowing an increase in achievement for some students and a lowering of achievement for others (Penuel et al., 2009; Webb, 1997). To achieve at a higher level of understanding, alignment is the underlying concept that connects students’ instructional experiences and academic concepts to assessment of this knowledge (Webb, 2007b). Porter (in press) stated that vertical alignment between standards and instruction is the greatest predictor of academic achievement because it represents the students’ option to learn. There are several approaches to curriculum alignment including first developing the standards, then the frameworks, and then the assessment; hiring a consultant to evaluate the documents; or using a rubric to analyze both the standards and the assessment instrument (Webb, 1997). Although there are several approaches to curriculum alignment, Webb (1997) wrote that legislative mandates will not lead to educational reform.

It is also critical to note that alignment to a particular state’s test does not correlate to alignment to another state’s test (Porter & Smithson, 2001a) or to the
National Association of Educational Progress (NAEP) assessment, making it hard to reconcile state assessments to the NAEP (Pellegrino, 2007). NAEP is seen as the gold standard of educational testing, but it is not without critics because it underreports student performance due to a lack of validity of achievement level analysis (Pellegrino, 2007). This lack of alignment between state tests and NEAP causes questions about an individual state’s assessment reporting when its results are different from the NAEP (Ananda, 2003b). This test is viewed by media and educators alike as being more rigorous than individual state assessments (Pellegrino, 2007).

Professional Development for Implementation of Standards-Based Reform

Effective implementation of standards-based reform relies heavily upon high-quality professional development for teachers that deepens their understanding of content and develops their teaching practices (Boyle et al., 2005; Desimone, Porter, Birman et al., 2002; Desimone et al., 2006). “Research and experience suggest that more time on standards and assessment alone will not improve learning. What is needed is a direct link between the components of standards-based reform . . . and instructional improvement strategies” (Valencia & Wixon, 2001, p. 210). A national study indicated that the amount of time teachers spent in professional development training was linked to the amount of teacher efficacy reported (Parsad, Lewis, Westat, & Green, 2001).

The educational reform movement has imposed greater expectations on teachers and teaching (Desimone et al., 2006). Without giving teachers the training and the necessary resources to enhance instruction, teachers cannot be held accountable for new standards and policies (Fixsen, 2008). Darling-Hammond and McLaughlin (1995) stated that today’s professional development opportunities for teachers should provide time for
teachers to think critically about their knowledge of content, teaching, and student learning. These researchers stated that teachers need access to opportunities that will make them knowledgeable of pedagogy, child development, and performance outcomes.

“Sustained change in teachers’ learning opportunities and practices will require sustained investment in the infrastructure of reform” (Darling-Hammond & McLaughlin, 1995, p. 598). Desimone, Porter, Birman et al. (2002) stated that professional development should be aligned with district policies and state standards to help support positive gains. This includes evaluation of how the training promotes the standards and assessment practices; how it reflects how students learn; how it lends itself to higher demands for academic growth; and how it accommodates diverse student populations (Desimone, Porter, Birman et al., 2002).

Characteristics of Effective Professional Development

Researchers have identified characteristics of effective professional strategies that effectively change teaching practices: collaborating within and across grade levels, practicing and receiving critical feedback, trying new strategies in a safe and trusting environment, basing professional development on teacher needs, evaluating professional development’s effect on student learning, and connecting development to the greater vision and school goals (Putman et al., 2009; Quick, Holtzman, & Chaney, 2009). Pritchard and Marshall’s (2002) research also identified the connection to the greater vision as one of the characteristics of effective professional development, but their research also recognized other important factors of professional development on a district level. These researchers found that when curriculum was a focus of district policy, district leadership was heavily involved. The policy drove every aspect of professional
development: selection of professional development participants, planning of the activity, and quality assurance for the activity. Pritchard and Marshall (2002) found that professional development was more effective in districts where there was strong leadership, where professional development was an expected job responsibility, where such development was predominantly conducted during working hours over a period of time, and where development had a protected budget. Fermanich (2002) wrote that a district’s priorities are identified in its professional development spending.

Since most new instructional strategies and reform initiatives are introduced through professional development (Boardman & Woodruff, 2004), it is important to create a school climate that embraces the vision of the school or district, create a learning environment that aims for excellence, and uses the resources of the organization to create specific, practical and relevant learning opportunities for teachers (Boardman & Woodruff, 2004; Desimone, Porter, Birman et al., 2002; Pritchard & Marshall, 2002). Parsad et al. (2001) reported that 80% of the professional development attended focused on standards, but that a day or less was spent on activities.

Desimone, Porter, Garet et al. (2002) found that the disparity in professional development was between teachers within schools instead of between schools; this led these researchers to state that much of school professional development was not a coherent or coordinated approach to teacher training and did little to build a consistent program. Boyle et al. (2005) found that primary science teachers were less likely to participate in conferences, workshops, or longer professional development than their colleagues in other disciplines. Desimone et al. (2006) found that teachers with the greatest content background were the ones attending the content-focused professional
development. These researchers stated that this type of professional development did not serve its intended function of addressing teachers with content knowledge gaps. To encourage teachers who are weak in content knowledge, Desimone et al. (2006) recommended a scaffolding approach to professional development that would prevent those with less content knowledge from feeling intimidated, and it would allow for differentiation of the material presented that would make the training meaningful to all. These researchers suggested making data-driven decisions when it comes to the design and selection of activities for professional development.

**Traditional vs. Reform Type Professional Development**

Traditional professional development has typically been a one-shot, short-duration activity. These activities can be in the form of a short meeting lasting up to a day and are used to introduce a new strategy or a new method of teaching with little follow-up and lacking focus on classroom application (Putnam et al., 2009). Putnam et al. (2009) stated that traditional professional development practices did very little to change teaching practices, but Boyle et al. (2005) stated that traditional professional development does create awareness of new strategies and may create an interest that may alter how a teacher teaches. Desimone et al. (2006) stated that the majority of teachers participate in traditional workshops that are not focused on content, and very few teachers actually participate in what is considered high-quality professional development.

Reform development practices have been attributed to sustained changes in instructional practices, and researchers consider them more effective (Birman et al., 2000; Boyle et al., 2005). Boyle et al. (2005) stated that the reform type of professional development equates to changes in instructional practices because they give teachers an
opportunity to immerse themselves in the activity through collaborative meetings and inquiry-based activities that are meaningful to the teacher and are longer in duration. Teacher outcomes are measured by the increase in teacher knowledge and the change in instructional practices (Garet et al., 2001).

Characteristics of Reform Type Professional Development

Researchers have identified six characteristics that identify reform professional development. There are three structural features and three core features. The three structural features are reform type, duration, and collective participation. The three core features identified are active learning, coherence, and content focus (Birman et al., 2000; Boyle et al., 2005; Desimone, Porter, Birman et al., 2002; Desimone, Porter, Garet et al., 2002; Desimone et al., 2006; Garet et al., 2001; Quick et al., 2009).

Structural Features of Professional Development

The first structural feature is reform type. The 3-year study by Porter et al. (2000) focused on higher-order teaching strategies and found that teachers who attended a reform type of professional development showed greater changes in teacher instructional practices than did those who attended traditional workshops or conferences. The study by Garet et al. (2001) included 1,027 math and scientific teachers compared different professional development characteristics and determined these characteristics’ effects of professional development on teachers’ learning. In their study, they stated that reform activities could be more likely to have a systemic effect on instructional practices because they tend to be longer, have a greater focus on content, use active learning strategies, are more coherent with teachers’ prior knowledge, and may be more like how teachers learn. Lieberman (1995) wrote that there may be a failure to realize that teachers learn more
like their students learn. Darling-Hammond and McLaughlin (1995) concurred, stating that teachers learn like their students through active learning, reading, and reflecting. Although the reform approach to professional development reported the greatest connection to changes in instructional practices, one team of researchers did find that traditional and reform activities that had the same duration achieved the same results, causing them to state that it is more important to focus on duration, collective participation, and core features than to focus on type of professional development (Garet et al., 2001) while another team found changes in teacher practice related to collective participation and coherence but did not find a connection to duration (Desimone, Porter, Garet et al., 2002).

The second type of structural feature is duration. Duration is an important structural component because of the active learning opportunities provided, and it is also important because of its coherence with content taught, standards, policy, and vision of the district (Birman et al., 2000). Duration is highlighted as a very important aspect of reform professional development because of the length of training and content of focus (Birman et al., 2000; Boyle et al., 2005; Desimone, Porter, Birman et al., 2002; Desimone, Porter, Garet et al., 2002; Desimone et al., 2006; Garet et al., 2001). Activities that are longer in duration and expand over a period of time give teachers the opportunity to practice new strategies and gain important feedback (Garet et al., 2001). Anderson (1996) reported that implementation of new strategies or standards increased the need for longer duration of professional development activities. In the study by Boyle et al. (2005), it was reported that over three fourths of the teachers who participated in longer professional development activities reported changes to one or more teaching practices,
but they also cautioned that longer duration such as finishing a college degree may not always correspond to changes in teaching strategies. Parsad et al. (2001) reported similar findings. They found that the teachers’ beliefs that the professional development activity improved their teaching were related to the number of hours the teachers reported they spent in staff development training.

The third type of structural feature is collective participation. Researchers have found that the degree of change to instructional practices is related to the intensity and duration of professional development, but they also stated that it is important to focus on content and pedagogy to improve student learning (Desimone, Porter, Garet et al., 2002). Collective participation is longer in duration and encourages teachers to become more reflective in their practice by reflecting and analyzing about their teaching and related to changes in instructional strategies (Boyle et al., 2005; Darling-Hammond & McLaughlin, 1995; Desimone, Porter, Garet et al., 2002). The collective participation structure opens a range of opportunities to teachers allowing them guide their own professional development through the context reflection and needs of their teaching (Darling-Hammond & McLaughlin, 1995). Researchers found that collective participation in professional development activities leads to changes in instruction for several reasons. First, there may be shared cultures, goals, or visions because the participants are from the same grade level or school. Next, being from the same grade or school, they may share supplies or materials. Finally, collective participation may lend itself to active learning that is more coherent to previous learning experiences (Birman et al., 2000; Garet et al., 2001).
Core Features of Professional Development

The first type of core feature is active learning. Teachers reported that they change their instructional practices after they participate in active learning (Birman et al., 2000). Researchers stated that active learning activities include planning implementation strategies, observing, being observed, practicing instruction, reviewing student work samples, presenting a demonstration, leading a group, or writing a paper (Birman et al., 2000; Garet et al., 2001). Lieberman (1995) stated that creating opportunities for teachers to use a variety of learning strategies associated with student learning is the core feature of active learning professional development. She also stated that the duration of the activity creates opportunities for teachers to discuss, think, try, and hone in on good practice. These activities become part of the life or culture of the school (Lieberman, 1995).

The second type of core feature is coherence. Coherence encourages continuous professional development that is tied to standards and assessments. Researchers indicated that professional development is coherent to the degree in which it builds on teachers’ past learning experiences, is consistent with teacher and school goals, and supports state standards (Birman et al., 2000; Desimone, Porter, Birman et al., 2002). Garet et al. (2001) stated that coherence allows improvement in teachers’ instructional practices because it builds on a wider set of experiences. They stated that coherence is addressed in three ways: the degree to which it builds on prior knowledge, how closely it is aligned with standards, and whether it promotes a collaborative effort among teachers.

The third type of core feature is content focus. Content focus seeks to increase teachers’ knowledge and skill. Researchers have found that one-size-fits-all professional
development was less effective in creating change in instruction (Birman et al., 2000; Porter & Smithson, 2001a). Porter and Smithson (2001a) reported that clear and content-focused professional development activities were effective in creating change in teacher instruction. Researchers found that student achievement was higher in schools where teachers had participated in content-focused professional development, but that there was no effect on student achievement for students whose teachers attended professional development that focused on general teaching practices (Garet et al., 2001). According to these researchers, content varies in four ways: how much emphasis is placed on subject matter and methods, the degree of expected changes in teacher practice, the goals for learning, and how much emphasis is placed on how students learn. Unfortunately, Desimone et al. (2006) found that teachers with strong content background are most likely to attend content-focused professional development. Desimone et al. (2006) state that content-focused professional development may be the most important type because it is content specific and associated with changes that are connected to student learning.

Research Findings from Reform Type Professional Studies

Desimone, Porter, Garet et al. (2002) found in their teacher-reported study that these six features of professional development were related to growth in teachers’ skill set, knowledge, and in instructional practices. The study identified the reform type of professional development as longer in duration, greater collective participation, and active learning opportunities. Researchers also indicated that professional development had a greater impact on teachers’ instruction when the professional development was focused on content-specific instruction (Garet et al., 2001). The core functions worked through and in conjunction with the structure features of professional development.
Schools and districts should pursue the goals of quality professional development through the use of reform type training (Birman et al., 2000). Desimone, Porter, Birman et al. (2002) found that some teachers received high-quality professional development in the reform type, but most teachers attended professional development that did not increase their knowledge base or change their teaching practices.

Effective Implementation of Standards-Based Reform

Effective reform implementation requires rethinking how professional development is designed and allowing an opportunity to put theory into practice (Darling-Hammond & McLaughlin, 1995). The key to effective implementation of new standards-based curriculum is leadership. District leadership can affect professional development at the school level through planning and implementation of solid professional development activities that take into account the district’s vision and standards (Desimone, Porter, Birman et al., 2002). They stated that a district’s response can have a heavy influence on student achievement on state standardized tests, but stated that districts should develop a coherent professional development plan that uses standards and assessments as a unifying tool for professional development. Desimone, Porter, Birman et al. (2002) found that effective districts with a strong reform vision were led by effective superintendents who expected participation of all teachers and planned all professional development accordingly. Leadership from districts provides constant communication with schools and teachers about the vision, goals, assessments, and evaluation of data that teachers and principals can use to make data-driven decisions about professional development (Desimone, Porter, Birman et al., 2002). Their research also indicated that goals can be developed through the use of standards, performance indicators, and high-quality
professional development. District and school leadership teams should play a critical role in the design and selection of professional development activities (Desimone et al., 2006). Reeves (2003) found this also to be the case in high achieving schools with a high poverty population.

Graczewski et al. (2009) stated that professional development was relevant and meaningful when the school principal fostered a coherent vision, but clear goals were not developed when a coherent vision was not developed. The research stated that the districts without clear goals were better able to take advantage of the opportunities for teacher learning than the districts with a vision. Knight and Wiseman (2005) stated that professional development decisions should be data-driven and focused on classroom outcomes, teacher behaviors, and student achievement. Leadership also plays an important role in providing feedback to teachers once new strategies have been implemented and practiced (Boardman & Woodruff, 2004), but these instructional leaders are required to have a knowledge of content matter, a pedagogical understanding, and to know how students learn (Graczewski et al., 2009).

Graczewski et al. (2009) also found that teachers were more likely to learn new information when there was feedback on their classroom performance and support from administrators for the implementation. In their study, Parsad et al. (2001) found that about one fourth of the teachers surveyed stated that administrators did not follow up on what they had learned during their professional development training, 10% reported that their professional development activities were followed up to a great extent, and only 15% reported that they had assisted others in implementing the new strategy. Boardman and Woodruff (2004) also found that teachers were able to change when they became
personally involved and took a vested interest in learning and implementing the new strategy. They stated that this leads to sustainability of the practice. Darling-Hammond and McLaughlin (1995) found that teachers needed a safe place to practice their skills and disclose imperfections in their teaching as a means of improving their methodology. They stated that the administrative team should cultivate a climate of safety for teachers.

Accountability

*Leadership’s Responsibility*

Teacher evaluation and accountability are important aspects of effective implementation (Darling-Hammond & McLaughlin, 1995; Graczewski et al. 2009). Desimone, Porter, Birman et al. (2002) stated, “The quality of professional development is believed to increase when teachers and providers are held accountable for outcomes of professional development and when professional development is evaluated based on teacher and student outcomes” (p. 1272). Their results stated that evaluations should be a constant feature of the school and not a once a year occurrence with a checklist. Graczewski et al. (2009) stated that school leaders have the greatest access to teachers, and they found principals to be the most influential persons to promote the school or district vision. These researchers also stated that curriculum reform is a challenge, difficult to implement, and even more difficult to maintain, but the change process is only possible with a strong supportive leader and a team of educators who are ready to do the work. Lawrenz et al. (2005) recommended providing opportunities and resources for standards-based reform, but stated that it takes teachers wanting to change and taking ownership of the changes to have a positive outcome. The research of Florian et al. (2000) stated that healthy districts were able to benefit from state-supported professional
development because the leadership of the school enabled and supported teachers’ efforts to change during the state educational reform. They also stated that these districts evaluated the influence of the professional development on teacher instruction after the training, but in the unhealthiest of districts. Desimone, Porter, Birman et al. (2002) stated that evaluation of professional development activities often takes the form of surveys or participation headcounts, but less often involve any evaluation of student achievement scores. Knight and Wiseman (2005) stated that follow-up to training and sustainability of skills needs more administrative attention. Pritchard and Marshall (2002) found that state tests influenced curriculum to the point that teachers did not teach anything that was not on the assessment. In these districts, test scores were the only factor determining professional development needs.

**Teachers’ Role**

Since the goal of professional development is to improve instruction, Desimone, Porter, Birman et al. (2002) suggested including the teachers in the preparation of professional development opportunities. They stated that this will increase the chance of the activity meeting the teachers’ goals. When teachers are not given opportunities for leadership, there is no one available to step into leadership roles when there are vacancies and that teachers have lower morale and less self-efficacy (Graczewski et al., 2009). Quick et al. (2009) identified the teacher as the only one who can make real change in education, and stated that professional development should be delivered to teachers in a format that is meaningful and relevant. Anderson (1996) stated that educational reform requires attention from all stakeholders and consensus on goals and directions, but he stated that systemic change is impossible without empowering teachers. Cohen and Hill
(2001) stated that teachers are the source and solution to the educational reform movement. These researchers reported that the more time teachers spent in content-focused workshops, the more the teachers reported instructional practices that were consistent with the standards-based reform, but the researchers claimed that it is hard for teachers to break old habits.

Teacher Collaboration

Teachers view collaboration as an important component to create lasting instructional changes (Parsad et al., 2001). Anderson (1996) stated that collaborative work with other teachers may be the most important instruction teachers receive. He also wrote that the training of teachers is the most important work of educational reform and requires two components: it should take place in a collaborative context in the school and it should attempt to change teachers’ values and beliefs.

A U. S. Department of Education survey that was reported in 1999 stated that collaborative professional development activities were of greater value to teachers than traditional professional development (Boyle et al., 2005). Their research shows that these activities were job-embedded and provided networking opportunities that created change. Giving teachers time and opportunity to meet during the school day can help teachers gain an understanding of policies and new standards-based reforms, and it gives teachers an opportunity to learn from the sharing that transfers into changes in instructional practices (Penuel et al., 2009). Guskey (2003) cautioned that collaboration should be structured and purposeful in order to achieve the goal of improving student learning.
Barriers to Standards-Based Reform

Financial

A significant barrier to standards-based educational reform is the cost associated with its implementation. There is a significant difference in the amount of money spent on professional development, and it depends a great deal on student academic performance, funds available, and school leadership (Fermanich, 2002). There is a cost involved in developing the in-service, and there is a cost involved in the purchase of teacher time when the professional development is offered during the school day (Fermanich, 2002). In his study of Cincinnati public schools, Fermanich (2002) discovered that there could be a great disparity in professional development spending between schools in the same district. His findings revealed that professional development spending in the Cincinnati school district ranged between $2,900 to more than $16,000 per teacher. Fermanich (2002) broke the cost structure into six categories: teacher time, training or coaching, administration, materials, travel, and conference fees. His research on the Cincinnati School District, revealed that all three schools in the intervention process received $100,000 for professional development training, but only one of the two highest performing schools received the support. High-quality professional development can cost as much as $512 per teacher (Birman et al., 2000), which forces many districts to send teachers to one-day workshops because of the high cost of high-quality professional development (Desimone et al., 2006). Teachers are often called upon to contribute significantly to professional development in terms of money and time (Fermanich, 2002).

To avoid the expense of high-quality professional development, schools and districts can co-fund. Co-funding uses multiple funding sources to fund professional
development activities and could be a signal of the districts vision or an indicator of reform efforts in the district (Desimone, Porter, Birman et al., 2002). Desimone, Porter, Birman et al. (2002) found that 2 out of 10 programs were co-funded and that the use of co-funding for professional development increased as the district size increased. Research showed that multiple sources of money are combined for professional development activities (Fermanich, 2002). Since cost is a major concern to districts, researchers stated that districts may have to choose between the number of teachers served by the professional development activity or the breadth of its focus in terms of quality professional development. (Birman, et al., 2000). These researchers recognized that limiting the number of participants will not be a popular thing for administrators to accomplish.

Lack of Cohesion

Another barrier to change is the teacher workforce. In their study from 1996 to 1999, Porter et al. (2000) found little change in teacher practices. They found that schools did not have an effective or cohesive approach to professional development, but they did find some change in individual classrooms. Desimone, Porter, Garet et al. (2002) stated that the effects on student achievement are only achieved through changes in a teacher’s instructional practices. This led these researchers to believe that professional development is more of an individual experience than a collective experience. Porter et al. (2000) found that professional development experiences vary in quality from year to year and that teachers within the same building report differences from the same training. In some instances, professional development can have a negative effect (Knight & Wiseman, 2005). Knight and Wiseman (2005) found that in some cases teachers may
not want to implement the new strategy or may not like the experience even when it was an empowering one. These researchers stated that when teachers are focused on student outcome, they will implement the strategy when they feel it is good for their students. When teachers were mandated to attend high-quality professional development, teachers changed their teaching practices, but it had limited success because of the top-down approach to the implementation (Desimone et al., 2006). As Cohen and Hill (2001) stated, teachers can be a source of the problem and the solution.

Implications for Districts in High-Poverty Areas

Professional development that addresses the need of diverse student populations is difficult but essential to meet the needs of the changing demographics of classrooms (Knight & Wiseman, 2005). Knight and Wiseman (2005) reported that diversity of the school population is the trend in education today even though most teachers are White, English-speaking, middle class, and female. In her study on poverty, Payne (2005) wrote that students from the middle class are decreasing in numbers in American schools while students from poverty are increasing. Whether these students are products of generational poverty, living in poverty for two or more generations, or situational poverty, poverty caused by an event, Payne (2005) stated that education and relationships are two of the ways to break the chains of poverty.

Payne (2005, 2009) identified nine interventions teachers and administrators can do to increase student achievement in students from low-income families. Some of these interventions include building respectful relationships that includes insisting on high quality work and offering support, introducing new learning in supportive contexts while monitoring progress and interventions, teaching the hidden rules of the middle class such
as formal registry and how to ask relevant questions to gain understanding, and building relationships with the parents. Payne (2005) also pointed out the link between low student achievement and the lack of resources available to students requiring educators to rethink educational requirements that require these resources.

In his study of 90/90/90 schools, Reeves (2003) identified five consistent characteristics exhibited by administrators and teachers in these high achieving schools serving children of poverty. The focus was on achievement and greater attention was given to deficiencies in reading and writing. Additional time was spent on reading, writing, and math and less time on other subjects. Students were given multiple opportunities to improve their work with respectful feedback from teachers, and external scoring of student work was conducted with teachers and administrators. No canned programs were used, and the schools remained consistent, not moving from one new educational approach to another (Reeves, 2003). Payne (2005, 2009) and Reeves (2003) both identified education as the key to leading students out of poverty. Reeves (2003) states, “teaching quality is the most dominant factor in determining student success” (p. 8).

Director Scott (2007) of the U. S. Government Accounting Office stated that research shows the importance of the teacher in student achievement, but he stated that many teachers, especially those in high-poverty areas, are not competent in the subject they teach and have a loss of efficacy. Parsad et al. (2001) found that schools with the highest poverty level reported participating in only 4 of the 10 professional development areas on the survey and reported the training to be less relevant than teachers in lower poverty areas. The greatest improvement efforts are underway in the districts with the
highest poverty rates, but these districts cannot respond as quickly to these reform initiatives and are not taking advantage of the professional development opportunities offered to them (Desimone, Porter, Birman et al., 2002; Desimone et al., 2006).

Professional development for these high-poverty districts has more reform type activities and less training in traditional workshops (Desimone, Porter, Birman et al., 2002). The researchers stated that teachers in these special populations have a greater chance of having little or no teaching experience, working at schools with limited resources, having larger classes, and having classes with greater behavioral and academic problems that are a greater challenge to teach. Just as in districts with lower poverty populations, teachers who are lacking in knowledge of the content are not getting the needed professional development (Desimone, Porter, Birman et al., 2002; Hobbs, 2008; Knight & Wiseman, 2005). In Texas, Hobbs (2008) reported that 43 of the 50 largest school districts have teachers with 3 or fewer years of experience and that there is a lack of cohesiveness because of the large turnover rate in these schools. Desimone, Porter, Birman et al. (2002) reported that these teachers do not feel prepared to meet the needs or challenges of their teaching situation.

Porter (1995) stated that the injustice is not the high-stakes test students in these schools are given, it is the unfairness of denying a certain group of students an adequate education because of their station in life. Lower performing schools received a greater amount of funding (Fermanich, 2002). Desimone, Porter, Birman et al. (2002) found spending to be greater in large and impoverished schools. They also found that districts with large poverty populations used the co-funding strategy more often than smaller
districts. High-poverty districts are more likely to receive greater amounts of federal funds (Desimone, Porter, Birman et al., 2002).

When evaluating the capability of students in these low-performing schools, Gamoran et al. (1997) found that these students were capable of achieving a great deal more than was being required of them. These researchers stated that the key is to provide serious, hard, meaningful curriculum for all students. Knight and Wiseman (2005) stated that since teachers make the difference and the children in these high-poverty districts could benefit from good teaching, high-quality professional development should be provided to assist teachers in these schools. Fixsen (2008) stated that the only hope for closing the achievement gap is to put effective practice into action.

Summary

The constructivist approach to learning is to be active where students derive meaning from continuous assessing and modifying their learning experiences to gain knowledge that can be transferred to future learning situations. New curriculum standards add rigor to the content of what is taught and at what depth of knowledge level instruction should occur. In order to make policy changes or derive meaning from accountability assessments, alignment of standards, curriculum, and assessments have become a priority for policy makers for the past decade. The intended purpose of standards-based educational reform is to align state content standards with instructional practices to create systemic change in instruction that leads to increased student achievement. The classroom is where educational reform will occur; the teacher is the central figure in the reform. Lasting reform will not be possible without quality professional development, accountability, and a climate of change that demands higher
teacher expectations for instruction and student learning. The reform type of professional development is associated with teacher-reported instructional changes. This type of professional development includes longer duration, collective participation, active learning, cohesiveness, and content focus. Establishing a collaborative team with supportive leadership to assist in carrying out the reform effort helps to ensure lasting changes. There are barriers to successful implementation of standards-based reform. Funding is a critical aspect both in terms of the quality of professional development offered and the number of teachers afforded the opportunity to attend training. Another barrier to change is the inexperience of teachers in schools that have students with the greatest needs. Teachers teaching in high-poverty districts face greater academic and behavioral challenges but are less likely to be equipped to handle these issues.
CHAPTER III
METHODOLOGY

Introduction

Chapter III describes the participants and design of the study. It outlines the research questions that are addressed in the study. It identifies and defines the independent and dependent variables. This chapter also explains the explicit data, the data collection process, the instrument that was used, and the statistical analyses that were undertaken to interpret the data.

Research Questions and Hypotheses

To effectively implement new curriculum standards that are sustainable and have a positive effect on student achievement, teachers should be afforded opportunities for high-quality professional training. Teacher understanding of policy and the purpose of the changes in policy can affect how well they enact the new curriculum standards. Therefore, it is important to identify mechanisms of effective professional development implementation including teachers’ perceptions in the implementation process of standards-based curriculum reform. This study examined professional development training and implementation practices that may produce sustainable standards-based reform. The following research questions were examined in the study:

1. Is there a significant relationship between the utilization of depth of knowledge strategies for instruction and assessment and language arts MCT2 achievement scores for students in grades 3 through 5?

2. Is there a significant relationship between the frequency, duration, or type of training teachers received to implement depth of knowledge strategies for
instruction and assessment and the MCT2 language arts achievement scores for students in grades 3 through 5?

3. Is there a significant relationship between teacher accountability for implementation of depth of knowledge in instruction and assessment and MCT2 language arts achievement scores for students in grades 3 through 5?

4. Is there a significant relationship between student achievement on MCT2 language arts scores and teachers’ perceptions of depth of knowledge implementation, instruction, and assessment practices for students in third through fifth grade language arts?

The hypotheses for these questions were as follows:

\( H_1: \) There is a statistically significant positive relationship between the level of depth of knowledge utilization strategies for instruction and assessment and MCT2 language arts achievement scores of students in grades 3 through 5.

\( H_2: \) There is a statistically significant positive relationship between the frequency of training teachers received to implement depth of knowledge strategies for instruction and assessment and MCT2 language arts achievement scores for students in grades 3 through 5.

\( H_3: \) There is a statistically significant positive relationship between the duration of training teachers received to implement depth of knowledge strategies for instruction and assessment and MCT2 language arts achievement scores for students in grades 3 through 5.

\( H_4: \) There is a statistically significant positive relationship positive between the type of training teachers received to implement depth of knowledge
strategies for instruction and assessment and MCT2 language arts achievement scores for students in grades 3 through 5.

H₅: There is a statistically significant positive relationship between teacher accountability for implementation of depth of knowledge in instruction and assessment and MCT2 achievement scores for students in grades 3 through 5.

H₆: There is a statistically significant positive relationship between student achievement on the language arts portion of the MCT2 assessment and the teachers’ perceptions of depth of knowledge implementation instructional practices for students in third through fifth grade language arts.

H₇: There is a statistically significant positive relationship between student achievement on the language arts portion of the MCT2 assessment and the teachers’ perceptions of depth of knowledge assessment practices for students in third through fifth grade language arts.

Participants in the Study

Participants in this study were third, fourth, and fifth grade language arts teachers located in the 5 geographic regions in the state of Mississippi. Thirty-one districts participated in the study that included a sample population from each geographic location throughout the state. In these selected districts, a sampling of the elementary schools that serve third, fourth, and fifth grade populations were selected based on the following criteria: the school’s accountability label; the percentage of the population receiving free lunch services; the size of the school; and whether the school was located in an urban, small city, or rural area. The researcher used a stratified random selection of districts to ensure selection of schools in districts throughout the state of Mississippi. The sample
included participants from different populations throughout the state to gain a better understanding of the degree of depth of knowledge implementation in instruction and assessment in Mississippi elementary schools. One dependent variable, test scores, and seven independent variables were analyzed using a multiple regression analysis. Third, fourth, and fifth grade language arts teachers in elementary schools in selected districts were surveyed and the answers to specific questions were averaged and used in the regression analysis to determine their relationship with language arts achievement as measured by the MCT2 assessment data for grades 3 through 5.

Research Design and Procedures

The study was non-experimental in nature. Because previous studies linked high-quality professional development to reform type professional training, the survey instrument included questions related to structural and core components that are considered important aspects of high-quality professional development that leads to changes in instructional practices (Birman et al., 2000; Desimone, Porter, Birman et al., 2002; Desimone, Porter, Garet et al., 2002). Since standards-based reform efforts hinge on effective teaching and effective teachers implementing high standards for students (Birman et al., 2000; Quick et al., 2009), the survey instrument also included questions about teacher perceptions of the implementation process indicating the degree of depth of knowledge strategies employed during instruction and assessment and the level of accountability imposed for depth of knowledge implementation in language arts instruction and assessment (see Appendix A). Since few studies have studied the link between the characteristics outlined as high-quality professional development training and gains in student learning (Desimone, Porter, Birman et al., 2002; Gusky, 2003;
Knight & Wiseman, 2005; Porter et al., 2000), a multiple regression analysis was performed to determine if a relationship exists between professional development training and implementation of standards-based curriculum during instruction and assessment and student achievement in third, fourth, and fifth grade language arts as measured on the Mississippi Curriculum Test, Second Edition (MCT2).

**Variables in the Study**

The dependent variables for this study are language arts mean scale scores for third, fourth, and fifth grades in selected elementary schools. There are seven independent variables that were evaluated in this study based on teachers’ self-responses on the survey instrument. The independent variables are as follows:

1. Utilization of depth of knowledge (DOK) implementation strategies obtained at professional development training.
2. Frequency of training marked as number of professional development trainings.
3. Duration of training marked as length or amount of time in training for implementation of DOK in instructional and assessment practices.
4. Type of training teachers received to implement DOK.
5. Level of accountability for implementing the standards.
6. Teacher perception of the degree in which DOK strategies were implemented during instruction.
7. Teacher perception of the degree in which DOK was implemented during assessment practices.
Data Collection Process

After receiving approval from the Institutional Review Board (IRB) at The University of Southern Mississippi (see Appendix B), districts within each of the 5 geographic regions in the state were selected using a random table of numbers through a stratified random selection. Districts were separated into the 5 geographic regions and numbered. Six districts per region were originally invited to participate (see Appendix C). After two districts rejected the invitation and others did not respond to the invitation, 10 other districts were selected through stratified random selection.

Permission to survey teachers that teach language arts in third, fourth, and fifth grades was obtained from district superintendents in 32 districts. The researcher invited all identified schools in these 32 districts to participate in the study through personal telephone calls and via email to building principals. In some districts, 100% of the identified schools accepted the invitation to participate in the study. In other districts, only one of the identified schools accepted the invitation. Although not all schools returned survey responses, 63 schools in 31 districts throughout the state of Mississippi participated in this study.

Survey instruments were distributed and collected from third through fifth grade language arts teachers in the participating schools by building administrators. To protect the anonymity of the respondents, a number was placed in the footnote at the end of the survey to distinguish the district and school, not the participant. A message to this effect was stated in the cover letter. Envelopes were provided for each survey, and the survey instructions directed the teachers to place the completed survey in the envelope and seal it before returning it to the office. A self-addressed, stamped envelope was provided to each
school for the return of the completed survey instruments. The principal’s instructions asked principals to leave the completed surveys in the sealed envelopes and place the completed surveys in the self-addressed stamped envelope and mail them back to the researcher by the end of January 2010 (see Appendix D).

Three hundred twelve survey responses from third, fourth, and fifth grade language arts teachers were collected from 63 schools in 31 districts throughout the state of Mississippi. Language arts scale scores from the MCT2 third, fourth, and fifth grades in selected schools are publicly available. Mean scale score data for selected schools for the school calendar year 2008-2009 were retrieved from the Mississippi State Department of Education (2010) website for use in the analysis. The reading mean scale scores from the MCT (Mississippi Curriculum Test) for the 2006-2007 school calendar year were used to control for previous learning during the data analysis.

The survey instrument used was adapted with permission (see Appendix E) from a survey sponsored by the Council of Chief State School Officers, Wisconsin Center for Educational Research, and the American Institutes for Research entitled Surveys of Enacted Curriculum: Follow-up Teacher Professional Development Survey (2004). This original survey was designed to evaluate implementation of standards-based mathematics and science curriculum. This instrument has been employed in at least 3 separate studies of math and science curriculum reform, one of which was exploring the use of the instrument as a tool for monitoring and evaluating changes in instructional practices. It has been adapted to survey participants on standards-based depth of knowledge curriculum implementation. It is a Likert-type scale with some portions on a four-point scale and other portions of the instrument on a five-point scale. Since collective
participation is associated with effective implementation and sustainability of reform efforts (Birman et al., 2000), there are also some yes/no questions to determine the amount of professional development that involved collective participation of the respondents. Appendix A contains a copy of the survey instrument, Appendix B contains the IRB approval letter, Appendix C contains a copy of the invitation letter sent to superintendents and the permission to conduct research in the district form, Appendix D contains a copy of the principal’s instructions, and Appendix E contains a copy of the required permission to use and modify the original survey instrument.

Analysis of the Results

Primary data from the survey instrument and archived MCT2 mean scale score assessment data were entered in Statistical Package for the Social Sciences (SPSS) and relevant statistical tests were conducted. The primary test was a multiple regression analysis that examined the relationships among the dependent variable of test scores and each of the independent variables controlling for previous achievement and students’ socioeconomic status. The advantage of using multiple regression analysis it that it focuses on the prediction of one variable from other variables and allows the study of multiple influences that can contribute to outcomes. Multiple regression can be used for analysis of non-experimental research in which the independent variables are not assigned at random or manipulated in any way.

The underlying assumptions for multiple regression analysis is that the dependent variable is a linear function of the independent variables, all of the variables are independent from each other, the variance of errors is not a function of the independent variables, and the errors are normally distributed. The assumptions were tested. The data
were checked for homoscedasticity to determine if the variability was constant, and a normality of residuals or error was determined using the histogram for a visual inspection and evaluation of the descriptive statistics identified the skewness and kurtosis to identify the normality of residuals. Descriptive statistics data were analyzed to determine if there were any problems with the data set.

There are several questions on the survey instrument that are intended to measure the same construct. A Cronbach’s alpha test of coefficient reliability was used to determine how well a set of items measured a single construct. This test was run on survey questions that were to be averaged together. To be considered a scale, the Cronbach’s alpha was set at .70. A significance level of .05 was used for all hypotheses.

Summary

Using multiple regression analysis, the researcher attempted to identify factors of effective standards-based reform when examining professional development training and implementation that has a significant positive effect on student achievement. The independent variables were utilization of DOK strategies obtained at professional development training, frequency of training indicating the number of trainings attended, the duration of the training, the type of training to determine if it is traditional or reform in nature, the accountability for implementation of the strategies, teachers’ perception of the level of DOK implementation, and the teachers’ perception of implementation of DOK strategies during assessment. The dependent variables were third, fourth, and fifth grade MCT2 language arts assessment data for the school calendar year 2008-2009. The project was conducted over a 3 month time frame and involved third, fourth, and fifth grade teachers in 63 elementary schools in 31 districts throughout the state of Mississippi.
Multiple regression analysis was conducted to determine if there is a statistical difference in the utilization depth of knowledge strategies, professional development training, and teacher perception and language arts assessment data for third, fourth, and fifth grade students in selected schools in Mississippi.
CHAPTER IV

RESULTS

Introduction

Standards-based educational reform has driven national, state, and district policies that specify learning objectives and assessment practices in an attempt to guarantee a high-quality education for all children (Cohen & Hill, 2001; Florian et al., 2000; Porter & Smithson, 2001a). The purpose of this study was to examine implementation practices for a standards-based reform, specifically the implementation of depth of knowledge levels in language arts instruction and assessment and its effect on language arts achievement as measured by the MCT2 assessment data. This chapter describes the results and statistical findings of the study.

Description of the Respondents

Primary data consisted of 312 teacher reported surveys from 31 districts across the state of Mississippi: six districts in Region 1, the Hills; six districts in Region 2, the Delta; five districts in Region 3, the Capital/River region; six districts in Region 4, the Pines; and eight districts in Region 5, the Coast. The demographic data of the respondents indicated that respondents were 97.1% female, 1.9% male, with 1% not responding. Respondents were from a range of ethnic backgrounds: 0% Native American or Alaskan Native, 0.3% Asian or Pacific Islander, 19.6% African American, 76.9% Caucasian, 0.6% Hispanic, 1.3% Other, and 1.3% did not respond. There was a wide range of educational experience reported: 5.4% first year teachers, 21.8% had 1 to 5 years of experience, 24.7% had 6 to 10 years of experience, 14.1% had 11 to 15 years of experience, 32.7% had 16 years or more teaching experience, and 1.3% did not answer.
The education level of the respondents indicated 52.6% hold a bachelor’s degree, 41.3% hold a master’s degree, 3.8% hold a specialist’s degree, 1% hold a doctoral degree, and 1.3% did not answer. National Board Certified teachers represented 11.2% of the respondents with 1.6% not responding to the question. Participants identified teaching the following grade level: 41% taught third grade, 28.5% taught fourth grade, 23.7% taught fifth grade, and 6.7% taught a multi-grade language arts. The average class size reported was as follows: 1.6% had a class size of 1 to 8 students, 13.8% had a class size of 9 to 16 students, 63.8% had a class size of 17 to 24 students, 19.6% had a class size of 25 to 32 students, 0.3% reported a class size of greater than 32 students, and 1% had no response.

Demographic make up of K-12 teachers in the state of Mississippi as reported by the Mississippi Department of Education Office of Research and Statistics (2010) were as follows: total K-12 teachers, 35,535; K-8 teachers, 22,312 (62.8%); female, 28,774 (81%); male, 6,761 (19%); Native American, 9 (0.03%); Asian, 85 (0.24%); African American, 9,415 (26.5%); Caucasian, 25,896 (72.9%); Hispanic, 118 (0.33%); and none were designated as other.

Results

This study was a non-experimental, quantitative study investigating whether a statistically significant relationship existed between professional development and implementation of new standards-based language arts curricula. This study used primary data collected through surveys of teachers throughout the state of Mississippi who teach language arts in the third, fourth, or fifth grade and archival achievement data collected from the Mississippi assessment and accountability system hosted on the Mississippi State Department of Education (2010) website.
To assess whether a relationship existed between the dependent variable and the independent variables, this study used multiple regression analysis to determine the relationships between the dependent variable, MCT2 language arts mean scale scores, and seven independent variables, which were selected based on previous literature, while controlling for the students’ socioeconomic status and prior learning. The independent variables included utilization of implementation strategies, training to include frequency, duration, and type of training, level of accountability for implementation, and teachers’ perceptions of implementation practices for instruction and assessment of student work.

To control for students’ socioeconomic status, the study employed districts’ mean free lunch percentage for participating schools as reported by the Mississippi Department of Education Office of Research and Statistics on the Mississippi Department of Education’s website. The mean free lunch percentage for the schools in this study was 59.81%, while the state of Mississippi’s mean free lunch percentage is 58.42%, as reported on the State, District, and School Enrollment by Race/Gender with Poverty Data report on the Mississippi Department of Education (2009) website. Mean scale score previous reading achievement data from the MCT for the school year 2006-2007 were also collected from the Mississippi Department of Education (2010) website for schools in the study to control for previous learning, and mean scale scores for the state were also collected from this website for comparison to the mean scale scores in this model. The 2006-2007 mean scale scores for the schools in this study were as follows: third grade, 486.8; fourth grade, 507.4; and fifth grade, 520.9. The 2006-2007 mean scale scores for the state as reported on the Mississippi Department of Education website were as follows: third grade, 497.2; fourth grade, 517.2; and fifth grade, 531.5. The 2006-2007 school year
was selected because this reading achievement data was collected before the implementation of the new standards-based depth of knowledge curriculum and prior to professional development training for the new standards.

Data Analysis

The first five questions of the survey instrument were divided into two parts to identify frequency of training and duration of training. After careful evaluation of the survey data, the researcher noted that if the respondents marked zero for never receiving any type of training, they failed to mark the zero on the duration side. Therefore, the researcher replaced the blanks in the data with zeros only for the respondents who selected zero as the frequency choice while leaving the duration choice blank. Other skipped questions in the survey data were coded as missing data for the regression analysis.

Several of the questions on the survey instrument were constructed to measure the same variable. A Cronbach’s alpha test of coefficient reliability was performed on each set of items to determine how well each set of items measured a single construct. This test was run on survey questions that were to be averaged together. A Cronbach’s alpha of 0.70 or greater is considered acceptable. Each set’s Cronbach’s alpha test proved a reliability of greater than 0.70 with the exception of the first five questions that measured frequency and the first five questions that measured duration. In both instances, one question was dropped that related to attendance of college courses related to DOK implementation or assessment to increase the Cronbach’s alpha to 0.63 and 0.68, respectively. Because these Cronbach’s alpha tests were only slightly below the 0.70 level, the questions were retained in the model.
Scores from the sets of questions from the survey instrument (see Appendix A) were averaged and used in the model. The first section of the survey identified frequency and duration of the study. Frequency was identified as how often and duration was identified as how many hours. Frequency was measured in the number of times teachers attended training from never to greater than 10 times. Duration was measured in number of hours from N/A to 61 plus hours. Questions for frequency and duration were averaged with question 3.1 for frequency of attendance in college courses for DOK implementation instruction and question 3.2 for duration of attendance in college courses for DOK implementation removed to bring the Chronbach’s alpha score to an acceptable level.

Scores were averaged as follows: questions 1.1, 2.1, 4.1, and 5.1, which identified frequency of training, were averaged; 1.2, 2.2, 4.2, and 5.2, which identified duration of training, were averaged; questions 6 through 11, which identified core features of active learning for professional development, were averaged; questions 12 through 20, which identified core features of professional development for coherence, were averaged; questions 21, 22, 23, and 31, which identified how often core features of active learning were practiced were averaged together; questions 24, 27, 28, and 29, which measured implementation practices, were averaged together; questions 25, 26, and 30 which measured active administrative accountability were averaged together; questions 32 through 35, which identified frequency of implementation practices, were averaged; questions 36 and 37, which measured accountability based on administrative review of documents such as lesson plans and assessments, were averaged; questions 39 through 42, which identified core content focus features, were averaged; questions 43 though 47, which measured teacher perceptions of training as enhancing instruction, were averaged;
questions 49 through 52, which identified teacher perceptions of changes in instruction, were averaged; and questions 48 and 53 were used as teacher perceptions of changes in assessment practices and entered into the regression model.

As shown in Table 1, a high percentage of schools serve students of low-socioeconomic status (M = 59.9%), which is in keeping with statistical data from the Mississippi State Department of Education (2009). Teacher perception of implemented changes due to enhancement from professional development and perceptions of implementation practices yielded a mean of 2 or greater on a 3-point scale with zero meaning no change or not at all and 3 meaning greatly or significant change.

Likewise, coherent types of professional development training and DOK implementation practices showed a mean of 2 or greater on a 4-point scale with zero meaning never and 3 meaning often. Planning for implementation of DOK practices indicated a mean of 3 on a 4-point scale with zero indicating never and 4 indicating often. Although the means of these independent variables seem to indicate that teachers reported greater attention to standards and implementation of standards in these areas, this study did not yield a significant relationship with MCT2 student achievement. Since a large number of teachers’ responses to these questions were at the high end of the Likert scale, this may have limited the variability needed in a regression model creating a ceiling effect and would require rewriting of survey items to gain greater variability in the survey responses.

Collective participation was another area that showed a high mean (M = 0.71) on a 2-point scale with zero indicating not attending with a colleague and 1 indicating attendance with a peer. Although researchers (Birman et al., 2000; Garet et al., 2001)
identified collective participation as leading to changes in instructional practices, this study did not show a statistical relationship with improvement in MCT2 language arts achievement for stated grades.

Data Findings

Statistical significance for each independent variable was set at 0.05, and a multiple regression analysis was conducted. The model summary reported an $R^2$ of 0.59 indicating the variability explained by the model as 59%. This percentage seems to be consistent with the previous literature review. The ANOVA yielded a significance of less than 0.001 and an $F$ of 25.26. Since the $F$ is the average amount of variability and is used to test the statistical significance of the model, the ANOVA table indicates the regression was statistically significant with $F(16, 278) = 25.26, p < .001$. 
Table 1

Means and Standard Deviations

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Free Lunch</td>
<td>59.92</td>
<td>19.85</td>
</tr>
<tr>
<td>Reading Mean Scale Score</td>
<td>514.61</td>
<td>23.35</td>
</tr>
<tr>
<td>Perception: Change Due to PD</td>
<td>2.21</td>
<td>1.01</td>
</tr>
<tr>
<td>Perception: Implemented Change</td>
<td>2.08</td>
<td>0.75</td>
</tr>
<tr>
<td>Perception: Assessments to Standards</td>
<td>2.59</td>
<td>1.11</td>
</tr>
<tr>
<td>Perception: Use DOK when Assessing</td>
<td>2.07</td>
<td>0.83</td>
</tr>
<tr>
<td>Frequency of Training</td>
<td>1.29</td>
<td>0.77</td>
</tr>
<tr>
<td>Duration of Training</td>
<td>1.13</td>
<td>0.90</td>
</tr>
<tr>
<td>PD Type: Active Learning/Implementation</td>
<td>1.36</td>
<td>1.04</td>
</tr>
<tr>
<td>PD Type: Active Learning</td>
<td>1.15</td>
<td>0.81</td>
</tr>
<tr>
<td>PD Type: Coherence</td>
<td>1.98</td>
<td>0.67</td>
</tr>
<tr>
<td>PD Attendance with Colleagues</td>
<td>0.71</td>
<td>0.28</td>
</tr>
<tr>
<td>DOK Implementation Plans</td>
<td>3.00</td>
<td>1.40</td>
</tr>
<tr>
<td>DOK Implementation Practices</td>
<td>2.10</td>
<td>0.82</td>
</tr>
<tr>
<td>Accountability: Administrative</td>
<td>1.75</td>
<td>1.29</td>
</tr>
<tr>
<td>PD Core: Coherence – Accountability</td>
<td>1.75</td>
<td>1.29</td>
</tr>
</tbody>
</table>

Note: PD denotes Professional Development.
Scales are as follows:
- 0 - 5 – questions for Frequency, Duration, PD Type: Active Learning/Implementation, PD Type: Active Learning, DOK Implementation Plans, Accountability: Administrative PD;
- 0 - 4 – questions of Perception: Change due to PD, Perception: Assessment Standards;
- 0 - 3 – questions of Perception: Implemented Changes, Perception of Use of DOK when Assessing, PD Type: Coherence, DOK Implementation Practices, PD Core: Coherence - Accountability;
- 0 - 1 – questions of PD Attendance with Colleagues;
- 0 - 100 – Percent of Free Lunch.
In Table 2, the coefficients table has several areas of interest. The independent variable that has the strongest relationship with student achievement is percentage of free lunch. For every one standard deviation change in free lunch there was a 0.68 standard deviation decrease in language arts achievement as reported on the MCT2 language arts achievement tests in grades 3 through 5 when controlling for all other independent variables. The $t$ statistic indicates a significant effect for the percent of free lunch, $t(293) = -13.73, p < .001$.

There was also a significant relationship between duration of training and MCT2 language arts achievement in grades 3 through 5. For every one standard deviation change in duration of training, there was a 0.24 standard deviation increase in student achievement when controlling for all other independent variables. The $t$ indicates a significant effect for duration of training, $t(293) = 3.89, p < .001$.

Frequency of training had a statistically significant relationship with MCT2 language arts achievement for specified grades, $t(293) = -2.53, p = .012$. For every one standard deviation change in the frequency of training that teachers receive there was a 0.18 standard deviation decrease in MCT2 language arts achievement for third, fourth, and fifth grades when controlling for all other independent variables.

Administrative influence on accountability for implementation of the new depth of knowledge standards also showed a significant relationship with MCT2 language arts achievement in third, fourth, and fifth grades. The analysis indicated that for every one standard deviation change in accountability for implementing professional development strategies, there was a 0.14 standard deviation increase in student achievement when controlling for all other independent variables. Administrative influence on
implementation practices was significant, \( t(293) = 2.30, p = .022 \). Administrators who influence accountability only through reviewed and revised lesson plans and assessment practices to ensure implementation of standards and curriculum seem to have a negative effect. For every one standard deviation change in this accountability model, there was a 0.12 standard deviation decrease in MCT2 language arts achievement scores in third, fourth, and fifth grades when controlling for all other independent variables. The administrators’ influence was significant, \( t(293) = -2.02, p = .04 \).

The data indicated a relationship between teachers’ perceptions related to assessing students to meet the DOK levels in the new curriculum frameworks. The data showed that for every one standard deviation change in DOK assessment strategies, there is a 0.20 standard deviation increase in MCT2 language arts achievement scores in third, fourth, and fifth grades when controlling for all other independent variables. The assessment perception is significant, \( t(293) = 2.70, p < .01 \).

Free lunch rates had the strongest relationship with MCT2 language arts achievement for students in third through fifth grades. The magnitude of effect (-0.68) was large. The duration of training and teachers’ perceptions of using DOK standards when assessing students also had a large magnitude of effect. Duration had a Beta of 0.24, and teachers’ perceptions of using DOK levels during assessments had a Beta of 0.20. The other three independent variables, frequency of training with a Beta of -0.18, proactive administrative influence on accountability with a Beta of 0.14, and reactive administrative influence on implementation practices with a Beta of -0.12, all had only a moderate magnitude of effect in the model indicating a moderate effect on MCT2 language arts achievement for students in grades 3 through 5.
Table 2 also identifies areas where no statistically significant relationship exists with MCT2 language arts achievement in the specified grades. This study did not find a statistically significant relationship between professional development training that included the core features of active learning and coherence in training to include implementation practices on MCT2 language arts achievement in third, fourth, and fifth grades.

A test for homoscedasticity to test the regression assumption that the variance of errors is not a function of any of the independent variables was performed using a scatterplot. The scatterplot showed the assumption had not been violated. The test for normality of errors was checked using a histogram. The visual analysis of the graph showed a relatively normal bell curve. Visual inspection of the data identified three outliers, and the data were checked for accuracy. The outliers did not seem to greatly influence the data set so the researcher kept them in model. Multicollinearity was not observed based on the tolerance statistic.

Hypotheses Results

Hypothesis 1 was stated as follows: There is a statistically significant positive relationship between the level of depth of knowledge utilization strategies for instruction and assessment and MCT2 language arts achievement scores of students in grades 3 through 5. This study did not find a significant relationship between utilization strategies and MCT2 language arts achievement for specified grades. DOK implementation though planning for instruction was not found to be statistically significant, \( r(293) = 0.40, p = .69 \); DOK implementation practices were not found to be statistically significant in
Table 2

**Coefficients**

<table>
<thead>
<tr>
<th>Model</th>
<th>Variables</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>150.72</td>
<td>32.97</td>
</tr>
<tr>
<td></td>
<td>Percent Free Lunch</td>
<td>-0.13</td>
<td>-0.68</td>
</tr>
<tr>
<td></td>
<td>Reading Scale Score</td>
<td>0.01</td>
<td>0.07</td>
</tr>
<tr>
<td></td>
<td>Perception: Change Due to PD</td>
<td>-0.17</td>
<td>-0.05</td>
</tr>
<tr>
<td></td>
<td>Perception: Implemented Change</td>
<td>0.17</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>Perception: Assessments/Standards</td>
<td>0.68</td>
<td>0.20</td>
</tr>
<tr>
<td></td>
<td>Perception: DOK/Assessing</td>
<td>-0.20</td>
<td>-0.04</td>
</tr>
<tr>
<td></td>
<td>Frequency of Training</td>
<td>-0.87</td>
<td>-0.18</td>
</tr>
<tr>
<td></td>
<td>Duration of Training</td>
<td>1.02</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td>PD Type: Active Learn/Imp.</td>
<td>0.18</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>PD Type: Active Learning</td>
<td>-0.10</td>
<td>-0.02</td>
</tr>
<tr>
<td></td>
<td>PD Type: Coherence</td>
<td>-0.37</td>
<td>-0.06</td>
</tr>
<tr>
<td></td>
<td>PD Attendance With Colleagues</td>
<td>0.06</td>
<td>0.01</td>
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<td></td>
<td>DOK Imp. Plans</td>
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<td>0.02</td>
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<td></td>
<td>DOK Imp. Practices</td>
<td>-0.29</td>
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<tr>
<td></td>
<td>Accountability: Administrative</td>
<td>0.54</td>
<td>0.14</td>
</tr>
<tr>
<td></td>
<td>PD Core: Coherence/Account.</td>
<td>-0.37</td>
<td>-0.12</td>
</tr>
</tbody>
</table>

**Note:** a Dependent Variable: MCT2 LA 2008-2009 Mean Scale Score; PD denotes Professional Development; Imp. denotes Implementation.
assessment practices, \( t(293) = -0.59, p = .56 \); DOK implementation practices were not found to be statistically significant, \( t(293) = -0.96, p = .34 \); and using DOK cognitive levels when designing and implementing instruction and assessment was not significant, therefore, hypothesis 1 was rejected.

Hypothesis 2 was stated as follows: There is a statistically significant positive relationship between the frequency of training teachers received to implement depth of knowledge strategies for instruction and assessment and MCT2 language arts achievement scores for students in grades 3 through 5. Frequency of training had a statistically significant relationship with MCT2 language arts achievement, \( t(293) = -2.53, p = .01 \), and indicated that when frequency of training increased there was a statistically significant negative relationship with MCT2 language arts achievement scores for specified grades. Since the significance was negative, hypothesis 2 was rejected.

Hypothesis 3 was stated as follows: There is a statistically significant positive relationship between the duration of training teachers received to implement depth of knowledge strategies for instruction and assessment and MCT2 language arts achievement scores for students in grades 3 through 5. There was also a significant relationship between duration of training and MCT2 language arts achievement in third through fifth grades, \( t(293) = 3.89, p < .001 \), which indicated that when duration increased there was a statistically significant positive relationship with MCT2 language arts achievement scores for students in grades 3 through 5. Hypothesis 3 was, therefore, supported.
Hypothesis 4 was stated as follows: There is a statistically significant positive relationship between the type of training teachers received to implement depth of knowledge strategies for instruction and assessment and MCT2 language arts achievement scores for students in grades 3 through 5. This model did not find a statistically significant relationship between types of training teachers received and MCT2 language arts achievement for the specified grades. Active learning and implementation did not have a statistically significant relationship with MCT2 language arts achievement for the specified grades, \( t(293) = 0.86, p = .39 \), core type of active learning did not have a statistically significant relationship with MCT2 language arts achievement for students in grades 3 through 5, \( t(293) = -.378, p = .71 \), and coherence professional development did not have a statistically significant relationship with MCT2 language arts achievement for students in specified grades, \( t(293) = -1.22, p = .23 \). Attending professional development with colleagues or other department members also did not reflect a statistical significance in this study, \( t(293) = .11, p = .92 \). Hypothesis 4 was, therefore, rejected.

Hypothesis 5 was stated as follows: There is a statistically significant positive relationship between teacher accountability for implementation of depth of knowledge in instruction and assessment and MCT2 achievement scores for students in grades 3 through 5. Administrators’ influence on accountability showed a significant relationship with MCT2 language arts achievement in specified grades. Administrators’ proactive accountability practices had a statistically significant relationship with MCT2 language arts achievement for third through fifth grades, \( t(293) = 2.30, p = .02 \). Administrators’ reactive accountability practices that reviewed and revised lesson plans and assessment
practices to ensure that new standards and curriculum are being properly implemented had a negative statistically significant relationship with MCT2 language arts achievement for specified grades. The administrators’ reactive accountability had a statistically significant relationship with MCT2 language arts achievement for grades 3 through 5, \( t(293) = -2.024, p = .04 \). Hypothesis 5 for accountability was, therefore, supported.

Hypothesis 6 was stated as follows: There is a statistically significant positive relationship between student achievement on the language arts portion of the MCT2 assessment and the teachers’ perceptions of depth of knowledge implementation instructional practices for students in third through fifth grade language arts. This study did not find a significant relationship between utilization strategies and MCT2 language arts achievement for specified grades. Perceived implementation was not found to be statistically significant, \( t(293) = 0.42, p = .67 \), and change due to professional development was not found to be statistically significant in this model, \( t(293) = -0.56, p = .57 \). Hypothesis 6 was, therefore, rejected.

Hypothesis 7 was stated as follows: There is a statistically significant positive relationship between student achievement on the language arts portion of the MCT2 assessment and the teachers’ perceptions of depth of knowledge assessment practices for students in third through fifth grade language arts. The data showed a positive relationship between teachers’ perceptions relating to assessing students to meet the DOK levels in the new curriculum frameworks and MCT2 language arts assessment for specified grades. The assessment perception was significant with MCT2 achievement, \( t(293) = 2.696, p < .01 \). Therefore, hypothesis 7 was supported.
While controlling for previous learning did not yield a significant relationship with MCT2 language arts achievement, students’ socioeconomic status showed a statistically significant relationship with MCT2 language arts achievement. Previous learning did not yield a significant relationship with MCT2 language arts assessment, \( t(293) = 1.451, p = .15 \), but students’ low socioeconomic status, as identified by the percentage of free lunch and reported by the Mississippi Department of Education (2009), showed a statistically significant negative effect on MCT2 language arts achievement in third, fourth, and fifth grades, \( t(293) = -13.734, p < .001 \).

Post Hoc Analysis

Post hoc analysis of some of the demographic data attempted to identify other independent variables that may be statistically significant on MCT2 language arts achievement for third, fourth, and fifth grade students. Other independent variables that were added into the regression model included teacher experience, teacher education, whether a teacher was National Board Certified or not, and the class size. Statistical significance for each new independent variable was set at 0.05.

The new model summary reported an \( R^2 \) of 0.616. The ANOVA table indicated the regression model was still statistically significant with \( F(20, 268) = 21.49, p < .001 \). In this model, the level of teacher education and National Board Certification did not have a statistically significant relationship with MCT2 language arts achievement for the specified grades. The sample size for National Board Certified teachers (\( N=35 \)) may not have yielded significant power in this model. Mississippi has 621 National Board Teachers certified as Middle Childhood Generalist and 801 National Board Teachers certified as Early Childhood Generalist. Teachers with these certifications would teach
students in kindergarten through eighth grade. According to the Mississippi Department of Education Office of Statistics (2010), there are 22,312 kindergarten through eighth grade teachers in the state of Mississippi, and 1,422 (6.4%) National Board Certified Teachers in the state of Mississippi for this group. In this study, only 1.1% of the teachers in the sample were identified as National Board Certified.

Teacher experience, $t(287) = -2.27, p = .02$, and increased class size, $t(287) = -3.80, p < .001$, each had a statistically significant negative relationship with MCT2 language arts achievement for students in third through fifth grades. For every one standard deviation change in teacher experience, there was a 0.1 standard deviation decrease in MCT2 language arts achievement for third through fifth grades when controlling for all other independent variables, and for every one standard deviation change in class size, there was a 0.16 standard deviation decrease in MCT2 language arts achievement for these specified grades.

The areas of statistical significance for percentage of free lunch, duration, frequency, and accountability identified in the first model continued to be statistically significant in the second model with percentage of free lunch still having the greatest relationship with MCT2 language arts achievement in third, fourth, and fifth grades. In the original model, controlling for previous learning did not indicate a statistically significant relationship with MCT2 language arts achievement, but this independent variable did show a statistically significant relationship with MCT2 language arts achievement in the post hoc regression, $t(287) = 2.09, p = .04$. For every one standard deviation change in prior reading achievement, there was a 0.1 increase in MCT2 language arts achievement for students in third through fifth grades.
Summary

This study investigated whether a relationship exists between professional development and implementation of new standards-based language arts curricula for third through fifth grade students in Mississippi public schools as measured by the MCT2 assessment data. A multiple regression analysis was used to identify statistically significant relationships with MCT2 language arts achievement for third, fourth, and fifth grade students.

The study showed that the greatest relationship with student achievement remains the student’s socioeconomic status, but the study also indicated a statistically significant relationship between student achievement and the duration of training, the amount of training, the level of accountability, and teachers’ perceptions of adapting assessment practices that require DOK levels. Other areas of influence identified in the literature – implementation practices, teacher perception of implementation of new strategies during instruction and assessment, and teacher perception of the use of cognitive levels of DOK when designing assessment practices – did not yield statistically significant relationships with MCT2 language arts achievement in this study.

The post hoc analysis of demographic data did yield statistically significant relationships between MCT2 language arts achievement for third through fifth graders and teacher experience and class size. This may indicate a need for future studies of these independent variables.
CHAPTER V
DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The primary purpose of this study was to determine if there were statistically significant relationships among professional development duration, frequency, type of training, utilization of training in instruction and assessment, and teachers’ perceptions of instructional and assessment implementation practices and language arts achievement for third, fourth, and fifth graders as measured by the MCT2 language arts assessment. Identifying those aspects of professional development that show a statistical difference may assist administrators, superintendents, and state policy makers when allocating funds for professional development. It may also aid teachers when they select professional development opportunities that will add pedagogical value. This chapter includes a summary of the procedures, discussion of the findings, conclusions, and future recommendations.

Summary of Procedures

The primary data for this study were obtained from 312 teacher-reported surveys from 31 districts throughout the state of Mississippi. Sixty-three schools from the five regions of Mississippi participated in this study, which examined implementation practices for standards-based educational reform, specifically the implementation of depth of knowledge levels in language arts instruction and assessment and its effects on language arts achievement in third, fourth, and fifth grades as measured by the Mississippi Curriculum Test, Second Edition (MCT2). A multiple regression analysis was used to determine whether relationships exist between the dependent variable, MCT2
language arts mean scale scores, and the independent variables, utilization of implementation strategies, training to include frequency, duration, and type of training, level of accountability, and teachers’ perceptions of implementation practices for instruction and assessment of school work. The researcher controlled for previous learning and the students’ socioeconomic status by using previous MCT reading scale scores and percentage of free lunch as reported by the Mississippi Department of Education (2009).

Before the study began, permission was gained from district superintendents and The University of Southern Mississippi’s Institutional Review Board (IRB). From the beginning of January through the first week of February 2010, surveys were distributed to participating school administrators who in turn distributed, collected, and mailed the competed surveys to the researcher. Data were compiled and analyzed by the researcher. To measure reliability of items that were to be averaged for the regression model, a Cronbach’s alpha test of coefficient reliability was performed on each of the sets of survey items.

Major Findings

The relationships between different aspects of implementation of new standards-based curriculum and MCT2 language arts achievement for third, fourth, and fifth grade students were found to be consistent with previous studies in some areas, but not statistically significant in others. The area that had the greatest relationship with achievement that was also stated in the literature was the relationship between achievement and poverty. The research of Payne (2005) and Marzano (2003) described the effects of poverty on student achievement as significant. Marzano (2003) reported
that 90% of variability in student test scores was due to students’ socioeconomic status. Socioeconomic status was found to be significant in this study as well.

Boyle et al. (2005) stated that professional development that is longer in duration changes instructional practices because teachers are given opportunities through collaboration and activities that provide ample opportunities for learning that are meaningful to the teacher. Consistent with the literature, this study also found longer duration of training to have a positive statistically significant relationship with MCT2 language arts achievement for specified grades in this study.

Previous research by Putman et al. (2009) and Boyle et al. (2005) identified traditional professional development as one-shot, short-duration activities that lack follow-up or focus on classroom implementations as doing little to change instructional practices. Although a moderate relationship was found between frequency and MCT2 language arts achievement, this study showed frequency of training as having a negative statistically significant relationship with MCT2 language arts student achievement for third through fifth graders. This lack of improvement in achievement was consistent with the previous literature on the effect of frequent short-termed professional development activities.

Researchers (Boardman & Woodruff, 2004) found that teachers were more likely to learn new information when there was feedback and support from administrators for the implementation (Graczewski et al., 2009), personal involvement (Boardman & Woodruff, 2004), and a safe place to practice perfecting their skills (Darling-Hammond & McLaughlin, 1995). Graczewski et al. (2009) credited principals as the most important persons to promote change. This study concurred with the literature. Although there was
a moderate effect size, there was a statistically significant positive relationship between administrators’ active involvement in the accountability of implementation practices and MCT2 language arts achievement for students in specified grades.

Although researchers identified both duration (Birman et al., 2000; Boyle et al., 2005; Desimone, Porter, Birman et al., 2002; Desimone, Porter, Garet et al., 2002; Desimone et al., 2006; Garet et al., 2001) and collective participation (Boyle et al., 2005; Darling-Hammond & McLaughlin, 1995; Desimone, Porter, Garet et al., 2002) as important aspects of reform professional development, this study showed only a statistically significant relationship between duration and MCT2 language arts achievement in third through fifth grades. This study did not concur that there was a statistically significant relationship between collective participation in professional development and increased student achievement. The high mean scores in this study seem to indicate that a large number of teachers attended training with their colleagues and reported making changes in instructional practices; however, this study did not find these changes to have a statistically significant relationship with language arts achievement in third through fifth grades as measured by the MCT2.

This study also did not find significant relationships between achievement and teacher implementation, types of training, and teacher perceptions. There is a great deal of literature on the types of professional development training that create changes in instructional practices. Although previous literature identified these areas of professional development and implementation practices as keys to creating pedagogical changes in instructional practices that leads to increases in achievement (Desimone et al., 2006), this study did not support previous findings reported in the literature. Researchers reported
the core feature professional development that incorporates active learning and coherence creates active learning activities that are coherent or tied to standards and assessments that build upon teachers’ previous experiences create real changes in instructional practices (Birman et al., 2000; Desimone, Porter, Birman et al., 2002; Garet et al., 2001; Lieberman, 1995). Also, Parsad et al. (2001) linked teachers’ changes in instruction to beliefs that the professional development activity improved their teaching. This study did not concur with previous studies. A statistically significant relationship was not found between implementation practices, types of professional development training, or teacher perceptions of implementation and MCT2 language arts achievement in third through fifth grades.

Post hoc analysis of demographic information identified other independent variables that showed a statistical significance that indicated a small to moderate relationship with MCT2 language arts achievement for specified grades. Teacher experience indicated only a small relationship with MCT2 language arts achievement for students in third through fifth grades. Class size had a moderate statistically significant relationship with MCT2 language arts achievement for third through fifth graders, but the level of teacher education and the teacher’s certification level for National Board Certification did not yield a statistically significant relationship with MCT2 language arts achievement for students in grades 3 through 5. A small sample size of National Board Teachers (N=35) in the study may account for this independent variable’s lack of significance. The small sample size may lack the power needed for this model.
Discussion

Many of the findings in this study are consistent with previous research. The relationship with poverty and student achievement is consistent with the research of Marzano (2003) and Payne (2005). Payne (2005) stated that one of the contributing factors to low achievement of students from low socioeconomic families is that a large number of these students enter school without the concepts or cognitive strategies needed to be successful in school. To prevent the assumption that the relationship, as Reeves (2003) stated, between poverty, race, and achievement is impossible to break, leading researchers (Marzano, 2003; Payne, 2005; Reeves, 2003) have identified specific strategies that can be used to improve achievement in this population of students. While these techniques are proven to improve achievement in schools with a high percentage of students receiving free lunch, these strategies may increase achievement for all classes of students. These researchers identified policy changes that have been proven to increase student achievement in the 90/90/90 studies (Reeves, 2003). There were two major recommendations made by these researchers (Marzano, 2003; Payne, 2005; Reeves, 2003): major attention to curriculum including what is being taught and protection of instructional time needed to teach essential concepts.

Payne (2005) stated it is also critical to supply the support systems students need to be successful which could be done through small adjustments in the instructional day without a large cost to schools. Payne (2005) recognized that building relationships of respect is crucial for building the support system needed to increase student achievement. Reeves (2003) stated that the collective work of schools, parents, and the community would lead students out of poverty with teaching quality the key to student success.
Teaching, leadership, and curriculum have been identified in this literature as crucial for leading students to success (Marzano, 2003; Payne, 2005; Reeves, 2003).

This study also concurs with the researchers (Darling-Hammond & McLaughlin, 1995; Graczewski et al. 2009; Marzano, 2003; Payne, 2005; Reeves, 2003) who have identified leadership as an important aspect of student achievement. Reeves (2003) found that active participation of administrators was a consistent characteristic of 90/90/90 schools. Reeves (2003) laid the burden of curriculum monitoring and oversight as the principal responsibility of administrators. Other researchers have also identified teacher evaluation and accountability as important aspects of implementation of new pedagogical strategies (Darling-Hammond & McLaughlin, 1995; Graczewski et al., 2009). This study found a statistically significant positive relationship between administrators’ influence on accountability and MCT2 language arts achievement for third through fifth graders that supports previous studies that have identified active leadership as having a significant relationship with achievement.

Questions from the study that addressed the influence of administrative oversight with such items as the amount of time teachers spent with a member from the school’s leadership team being coached or mentored yielded a statistically significant positive relationship with MCT2 language arts achievement. Questions from the study that addressed how often the school administration reviewed and revised lessons and lesson plans to ensure proper implementation of DOK strategies learned during implementation of professional development training had a statistically significant negative relationship with MCT2 language arts achievement scores.
As previous research stated, there is little direct evidence on how professional development corresponds to improvement in instruction and whether new strategies have a relationship with increased student achievement (Boyle et al., 2005; Desimone, Porter, Birman et al., 2002; Desimone, Porter, Garet et al., 2002; Garet et al., 2001; Guskey, 2003; Knight & Wiseman, 2005; Porter et al., 2000). This study also failed to show a statistically significant relationship between types of professional development training and implementation practices and MCT2 language arts achievement in specified grades. Although the mean scores seemed to indicate that teachers attempted to implement new DOK strategies, it was not found to have a statistically significant relationship with language arts achievement. The only aspect of core type of professional development training that was found to have a statistically significant relationship with achievement in this study was the duration of the training. This study concurs with Boyle et al. (2005) and other researchers who identified the teachers’ opportunities to immerse themselves in meaningful activities that are longer in duration allowed meaningful changes in instruction to take place.

Limitations

Generalizations of study findings were limited by some factors. This research did not ask specifically how much time was spent in each training nor did it inquire into specifically which trainings teachers received. Therefore, this study is limited in its ability to recommend specific types and amounts of training that teachers should receive to achieve the greatest effect on student achievement. Since the teachers’ responses for utilization of implementation strategies, types of training, and perceptions of implementation of DOK strategies yielded a high mean score, the variability was limited
and may have affected the results. Other findings in the post hoc model relative to variables such as class size and teacher experience were not thoroughly investigated, so these variables may alter the effect sizes in this study.

The sample size (N=35) used to determine the relationship between a teacher having National Board Certification and MCT2 language arts achievement was too small to yield any power in the regression model. This study did not have a sufficient sample size of this population to draw any conclusions related to this variable.

Administrators were not included in the survey sample. Therefore, it was not determined if the amount of time administrators spent reviewing lesson plans and assessment instruments was negatively related to MCT2 language arts achievement or if the reviews of plans and assessments were instead tied to teachers’ previous classroom performance.

When the Cronbach’s alpha test of coefficient reliability was performed on each set of items, two of the sets were slightly below the 0.7 criteria. Questions that measured frequency had a Cronbach’s alpha of 0.63, and questions that measured duration had a Cronbach’s alpha of 0.68. These measures could be slightly less reliable.

Recommendations for Policy and Practice

The relationship between poverty and achievement in Mississippi schools identified in this study presents a challenge for educators in this state. As Payne (2005) stated, people escape poverty in four ways: they leave to escape the pain, because of a goal or vision, they have a special talent or skill, or someone has played a key role or built a relationship including providing resources that helps the person break free. She identified a lack of resources as having a direct correlation with low achievement. The
work of teachers and administrators as outlined by previous researchers (Marzano, 2003; Payne, 2005; Reeves, 2003) may play a key role in helping students of poverty by setting challenging but attainable goals for students, developing respectful relationships with the students and their families, and providing resources that students need to be successful. These resources include teaching students of poverty to speak and write in formal registry and teaching them the hidden rules of the middle class and how to operate and maneuver between the two classes in which they live. For policy makers, this could require the reevaluation of curriculum and curriculum objectives. It may also require states to reevaluate the number of curriculum objectives required to be taught each year and require schools to identify and sequence essential concepts while providing students with multiple opportunities to learn these concepts. Policy makers may also have to restructure time allotted for core subjects such as reading, writing, and mathematics and reduce the amount of time spent on other subjects, especially in elementary schools.

Duration was found to have a positive statistically significant relationship with MCT2 language arts achievement for third through fifth grades, while frequency of training was found to have a statistically significant negative relationship with achievement with students in the specified grades. For policy makers, this may indicate the need for professional development to be conducted less frequently but for longer durations. This study seems to indicate that policy makers may need to schedule professional development for days set aside at the beginning of school and at the semester break to do more intensive training that allows teachers to be immersed in meaningful training that may be more beneficial than frequent one-shot workshops. Because increased frequency of training had a negative relationship with achievement, fewer
trainings of longer duration may be more effective training approaches to increase achievement.

Administrators’ influence on teacher accountability for implementing new standards and oversight of what is being taught showed a significant relationship with increased student achievement in third, fourth, and fifth grade language arts as measured by the MCT2. As Marzano (2003) stated, administrators are responsible for ensuring that essential content is taught. Administrators’ influence on instructional accountability included evaluation of lesson plans and assessments with teachers, observations of teachers presenting lessons and receiving appropriate feedback on the taught lesson, and coaching teachers in their classrooms.

Administrators who only reviewed written lesson plans and assessments away from the teacher showed a statistically significant negative relationship with MCT2 language arts achievement. There are several items that could be a factor in this model. Administrators may be spending the greatest amount of time reviewing lesson plans and written assessments of teachers that administrators have identified as not performing to a satisfactory level. It may be that the lack of classroom performance caused the low scores, not administrative supervision. Policy makers may need to establish policy that requires administrators to spend a percentage of the instructional day observing and working with teachers in their classrooms, assigning mentors and providing time for teachers to work with their mentors, and working one-on-one with teachers when designing lessons and assessments when implementing new curriculum standards. Policy makers may need to target mentoring and interactions, consultants, and classroom evaluations toward all teachers as staff development or as a part of an effort for school-
wide training to implement the new standards-based curriculum, resulting in increased achievement.

This study evaluated preliminary results 2 years after the implementation of new standards-based curriculum that incorporated depth of knowledge (DOK) levels in the new curriculum objectives. As Firestone et al. (1991) and Lawrenz et al. (2005) stated, standards-based reform is a long-term process that is beneficial if it is sustained and attended to for numerous years with consistent effort. Lawrenz et al. (2005) also wrote that the process also requires schools to continuously modify and change as the data indicate, and Firestone et al. (1991) identified the only constant in standards-based educational reform is to improve teaching through improved curriculum and instruction.

Recommendations for Future Research

Further studies should help to define the reasons for the difference in achievement based on duration and frequency of teacher training and help define the reasons for the difference in achievement based on the type of accountability.

1. Future studies should focus on the amount of time spent per training, how much training is available, what types of training teachers are receiving, and the distinctions in the effectiveness of each.

2. The questions that measured utilization of implementation practices, specific types of teacher training, and teachers’ perceptions of implementation strategies should be rewritten to gain a greater variability of responses that is needed for regression analysis. Other variables that seemed to identify some significance in the post hoc model such as class size and teacher experience could also be further investigated in future studies.
3. Future studies looking to determine whether National Board Certification makes a difference on student achievement should obtain a larger sample size and data related to individual teacher’s MCT2 class summary sheets.

4. Future studies should survey administrators to determine if time spent on teacher accountability is tied to teacher performance. These surveys should also include questions that will evaluate what is being done at the school level to assist teachers in the implementation of new curriculum standards and how much of that assistance is active assistance on the part of the administrative team.

5. Finally, future studies should focus on identifying high achieving schools in Mississippi that serve students from low-socioeconomic backgrounds. The focus should be on identifying the characteristics that make them successful so they can be replicated in other schools in the state. Future studies should also replicate some of the 90/90/90 strategies of Reeves (2003), some of the relationship building strategies of Payne (2005), and some of the curriculum concepts of Marzano (2003), including opportunities to learn and sufficient time to learn in schools serving a high percentage of students receiving free lunch. These schools should be studied and student achievement should be tracked to determine if these strategies make a statistically significant difference in student achievement and whether they make a statistically significant difference in breaking the cycle of poverty.

Summary

The primary purpose of this study was to determine if there were statistically significant relationships among the independent variables that consisted of standards-based professional development and language arts achievement for third, fourth, and fifth
graders as measured by the MCT2. Previous literature has linked these standards-based curriculum variables to changes in instructional and implementation practices and loosely linked them to increased student achievement.

Primary data were obtained from teacher-reported survey instruments that were administered in 63 schools that serve the specified student population through the state of Mississippi. A multiple regression analysis was used to determine whether relationships existed between the dependent and independent variables. The relationship between different aspects of implementation of new standards-based curriculum and MCT2 language arts achievement for third, fourth, and fifth grade students was found to be consistent with previous studies in some areas and yet surprisingly not statistically significant in others.

The area that this study identified as having the greatest relationship with achievement was that of poverty. This finding was consistent with the research of Marzano (2003) and Payne (2005). Other areas of statistical significance were duration of training, frequency of teacher training, influence of administrators on teacher accountability, and teachers’ perceptions of adapting assessment instruments to meet the new standards. Some of these indicated a positive relationship such as duration and administrators’ active influence on teacher accountability for implementation of new standards, but others such as frequency of training and administrative review of only lesson plans and assessments had a negative relationship with MCT2 language arts achievement in grades 3 through 5.

Although this study had some limitations, recommendations for policy makers were made which could include reevaluation of the curriculum including the number of
objectives required to be taught each year, the sequence in which curriculum objectives should be taught, and provide sufficient instructional time to learn. Recommendations for policy makers also include identifying optimal duration and frequency for professional development training that could be directly attributed to increased student achievement, and policy makers may need to establish policy that requires administrators to spend a percentage of the instructional day observing and working with teachers in their classrooms.

Recommendations for further research included using further studies to help define the reasons for the difference in achievement based on duration and frequency of teacher training and to help define the reasons for the difference in achievement based on the type of accountability. Another recommendation was to identify high achieving schools that serve students from low socioeconomic families to determine the characteristics of these schools and attempt to replicate these characteristics in other schools with similar populations throughout the state.
APPENDIX A

SURVEY INSTRUMENT

Survey of Professional Development and Implementation of

Depth of Knowledge

Instruction and Assessment in Language Arts

You are invited to participate in this survey on professional development and implementation of depth of knowledge instruction and assessment in language arts. It should take less than 20 minutes of your time to complete. This survey is being administered to gain important information about the implementation process of standards-based reform initiatives in language arts.

Your participation in this survey is voluntary. If you choose to participate, all of your responses will be kept confidential. All individual information will be kept confidential and will not be shared with any staff members at the schools, districts, state, or university personnel except as summary information. No individuals will be identified in any of the reports. Please do not put your name on the questionnaire. The only identifying mark on the survey instrument is a code that identifies the district and the school of origin; it will not identify the individual respondent. The questionnaire poses no risk to you and there is no penalty for refusal to participate.

Please complete the survey questions to the best of your ability. When you have completed the survey, place the survey in the envelope provided and seal it. Return the survey in the sealed envelope to the designated person at your school, _______________________. Once the surveys have been collected, they will be forwarded to Carol Viator, doctoral candidate at The University of Southern Mississippi. The seals will then be broken and the data analyzed.

If you have any questions, please contact Carol Viator at cfviator@gmail.com or 228-432-0214. Returning the completed survey signifies your consent to participate in the study and signifies your consent to use the data obtained in this instrument.

This project has been reviewed by the Human Subjects Protection Review Committee, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5147, Hattiesburg, MS 39406-0001, (601) 266-6820.
Please answer the following questions to the best of your ability. All individual information will be kept confidential and will not be shared with any district or university employee except as summary information. Please do not write your name anywhere on this document to ensure anonymity.

Please darken the circle that best reflects your demographics and experiences training.

1. What is your gender?
   ○ Male
   ○ Female

2. Please indicate your ethnicity/race. (Darken one circle only.)
   ○ American Indian or Alaska Native
   ○ Asian or Pacific Islander
   ○ African-American
   ○ White
   ○ Hispanic
   ○ Other

3. How many years have you taught? (Darken the circle that reflects the range in years of teaching completion.)
   ○ First year teacher
   ○ 1-5 years of teaching experience
   ○ 6-10 years of teaching experience
   ○ 11-15 years of teaching experience
   ○ 16 years or more of teaching experience

4. What is your level of education? (Darken the circle that describes your highest level of education completion.)
   ○ Bachelor’s Degree
   ○ Master’s Degree
   ○ Specialist Degree
   ○ Doctorate Degree

5. Are you a National Board Certified Teacher?
   ○ Yes
   ○ No

6. What is the current grade level of language arts you teach (Darken the circle that best describes the language arts classroom(s) you teach.)
   ○ 3rd grade language arts
   ○ 4th grade language arts
   ○ 5th grade language arts
   ○ Multi grade language arts (grade levels mixed for language arts)

7. What is the average class size of the language arts class(es) you teach?
   ○ 1 – 8
   ○ 9 – 16
   ○ 17 – 24
   ○ 25 – 32
   ○ Greater than 32
PROFESSIONAL DEVELOPMENT TRAINING AND IMPLEMENTATION OF DEPTH OF KNOWLEDGE (DOK) LEVELS IN LANGUAGE ARTS CURRICULUM INSTRUCTION AND ASSESSMENT

In answering the following items, consider all the professional development activities related to language arts DOK levels or DOK implementation that you participated in between June 2007 and August 2009. Professional development refers to a variety of activities intended to enhance your professional knowledge of DOK through in-service training both district and state, teacher networking, course work, Mississippi Department of Education workshops, institutes, committee work, workshops, and mentoring. In-service training is professional development offered by your school or district to enhance your professional knowledge of DOK. Workshops are generally shorter learning opportunities that can be located in your school, district, or elsewhere to enhance your knowledge of DOK. Institutes are long term professional development opportunities generally a week or longer in duration.

Using the answer options below (0, 1, 2, 3, 4, 5) please darken the circle that best describes your response to each of the items below.

<table>
<thead>
<tr>
<th>How Often?</th>
<th>How many hours?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>0/1</td>
</tr>
<tr>
<td>3-4 times</td>
<td>2/3</td>
</tr>
<tr>
<td>5-10 times</td>
<td>4/5</td>
</tr>
<tr>
<td>&gt; 10 times</td>
<td>5</td>
</tr>
<tr>
<td>N/A</td>
<td>6</td>
</tr>
<tr>
<td>1-6 hrs.</td>
<td>7</td>
</tr>
<tr>
<td>36-60</td>
<td>8</td>
</tr>
<tr>
<td>7-15 hrs.</td>
<td>9</td>
</tr>
<tr>
<td>61+ hrs.</td>
<td>10</td>
</tr>
</tbody>
</table>

Between June 2007 and August 2009, how often, and for how many total hours, have you:

1. Participated in workshops or in-service training in your school or district related to DOK implementation or assessment using DOK levels?
2. Participated in summer institutes related to DOK implementation or assessment using DOK levels?
3. Attended college courses related to DOK implementation or assessment using DOK levels, and about how many hours did you attend class?
4. Participated in workshops or in-service training conducted by the Mississippi State Department of Education related to DOK implementation or assessment using DOK levels?
5. Participated in workshops or in-service training outside your district not conducted by the Mississippi Department of Education related to DOK implementation or assessment using DOK levels?

*Survey adapted with permission from John Smithson, of the Wisconsin Center for Educational Research. Original survey titled, Surveys of Enacted Curriculum, dated September 2004.*
Using the answer options below (0, 1, 2, 3) please darken the circle that best describes your response to each of the items below.

### Between June 2007 and August 2009, how frequently have you engaged in each of the following activities related specifically to teaching and assessing using depth of knowledge (DOK) levels?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Never</th>
<th>Once or twice a year</th>
<th>Once or twice a term</th>
<th>Once or twice a month</th>
<th>Once or twice a week</th>
<th>Almost daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attended workshops related to DOK implementation or assessment using DOK levels</td>
<td>☐</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>Participated in a teacher study group related to DOK implementation and using DOK levels for assessment</td>
<td>☐</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>Acted as a coach or mentor to other teachers or staff in your school for DOK implementation or for using DOK levels during student assessment</td>
<td>☐</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>Received coaching or mentoring in your school for DOK implementation or for using DOK levels during student assessment</td>
<td>☐</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>Participated in a committee that focused on DOK implementation or the use of DOK levels during student assessment</td>
<td>☐</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>Engaged in formal self-directed learning (for example, discussion with colleagues about DOK, read journal topics related to DOK, used the internet to enrich your knowledge of DOK implementation and assessment practices)</td>
<td>☐</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
</tbody>
</table>

Using the answer options below (0, 1, 2, 3) please darken the circle that best describes your response to each of the items below.

### How much emphasis did your DOK professional development training place on the following topics?

<table>
<thead>
<tr>
<th>Topic</th>
<th>None</th>
<th>Slight</th>
<th>Moderate</th>
<th>Great</th>
</tr>
</thead>
<tbody>
<tr>
<td>State content standards and DOK levels</td>
<td>☐</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>Alignment of instruction to state standards using DOK levels</td>
<td>☐</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>Instructional approaches using DOK levels</td>
<td>☐</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>Meeting the learning needs of English language learners using DOK levels</td>
<td>☐</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>Meeting the learning needs of students with disabilities using DOK levels</td>
<td>☐</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>Classroom assessments using DOK levels</td>
<td>☐</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>State or district assessments using DOK levels</td>
<td>☐</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>Interpretation of state or district DOK assessment levels</td>
<td>☐</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
<tr>
<td>Interpretation of state or district DOK assessment levels for making changes in instructional practices</td>
<td>☐</td>
<td>☀</td>
<td>☀</td>
<td>☀</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Thinking about all of your DOK professional development activities between June 2007 and August 2009, how often have you:</th>
<th>Never</th>
<th>Once or twice a year</th>
<th>Once or twice a term</th>
<th>Once or twice a month</th>
<th>Once or twice a week</th>
<th>Almost daily</th>
</tr>
</thead>
<tbody>
<tr>
<td>21. Observed demonstrations of teaching using different DOK levels?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>22. Led group discussions about language arts curriculum and assessment using the levels of DOK?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>23. Participated in group discussions about language arts curriculum and assessment using the levels of DOK?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>24. Developed and implemented language arts lesson plans that incorporated DOK levels?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>25. Reviewed language arts lesson plans that incorporated DOK levels with your school administration?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>26. Developed language arts curriculum assessments that incorporated DOK performance levels as outlined by the Mississippi language arts curriculum framework which were reviewed by your school administration?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>27. Reviewed student work or scored assessments to evaluate the DOK performance levels on the assessment instrument?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>28. Developed language arts lessons that used different levels of DOK outlined by the Mississippi curriculum framework during instruction</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>29. Developed language arts student assessments that used different levels of DOK?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>30. Received coaching or mentoring in your classroom about DOK curriculum implementation from an administrator, curriculum specialist, lead teacher, grade level chairperson, or educational consultant after observing you teach a lesson?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>31. Discussed DOK implementation and assessment strategies with colleagues that did not receive DOK training?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Using the answer options below (0, 1, 2, 3) please darken the circle that best describes your response to each of the items below.

<table>
<thead>
<tr>
<th>Thinking again about all of your DOK professional development activities between June 2007 and August 2009, how often have language arts DOK activities been:</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>32. Designed to support the school-wide improvement plan?</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>33. Consistent with your grade level plan for DOK implementation?</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>34. Consistent with your own goals for DOK professional development?</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>35. Based explicitly on what you learned in previous DOK professional development training?</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>36. Reviewed and revised by your school administration to ensure proper implementation of DOK in language arts instruction?</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>37. Reviewed and revised by your school administration to ensure proper language arts assessment practices using different levels of DOK?</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>38. Provided additional activities to build upon what you previously learned about DOK?</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
<td>⬜</td>
</tr>
</tbody>
</table>

Using the answer options below (0, 1) please darken the circle that best describes your response to each of the items below.

<table>
<thead>
<tr>
<th>Between June 2007 and August 2009, have you participated in professional development activities in language arts DOK in the following ways?</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>39. I participated in professional development activities with most or all of the teachers from my school.</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>40. I participated in professional development activities with most or all of the teachers from my department or grade level.</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>41. I participated in professional development activities not attended by other staff members from my school.</td>
<td>⬜</td>
<td>⬜</td>
</tr>
<tr>
<td>42. I discussed what I learned with other teachers in my school or department who did not attend the activity.</td>
<td>⬜</td>
<td>⬜</td>
</tr>
</tbody>
</table>

Using the answer options below (0, 1, 2, 3, 4) please darken the circle that best describes your response to each of the items below.

To what extent do you feel that your knowledge and skills have been enhanced in each of the following areas as a result of your participation in DOK professional knowledge training? Answering zero indicates no enhancement at all and four indicates a great extent of enhancement has been accomplished.

43. Instruction methods using DOK levels
   - Not at all
   - Greatly

44. Strategies for teaching English language learners using DOK levels
   - Not at all
   - Greatly

45. Strategies for teaching students with disabilities using DOK levels
   - Not at all
   - Greatly

46. Deepening knowledge of language arts curriculum using DOK levels
   - Not at all
   - Greatly

47. Adapting language arts instruction to meet state standards and curriculum framework requirements for DOK levels for instruction
   - Not at all
   - Greatly

48. Adapting language arts assessments to meet the state standards and curriculum framework requirements for DOK levels
   - Not at all
   - Greatly

Using the answer options below (0, 1, 2) please darken the circle that best describes your response to each of the items below.

To what extent have you made each of the following changes in your teaching practices as a result of DOK professional development training in language arts instruction and assessment?

49. Use of DOK levels when teaching language arts curriculum content
   - No Change
   - Minor Change
   - Moderate Change
   - Significant Change

50. Use of DOK levels when designing language arts curriculum lessons and activities
   - No Change
   - Minor Change
   - Moderate Change
   - Significant Change

51. Use of the cognitive challenge levels of DOK when designing curriculum lessons and activities
   - No Change
   - Minor Change
   - Moderate Change
   - Significant Change

52. Use of instructional methods to incorporate all levels of DOK
   - No Change
   - Minor Change
   - Moderate Change
   - Significant Change

53. Use of cognitive challenge levels of DOK when designing student assessments
   - No Change
   - Minor Change
   - Moderate Change
   - Significant Change

*Survey adapted with permission from John Smithson, of the Wisconsin Center for Educational Research. Original survey titled, Surveys of Enacted Curriculum, dated September 2004.

District/School Code: ____________________

This portion of the instrument will be clipped and destroyed following analysis. District and school identity will be completely confidential.
APPENDIX B

INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

Institutional Review Board
118 College Drive #5147
Hattiesburg, MS 39406-0001
Tel: 601.266.6820
Fax: 601.266.5509
www.usm.edu/irb

HUMAN SUBJECTS PROTECTION REVIEW COMMITTEE
NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Human Subjects Protection Review Committee 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: 29110304
PROJECT TITLE: A Critical Analysis of the Implementation of Depth of Knowledge and Preliminary Findings Regarding its Effectiveness in Language Arts Achievement
PROPOSED PROJECT DATES: 11/01/09 to 05/30/10
PROJECT TYPE: Dissertation or Thesis
PRINCIPAL INVESTIGATORS: Carol Elizabeth Ferguson Viator
COLLEGE/DIVISION: College of Education & Psychology
DEPARTMENT: Educational Leadership & School Counseling
FUNDING AGENCY: N/A
HSPRC COMMITTEE ACTION: Exempt Approval
PERIOD OF APPROVAL: 11/12/09 to 11/11/10

Lawrence A. Hosman, Ph.D.
HSPRC Chair

Date: 11-11-09
APPENDIX C

SUPERINTENDENTS’ PERMISSION TO SURVEY LETTER

AND CONSENT FORM

1179 Lafayette Street
Biloxi, MS 39530
November 17, 2009

Superintendent’s Name
District’s Name
District Address
City, State Zip Code

Dear Superintendent:

I am Carol Viator, a doctoral candidate at The University of Southern Mississippi. I am conducting research on the implementation practices of standards-based depth of knowledge in language arts instruction in third, fourth, and fifth grades. I would like your written permission to survey third, fourth, and fifth grade language arts teachers in your district. This project has been reviewed by the Human Subjects Protection Review Committee, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5147, Hattiesburg, MS 39406-0001, (601) 266-6820.

With your permission, this survey will be distributed to _____(school names inserted here). The survey instrument will be distributed by the building principals with written instructions and is not expected to take longer than 20 minutes to complete. A copy of the survey instrument and instructions are attached for your reference.

If you consent to have the listed elementary schools participate in this research, please sign and date the enclosed consent form and return it in the self-addressed, stamped envelope.

Thank you for your consideration. If you have any questions, you can contact me at cfviator@gmail.com or 228-432-0214.

Sincerely,
Carol Viator, Ed.S.
Doctoral Candidate
The University of Southern Mississippi
Consent to Participate in Standards-Based Depth of Knowledge Implementation Survey

As superintendent of _________________________ District, I give Carol Viator permission to conduct educational research at the following schools:
_____________________________ (schools will be listed here).

This research will be conducted on the implementation practices of standards-based depth of knowledge language arts instruction in third, fourth, and fifth grades. Permission is granted to survey teachers that teach language arts in the third, fourth, and fifth grades. I understand who participation in this survey is voluntary. All responses will be kept confidential. No individuals will be identified in any of the reports.

_____________________________________   ___________ _____
Superintendent’s Signature        Date
APPENDIX D

PRINCIPALS’ SURVEY INSTRUCTIONS

Principals,

Please read the following instructions to the teachers in your building who teach either third, fourth, or fifth grade language arts before distribution of the survey instrument. Please leave the surveys in the sealed envelopes, place them in the self-addressed, stamped envelope, and return them back to me by the end of January. If you have any questions, you can contact me at cfviator@gmail.com or 228-432-0214. Thank you for your assistance.

Instructions

You are being invited to participate in a research study of standards-based depth of knowledge implementation practices in the state of Mississippi. This research is being conducted to gain important information about the implementation process of standards-based reform initiatives in language arts.

Your participation in this survey is voluntary. If you choose to participate, all of your responses will be kept confidential. No individuals will be identified in any of the reports. Please do not put your name on the questionnaire. The questionnaire poses no risk to you and there is no penalty for refusal to participate. When you have completed the survey, place the survey in the envelope provided, seal it, and return the survey in the sealed envelope to the office. The surveys will then be returned to Carol Viator for data analysis.
APPENDIX E

PERMISSION TO USE AND ADAPT THE SURVEY INSTRUMENT

DATE: August 25, 2009
TO: Carol Vistor
FROM: John Smithson
RE: Permission to use and/or modify Survey of Enacted Curriculum Instruments

Carol,

Thank you for your interest in using portions of the Survey of Enacted Curriculum (SEC) instruments as a component of your dissertation. These instruments have been reviewed by our IRB committee and determined to be exempt, based on federal guidelines. You are welcomed to use and/or modify the survey instruments as best suits your dissertation needs, though this may require IRB approval at your own institution. I only ask that you include an appropriate reference to the SEC instruments in your dissertation.

Thanks again for your interest in the SEC, and best wishes on your doctoral work.

Regards,

[Signature]
John Smithson, Ph.D.
Director, Surveys of Enacted Curriculum
Wisconsin Center for Education Research
University of Wisconsin-Madison
REFERENCES


